

**Universitat de les Illes Balears**

**CATÀLEG DE PROJECTES D'INVESTIGACIÓ**  
**2006**

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- Departament de Biologia
- Departament de Biologia Fonamental i Ciències de la Salut
- Departament de Ciències Matemàtiques i Informàtica
- Departament d'Economia Aplicada
- Departament de Física
- Institut Mediterrani d'Estudis Avançats (IMEDEA)

### Projectes de recerca finançats pel Govern espanyol i el Govern de les Illes Balears

- Departament de Biologia
- Departament de Biologia Fonamental i Ciències de la Salut
- Departament de Ciències de la Terra
- Departament de Ciències Històriques i Teoria de les Arts
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- Departament de Pedagogia Aplicada i Psicologia de l'Educació
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- Institut Mediterrani d'Estudis Avançats (IMEDEA)
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**PROJECTES DE RECERCA  
EN EL MARC DE LA UNIÓ EUROPEA**

**DEPARTAMENT DE BIOLOGIA**

**Referència:** INCO-CT-2004-509140.

**Títol:** *Improvement of native perennial forage plants for sustainability of Mediterranean farming systems.*

**Acrònim:** PERMED.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** CIFRE LLOMPART, Josep.

**Categoria:** P. Col. (àrea de coneixement: Producció Vegetal).

**Inici:** 2004.

**Fi:** 2008.

### Socis

Institut Nacional de la Recherche Agronomique d'Algerie (Algèria)

Institut Nacional de la Recherche Agronomique (Marroc)

Institut des Regions Arides (Tunísia)

Consiglio Nazionale delle Ricerche (Itàlia)

Instituto de Investigação Agrária e das Pescas (Portugal)

Universitat de Barcelona (Espanya)

Institution de Recherche et d'Enseignement Supérieur Agronomique (Tunísia)

Istituto Sperimentale per le Coltive Foraggere (Itàlia)

Coordinador: Institut Nacional de la Recherche Agronomique (França)

### **Summary**

The amount of water available to agriculture in the Mediterranean is declining because of increasing population pressure and greater incidence of drought. Therefore, the efficiency of the use of water for agricultural production must be maximized, and in this context perennial forage species have a number of advantages in comparison to the predominantly used annuals. They can utilize water throughout the whole year besides being able to halt rangeland degradation, restore soil fertility and enhance forage production, thereby contributing to greater sustainability of rain-fed agricultural systems in the southern European Union and North Africa.

Despite these advantages, the small size of individual national markets has so far worked against the development of a viable forage industry based on perennials. Therefore, by adopting a multi-national approach and targeting the key breeding objectives of superior drought resistance and water use efficiency (WUE), this project aims to produce commercially viable cultivars of a select number of species of broad regional interest and adaptation.

Ten research groups from southern Europe and North Africa will combine to work on species including lucerne, cocksfoot, tall fescue and sulla to enhance cultivar development across environments ranging from the sub-humid to arid. Complementary Workpackages will (i) complete North African forage germplasm collection and evaluation, (ii) assess the use of molecular genetics in breeding of drought resistant lucerne, (iii) evaluate elite forage populations across the region for high WUE and adaptation to drought as bases for new cultivars, (iv) enhance knowledge of physiological traits for drought survival and WUE, and (v) determine optimal use of perennial forages in four representative farming systems. Their results will contribute to the development of technical packages for easy on-farm adoption across the western Mediterranean, thereby ensuring a long-term interest of the seed industry.

**DEPARTAMENT DE BIOLOGIA FONAMENTAL I CIÈNCIES DE LA  
SALUT**

**Referència:** FOOD-CT-2004-506360.

**Modalitat:** Network of excellence.

**Títol:** *European nutrigenomics organisation-linking genomics, nutrition and health research.*

**Acrònim:** NUGO.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2004. **Fi:** 2009.

### Socis

Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (Holanda)  
Rikilt (Holanda)

Nutrition and Toxicology Research Institute Maastricht (Holanda)

Rijksinstituut voor Volksgezondheid en Milieu (Holanda)

University College Cork, National University of Ireland (Irlanda)

Trinity College Dublin (Irlanda)

University of Ulster (Regne Unit)

Deutsches Institut fuer Ernaehrungsforschung (Alemanya)

Technische Universitaet Muenchen (Alemanya)

Institute of Food Research (Regne Unit)

Rowett Research Institute (Regne Unit)

University of Reading (Regne Unit)

Universita degli Studi di Firenze (Itàlia)

Uniwersytet Jagiellonski (Polònia)

Lunds Universitet (Suècia)

University of Newcastle upon Tyne (Regne Unit)

Instiut Nacional de la Sante et de la Recherche Medicale (França)

Universitetet I Oslo (Noruega)

European Molecular Biology Laboratory (Alemanya)

Topshare International BV (Holanda)

Coordinador: Wageningen Universiteit (Holanda)

### **Summary**

The primary aim of NuGO is integration, making future nutrigenomics research easier. Twenty-two partners organisations from ten European countries form the core of The European Nutrigenomics Organisation (NuGO). The specific aims of NuGO are to:

Strengthen the European scientific and technological excellence in nutrigenomics by bringing together the critical mass of resources and expertise needed to offer leadership in this rapidly developing field

Define individual response to nutrients and refine the requirements for population sub-groups based on genetic variations (nutrigenetics), sex, and the different life-stages

Determine the relative health benefits and risks of food compounds for different population sub-groups and improve public health

Spread excellence in nutrigenomics beyond the partnership through training, sharing of methods and facilities, dissemination and exploitation, and enter into dialogue with stakeholder groups. Support the competitive arm of the European food industry, facilitating its growth as a knowledge-based business, with a view to evidence-based healthier food production

Promote understanding in the ethical, social, legal, economical and scientific issues of concern in nutrigenomics

There are four related activities to help this process, each with complementary tasks:

**Integration Activities** which will harmonise, stimulate and facilitate new technologies, informatics and systems for common use, and underpin research activities

**Joint Research Activities**, which exploit the technological and scientific innovations in a number of key areas of nutrition and health research as well as consolidate the research effort in Europe

**Spreading of Excellence** will build upon the acquired knowledge, sharing it with stakeholder groups including researchers, industry, society and healthcare

NuGO is funded by the European Commission's Research Directorate General under the Food Quality and Safety Priority of the Sixth Framework Programme for Research and Technological Development. The project began in January 2004 and will be funded until December 2009, but expects to be self-funding after this date.



**DEPARTAMENT DE CIÈNCIES MATEMÀTIQUES I INFORMÀTICA**

**Referència:** INTAS-04-77-7178.

**Modalitat:** Information technology.

**Títol:** *Global and local protein matching.*

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** ROCHA CÁRDENAS, Jairo.

**Categoria:** Contr. dr. (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2005.

**Fi:** 2007.

### Socis

University of York (Regne Unit)

Belarusian Research Institute of Microbiology and Epidemiology (Bielorússia)

Moscow State University (Rússia)

United Institute of Informatics Problems (Bielorússia)

Coordinador: Universitat de les Illes Balears

### **Summary**

A novel method based on EM-SVD apply to protein comparison will be developed both for global and local similarities. A method for prediction of local antigen sites in primary structure as well as their comparison will be developed. The methods, that combine the stochastic approach of Expectation Maximization with the use of spectral graph theory for the Singular Value Decomposition, are expected to outperform most popular matching algorithms for proteins. This belief is supported by the fact that the EM-SVD approach has been very successful in image matching. The application of the methods above to real proteins as well as in vitro verification will be fulfilled. The databases with the results of comparison as well as the developed software will be available at the web site.

**DEPARTAMENT D'ECONOMIA APLICADA**

**Referència:** ASI/B7-301/98/679-014.

**Modalitat:** Human resource development.

**Títol:** *Professional joint European Chinese cooperation in tourism.*

**Centre:** Departament de d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** SASTRE ALBERTÍ, Francesc.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2003.                      **Fi:** 2006.

### Socis

University of Guangzhou (Xina)

University of Nice (França)

University of Genoa (Itàlia)

Coordinador: University of Angers (França)

### **Summary**

Our application is made with the aim of creating a regional multilateral network between 4 European universities and the University of Guangzhou in China with the purpose of upgrading the skills of teaching staff (existing lecturers and professors as well postgraduate students interested in a teaching career) so as to allow them to improve the quality of the training of their students in the field of tourism and hotel management. The present application corresponds to the Asia-Link Human Resource Development (HRD) type of project. Its projected length is three years.

The main activities will focus on devising teaching seminars in Guangzhou for our Chinese colleagues, organising intensive courses in the European universities of the consortium on specialised topics related to the teaching of tourism related subjects for both confirmed teaching staff involved in the development of tourism courses in the home institution (Guangzhou University) and administrators in charge of implementing the credit transfer system.

Sandwich courses and internship opportunities will be added to the above-mentioned activities with the aim of increasing the mutual knowledge of the industry of tourism, hospitality and hotel sectors for both teaching staff and advanced students in Europe for our Chinese colleagues and in China for the Europeans.

**Referència:** GOCE-CT-2003-003933.

**Modalitat:** Integrating and strengthening the European Research Area.

**Títol:** *Thresholds of environmental sustainability.*

**Acrònim:** THRESHOLDS.

**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** RIERA FONT, Antoni.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2005.

**Fi:** 2008.

### Socis

Istituto di Studi per l'Integrazione dei Sistemi (Itàlia)  
Universitaet Stuttgart (Alemanya)  
Uppsala Univesity (Suècia)  
National Environmental Research Institute (Dinamarca)  
European Comission (Bèlgica)  
Suomen Ympäristökeskus (Finlàndia)  
University of Southern Denmark (Dinamarca)  
University of Kalmar (Suècia)  
Université Pierre et Marie Curie (França)  
Norsk Institutt for Vannforskning (Noruega)  
Intitut Français de Recherche pour l'Exploitation de la Mer (França)  
Université Libre de Bruxelles (Bèlgica)  
University of Oslo (Noruega)  
Ringkjoebing County (Dinamarca)  
University of Bath (Regne Unit)  
TerrAquat (Alemanya)  
Centrale Recherche SA (França)  
ARDMPI (França)  
Intitut of Oceanology (Bulgària)  
University of Tartu (Estònia)  
Coordinador: Consell Superior d'Investigacions Científiques (Espanya)

### **Summary**

THRESHOLDS seeks to contribute to the development of Sustainability Science and through the implementation of a procedure for policy formulation based on the development of a target setting process that integrates scientific knowledge on thresholds of indicators of environmental sustainability, the socio-economic activities that impinge in these indicators and the components of their vulnerability, and the evaluation of the resultint externalities associated with these socioeconomic activities.

THRESHOLDS carries out innovative crosscutting research to develop, improve and integrate tools and methods to provide the basis to formulate sustainable strategies through research to deliver the scientific tools to identify Thresholds and Points of Noreturn of Environmental Sustainability and externality valuations required to define targets for the development of the European sustainable Development Strategy. The THRESHOLDS IP will confront complex behaviour of ecosystems, such as regime shifts between alternative stable states, and complexity in valuation of the sectors affecting environmental quality, such as nonlinear cost-accommodate to the complexity of the socio-economic and environmental systems. The tools

developed will be applied to case studies in the European coastal zone, where policy needs are pressing, involving increasing levels of complexity, from local to pan-European.

THRESHOLDS IP will draw on the extensive data sets and research results produced on the basis of national efforts as well as previous framework programmes, which have focussed on major environmental problems and have delivered models and data which can be used to define Thresholds and Points of No Return. The THRESHOLDS IP, will, therefore, build on the European Research Area concept and add value to the applications of results derived from national and FP 6-funded research.

# **DEPARTAMENT DE FÍSICA**

**Referència:** EVK1-CT2001-00092.

**Modalitat:** Energy, environment and sustainable development.

**Títol:** *Towards sustainable water use on mediterranean islands: addressing conflicting demands and varying hydrological, social and economics conditions.*

**Acrònim:** MEDIS.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ALONSO OROZA, Sergio.

**Categoria:** CU (àrea de coneixement: Física de la Terra).

**Inici:** 2002.                      **Fi:** 2006.

### Socis

Natural Environment Research Council (Regne Unit)

University of Cyprus (Xipre)

Foundation of Research and Technology (Grècia)

Università degli Studi di Messina (Itàlia)

Centre National de la Recherche Scientifique (França)

Universitat Politècnica de Catalunya (Espanya)

Université de Corse Pascal Paoli (França)

National Agricultural Research Foundation (Grècia)

Regional Government of Crete (Grècia)

Coordinador: Universitaet Muenster (Alemanya)

### **Summary**

The availability of water in the Mediterranean in sufficient quantities and adequate quality represents a significant problem of European dimension. This is due to a number of factors which include: the over-exploitation of existing aquifers by various users, insufficient recharge due to diminishing precipitation, excessive and inadequate use through agricultural activities or tourism, significant deficits in water management and distribution schemes and conflicting or unresolved demands and interests between various users, to name just a few. These problems are exacerbated on the islands in the Mediterranean because of their isolation and thus the impossibility to draw on more distant or more divers aquifers in general and because of the threat of saline intrusions, which reduce the utilisation of existing, near-shore aquifers in particular. Consequently, some islands (e.g., Mallorca or Cyprus) because of the inability to cope with the existing water resources on the island have resorted to extremely costly measures such as sea water desalination or the transport of freshwater from the mainland to the island with tankers. While the availability, demand and distribution of water on each island are determined by specific conditions, there are a number of attributes common to all Mediterranean islands which call for the formulation of generic solutions to the above mentioned problems. Such solutions are also pertinent in the context of the Water Framework Directive (WFD), which came into force on 22.12.2000. Because most of these problems are mutually related and interdependent, solutions will only be derived through holistic considerations. This calls for a high degree of interdisciplinarity and renders mono-disciplinary studies almost useless. Moreover, enduring solutions will only be found through recommendations and/or regulations that are based on mutually agreed principles between the stakeholders involved. This requires a stakeholder-based participatory process that builds on the results of scientific investigations on the one hand and on the consent of major stakeholders on the other. Only an approach combining interdisciplinarity and stakeholder



involvement, which is central to MEDIS (Towards sustainable water use on Mediterranean Islands: addressing conflicting demands and varying hydrological, social and economic conditions) will result in water management practices that are both sustainable and acceptable/equitable. The overall goal of MEDIS is to contribute towards the sustainable use of water on islands of the Mediterranean where conflicting demand for water is combined with a wide range of hydrological, social and economic conditions. The study will be carried out in one typical catchment each on Corsica, Crete, Cyprus, Mallorca and Sicily. Based on interdisciplinary investigations involving, hydrology, spatial analysis (geo-informatics) and geophysics, improved methodologies for the characterisation of- and basic data on aquifers and the monitoring of water consumption, recharge and safe field will be developed/derived. Because agriculture represents the major user of water on most Mediterranean islands (except for Mallorca, where water demand is highest for tourism), improved agricultural practices that enable smaller water consumption will be recommended. A stakeholder analysis and the collection and examination of information on water demand by various stakeholders in conjunction with the physical data will be used in a decision support system employing multi-criteria analysis in order to derive various mutually agreeable water distribution schemes in a participatory bottom-up approach. This will form the basis for recommendations on equitable and sustainable water management practices under current and possibly decreased precipitation rates resulting from climate change. By carrying out this project on five islands that cover the Mediterranean from west to east and by enabling a dialogue between scientists and stakeholders as well as between principal stakeholders from each island, these recommendations will embrace generic solutions based on the collective experiences of the residents on all islands. Thus, MEDIS will not only enable improved water management practices on each of the islands considered, but will contribute to the implementation of the WFD on Mediterranean islands. It is expected that MEDIS will deliver: extensive maps, databases and electronic atlases of current water resources/supply, water demands and recharge for the islands under investigation; recommendations/ guidelines for best practices in agriculture in order to mitigate the inefficient use of water; a detailed analysis and evaluation of the social and economic impacts of current water management practices, the water demands of major stakeholders, and their perception on water and water availability in general; recommendations and/or guidelines for the implementation of an infrastructure for a stakeholder-based, participatory process leading to sustainable and equitable water distribution schemes on the Mediterranean islands. These objectives are realistic, because MEDIS will be carried out by a consortium of partners who have gained extensive experience in earlier studies addressing comparable problems. Moreover, we will seek collaboration with external experts and other ongoing projects in order to improve our investigations and to avoid undue overlap.

**Referència:** INTERREG IIIB-MEDOC.

**Títol:** *Application des methodologies de previsions hydrometeorologiques orientees aux risques environnementaux.*

**Acrònim:** AMPHORE.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ROMERO MARCH, Romualdo.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2004.

**Fi:** 2006.

### Socis

Université Joseph Fournier (França)

METO-France/CNRM (França)

Fundació Bosch i Gimpera (Espanya)

Agenzia Regionale per la Protezione dell'Ambiente Ligure (Itàlia)

Centro Interuniversitario di Monitoraggio Ambientale (Itàlia)

Agenzia Regionale per la Protezione dell'Ambiente della Calabria (Itàlia)

Agenzia Regionale Protezione Ambientale Emilia Romagna (Itàlia)

Dipartimento della Protezione Civile (Itàlia)

Coordinador: Agenzia Regionale per la Protezione Ambientale del Piemonte (Itàlia)

### **Summary**

The project Amphore belongs to the context of prediction and prevention of natural risks, with particular attention to risks due to intense hydrometeorological phenomena in the Mediterranean region. The project seeks a combined experience of objective methodologies directed towards the improvement of quantitative precipitation forecasts that are applied in the hydrometeorological alert systems. The main objective is the optimisation of these alert systems taking into account the particularities of the Mediterranean region. The diversity of involved partners allows the disposal of multiple scenarios of forecast rainfall owing to the different modelling and production techniques available. An essential aspect of the project is its emphasis on probabilistic forecasts rather than deterministic methods. That is, a recognition of the value of uncertainty and complexity for the hydrometeorological chain.

**Referència:** MIF1-CT-2004-003027.

**Modalitat:** Marie Curie incoming fellowships.

**Títol:** *Autonomous vehicle for underwater inspections.*

**Acrònim:** AUVI.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CALVO IBÁÑEZ, Óscar Alberto.

**Categoria:** TEU int. (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2004.

**Fi:** 2006.

### Socis

Coordinador: Universitat de les Illes Balears (Espanya)

### **Summary**

This project proposes the research in reactive path planning for mobile robots in real environment using artificial intelligence (AI) techniques. An experimental prototype will be used in a first stage as a testbed for proposals (an autonomous underwater vehicle (AUV)). Among the multiple disciplines that converge in the development of a cost effective and useful for inspections AUV, the navigation control as well as the path planning exhibits particular interest. Effectively, although a lot of proposals may be found in the literature since the last decade, there is a lack of a reliable set of tracking and obstacle avoidance systems to allow the vehicle to follow a certain pattern in the seabed. A potential application is pipeline, electric and telephone cables tracking. However, the scopes of this research are not limited to this application (i.e., study of coastal ecosystems). Thus, given the multiple possible scenarios in an underwater world, AI techniques will be used to cope with these unknown situations. To face them it requires safe navigation systems that are not yet available for autonomous operations. The main objective of this project is to design and to develop a cost-efficiency technology for autonomous navigation in complex environments. The project includes development of an autonomous tracking and a safe low-altitude navigation for an AUV prototype, which could hadle sea trials. The particular objectives are: 1. To develop a software module responsible for providing the desired AUV trajectory, resorting to AI techniques, particularly knowledge-based system; 2. To apply the resulting prototype to subsea pipeline and cable inspections (in 1 and 2 this project is linked to the EU AUTOTRACKER-GRD1-2000-25150); 3. To develop a mobile robot laboratory in the outgoing host institution (Electromecanica Department of the Engineering Faculty at UNCPBA).

**Referència:** RII3-CT-2004-506222.

**Modalitat:** Research infrastructures action.

**Títol:** *Integrated large infrastructures for astroparticle science.*

**Acrònim:** ILIAS.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** SINTES OLIVES, Alícia Magdalena.

**Categoria:** TEU (àrea de coneixement: Física Teòrica).

**Inici:** 2005.

**Fi:** 2008.

### Socis

Centre National de la Recherche Scientifique (França)  
Istituto Nazionale di Fisica Nucleare (Itàlia)  
Universitat de Zaragoza (Espanya)  
University of Sheffield (Regne Unit)  
Czech Technical University (Txèquia)  
University of Southern Denmark (Dinamarca)  
University of Jyväskylä (Finlàndia)  
Max Planck Society for the Advancement of Science (Alemanya)  
Technische Universität München (Alemanya)  
Eberhard Karls Universität Tübingen (Alemanya)  
Aristotle University of Thessaloniki (Grècia)  
Istituto di Fotonica e Nanotecnologie (Itàlia)  
European Gravitational Observatory (Itàlia)  
Leiden University (Holanda)  
Comenius University (Eslovàquia)  
European Organization for Nuclear Research (Suïssa)  
Bogazici University (Turquia)  
University of Glasgow (Regne Unit)  
University College London (Regne Unit)  
Coordinador: European Gravitational Observatory (Itàlia)

### **Summary**

ILLIAS is an integrated infrastructure initiative that has pulled together all of Europe's leading infrastructures in astroparticle Physics to produce a focused, coherent and integrated project to improve the existing infrastructures and their operation as well as to organise and structure the scientific community to prepare the best infrastructures for the future. ILIAS results from an extensive consultation of the community and an internal review process through the Astroparticle Physics European Co-ordination (ApPEC).

ILIAS has 20 participants. In addition, there are numerous institutions that will contribute to the activities of ILIAS (but are not signatories to the contract). ILIAS will strengthen the new coordination by focusing on the following three scientific poles:

- Physics in deep underground laboratories.
- Gravitational wave detection.
- Theoretical astroparticle physics.

**Referència:** MSCF-CT-2004-013119.

**Modalitat:** Marie Curie conferences and training courses.

**Títol:** *Interactive training and research in nonlinear science from physics to biology.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** TORAL GARCÉS, Raúl.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2005.      **Fi:** 2008.

### Socis

Centre National de la Recherche Scientifique (França)

Universität Bayreuth (Alemanya)

Coordinador: Research Institute for Solid State Physics and Optics (Hongria)

### **Summary**

A new shift in the understanding of stochastic processes has emerged in the last decades. Since they were first analyzed about one hundred years ago (the pioneering works of Einstein, Langevin, Perrin, Smoluchovsky, etc.), the noise terms in physical, chemical, engineering and biological systems had commonly been considered to be a nuisance, something to be avoided or, in those cases where the noise is intrinsic to the system, to be minimize as much as possible. This point of view has changed recently with the discovery that in nonlinear systems noise can actually have a constructive effect that induces new ordering phenomena. This change was originated in the already classic works on stochastic resonance, originally aiming to explain the observed periodicity of the Earth's ice ages as a subtle entanglement between a nonlinear climatic model, the periodic changes in solar radiation due to the variations in the ellipticity of the earth's orbit, and noise in the form of random variations of the total solar emission. This work instantly opened a door. Many other constructive effects have since been found, such as noise -induced transitions and noise -induced phase transitions, noise -induced transport (Brownian motors, ratchets, etc), noise -sustained patterns, synchronization induced by noise, etc. In all the examples, the nonlinearities play an essential role.

Many applications of those phenomena have been found in different fields, mainly of physical and biological interest.

Stochastic processes are usually not covered, or only very superficially, in the academic programs and therefore there is need to start at a low level in the training. The proposed course will address a wide audience, including, physicists, chemists, biologists, mathematicians, electrical engineers, etc.

Since one of the major tools in this field is that of numerical simulations, special attention will be devoted to the application of numerical algorithms for stochastic processes.

**Referència:** 034743.

**Modalitat:** Information society technologies.

**Títol:** *Integrated optical logic and memory using ultrafast micro-ring bistable semiconductor lasers.*

**Acrònim:** IOLOS.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SCIRÉ, Alessandro.

**Categoria:** Investigador contractat.

**Inici:** 2006.                   **Fi:** 2009.

### Socis

University of Glasgow (Escòcia)

Universita degli Studi di Pavia (Itàlia)

Vrije Universiteit Brussel (Bèlgica)

Intense Limited (Regne Unit)

Siemens, S.A. (Portugal)

Coordinador: University of Bristol (Regne Unit)

### **Summary**

The research proposed by IOLOS aims to develop a new and universal building block, thereby creating the necessary integration technologies for future all-optical digital and logic functional sub-systems. The key approach is the exploitation of the strong and robust directional optical bi-stability in semiconductor ring lasers (SRLs) as the fundamental mechanism for all-optical digital building blocks - from which digital functions of all types can be synthesised. The central concept is that the switching between two digital logic states within an SRL device (the two possible directions of operation) can be triggered by an external optical signal - and can occur at ultra-high speeds, being limited solely by the round-trip time of the optical laser cavity. The innovation lies in the development of proven technologies that enable the progressive down-scaling of the dimensions of micro-SRLs to less than 20 microns, thus allowing optically induced switching times of < 10 ps.

IOLOS will develop theoretical understanding and numerical models for the design and optimisation of the directional bistability and switching speed of micro-SRLs. IOLOS will study the ultimate limits of device down scaling, thus predicting future technological development capability. IOLOS will further develop technologies to monolithically integrate the SRL bistable devices into functional all-optical digital and logic chips that incorporate optical access couplers, passive waveguides, and all-optical gates. These chips will be used to realise and demonstrate all-optical set/reset flip-flop function, all-optical threshold devices for all-optical data regeneration and retiming, and optical memory units with all-optical write, read, and reset control functions.

**Referència:** FP6/2005/IST/5.

**Modalitat:** Information society technologies.

**Títol:** *Photonic integrated components applied to secure chaos encoded optical communications systems.*

**Acrònim:** PICASSO.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** MIRASSO SANTOS, Claudio Rubén.

**Categoria:** TU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2006.                   **Fi:** 2009.

### **Socis**

Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (Alemanya)

University of Wales, Bangor (Gal·les)

Universite de Franche-Comte (França)

Eblana Photonics Limited (Irlanda)

Phoenix Photonics Limited (Regne Unit)

Attica Telecommunications, S.A. (Grècia)

Universita degli Studi di Pavia (Itàlia)

Coordinador: National and Kapodistrian University of Athens (Grècia)

**Referència:** 2A701.

**Modalitat:** MEDEA.

**Títol:** *Parasitic extraction and optimization for efficient microelectronic system design and application.*

**Acronim:** PARACHUTE.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SEGURA FUSTER, Jaume A.

**Categoria:** TU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2005.                   **Fi:** 2007.

### **Socis**

AIRBUS (França)

ALCATEL (Alemanya)

ATMEL, S. A. (França)

BOSCH (Alemanya)

EADS (França)

Infineon Technologies AG (Alemanya)

iRoC Technologies (França)

Magneti Marelli Sistemi Elettronici (Itàlia)

Philips (Holanda)

Conti TEMIC Microelectronic (Alemanya)

ZUKEN GmbH (Alemanya)

CEM2/Montpellier University II (França)

Universitat Carlos III (Espanya)

Centre de Recherches du Cyclotron (Bèlgica)

Universitat de les Illes Balears (Espanya)

University Joseph Fourier (França)

Fraunhofer Institute Reliability and Microintegration (Alemanya)

### **Summary**

Present design solutions to handle natural and artificial disturbances in combination with Parasitic Effects focus on optimization of technology rather than analysis at various design levels such as cells, IP blocks, IC applications, IC package, high density system structures, (sub-)system or even product level. Furthermore, the existing design solutions have not yet been optimized, because of lacking an integral (top-down) overview and an integral analysis that is necessary to optimize the application when using nanometer technologies. Therefore the overall technical objective of this project is to initiate a paradigm change in the IC development and system application community in Europe regarding induced physical noise in nanometer circuits. The innovation proposed in this project is the development of new integral design approach and the necessary models, algorithms and tools that take into account all the level of IC, IC package, and HDP/HDI/PCB to allow optimizing of the application in the context of a parasitic environment, especially electromagnetic interferences and particle radiation. The new integral design approach leads to the necessary paradigm change (Top Down Approach by Design to Noise Margin and Model Based Development) introduced by the PARACHUTE consortia.



**INSTITUT MEDITERRANI D'ESTUDIS AVANÇATS (IMEDEA)**

**Títol:** *Mediterranean ocean forecasting system: toward environmental predictions.*

**Acrònim:** MFSTEP.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TINTORÉ SUBIRANA, Joaquim.

**Categoria:** Professor d'investigació del CSIC.

**Inici:** 2003.

**Fi:** 2006.

### **Socis**

University of Bologna (UBLG.DF)  
Italian Agency for new Technology, Energy and Environment (ENEA.RAM.PC)  
National Centre for Marine Research (NCMRG.IO)  
Collecte Localisation Satellites SA (CLS.SOC)  
Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS.OCE)  
Institut fuer Meereskunde an der Universitaet Kiel (IMUK.FOZK)  
Universitat Politècnica de Catalunya (UPC.LEM)  
Centre National de la Recherche Scientifique (CNRS.OMP.POCT)  
National and Kapodistrian University of Athens (UAT.DAP.PO)  
Institute of Accelerating Systems and Applications (IASA)  
Institute of Marine Biology of Crete (IMBC.PHY.MDNS)  
National Research Council of Italy (CNR.ISTT)  
Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)  
Ministry of Agricultural and Natural Resources (MANR.DF.LPO)  
Fondazione Eni- Enrico Mattei (FEEM)  
Météo-France (DMN.CNRM)  
National Research Council of Italy (CNR.ISAC.RM)  
National Institute of Biology (NIB.MBSP)  
Cesky Hydrometeorologivky Ujatv Praha (CNR.IOF)  
Consorzio Interuniversitario per la Gestione del Centro di Calcolo Elettronico dell'Italia Nord  
Orientale (CICCE.HPS)  
Consell Superior d'Investigacions Científiques (CSIC.IMEDEA)  
Coordinador: Istituto Nazionale di Geofisica e Vulcanologia (INGV)

### **Summary**

The Project aims to the further development of an operational forecasting system for the Mediterranean Sea based upon three main components: a) the Near Real Time Observing system, b) the numerical forecasting systems at basin scale and for regional areas; c) the forecast products dissemination/exploitation system.

The problems to be solved belong to three major categories:

- 1) Technology developments, connected to the new instrumentation for NRT monitoring and the provision of NRT protocols for data dissemination, comprehensive of telecommunication technology and quality control procedures;
- 2) Scientific development, connected to the understanding of the sampling scheme for different measuring platforms, the design and implementation of data assimilation schemes for different spatial scales, the ecosystem modelling validation/calibration experiments at the basin and the coastal areas scale and the development of data assimilation techniques for biochemical data;
- 3) Exploitation developments, consisting of software interfaces between forecast products and oil spill modelling, general contaminant dispersion models, emergency systems, search and rescue models, and fish stock observing systems. In addition, the study of forecast economic value and impact will be carried out.

**Referència:** GOCE-CT-2003-505446.

**Modalitat:** Network of excellence.

**Títol:** *Marine biodiversity and ecosystem functioning.*

**Acrònim:** MARBEF.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** DUARTE QUESADA, Carlos.

**Categoria:** Professor d'investigació del CSIC.

**Inici:** 2004.

**Fi:** 2009.

### Socis

The Natural History Museum (Regne Unit)  
Plymouth Marine Laboratory (Regne Unit)  
The University Court of the University of St Andrews (Regne Unit)  
Stazione Zoologica Anton Dohrn (Itàlia)  
Vlaams Instituut Voor de Zee (Bèlgica)  
Ecological Consultancy Services, LTD (Irlanda)  
Natural Environment Research Council (Regne Unit)  
Senchenbergische Naturforschende Gesellschaft (Alemanya)  
Max Planck Gesellschaft zur Foerderung der Wissenschaften E.V. (alemanya)  
Universidade dos Açores (Portugal)  
Instytut Oceanologii (Polònia)  
Stiftung Alfred Wegener Institut fuer Polar und Meeresforschung (Alemanya)  
Abo Akademi University (Finlàndia)  
University of Southampton (Regne Unit)  
Nacionalni Institut za Biologijo (Eslovènia)  
Danmarks Fiskeriundersoegelser (Dinamarca)  
Institut fuer Ostseeforschung Warnemuende (Alemanya)  
Consell Superior d'Investigacions Científiques (Espanya)  
Universiteit Gent (Bèlgica)  
Consorcio Nazionale Interuniversitario per le Scienze del Mare (Italia)  
Sir Alister Hardy Foundation for Ocean Science (Regne Unit)  
National University of Ireland (Irlanda)  
Institut fuer Meereskunde an der Universitaet (Alemanya)  
Rijksuniversiteit Groningen (Holanda)  
Consiglio Nazionale delle Ricerche (Itàlia)  
University of Hull (Regne Unit)  
Syddansk Universiteit (Dinamarca)  
Akvaplan-Niva AS (Noruega)  
Netherlands Institute for Fisheries Research (Holanda)  
Centro Interdisciplinar de Investigaçao Marinha e Ambiental (Portugal)  
Universitetet I Oslo (Noruega)  
Klaipedos Universitetas (Lituània)  
Institut Français de Recherche pour l'Exploitation de la Mer (França)  
Universiteit van Amsterdam (Holanda)  
The Center for Environment, Fisheries and Aquaculture Science (Regne Unit)  
Uniwersytet Gdanski (Polònia)  
Expert Center for Taxonomic Identification (Holanda)  
Rijkinstituut voor Kust en Zee (Holanda)  
Institute of Marine Biology of Crete (Grècia)

Marine Biological Association of the United Kingdom (Regne Unit)  
Centre National de la Recherche Scientifique (França)  
Nationaal Natuurhistorisch Museum (Holanda)  
Goeteborg Universitet (Suècia)  
Universiteit Maastricht (Holanda)  
University of Wales (Regne Unit)  
Wageningen Universiteit (Holanda)  
Università degli Studi di Pisa (Itàlia)  
Stichting Nederlands Instituut voor Onderzoek der Zee (Holanda)  
Havforskningsinstituttet (Noruega)  
Coordinador: Netherlands Institute of Ecology (Holanda)

### **Summary**

The creation of the network of excellence MARBEF (Marine Biodiversity and Ecosystem Functioning) aims at integrating research efforts by forming a dedicated group of marine scientists and institutes and creating a virtual European institute with a long-term research programme and dedicated links with industry and the public at large. This involves besides coordination of research the training, exchange and outreach activities in several relevant fields of science, including marine ecology and biogeochemistry, fisheries biology, taxonomy and socio-economic sciences. Better integration of research is also required to support the legal obligations of the EU and its member states and associated states for the Convention for Biological Diversity, the OSPAR and Barcelona conventions as well as several EU directives (Bird Directive, Habitat Directive, Water Framework Directive). The network will also improve links with the large and growing number of industries depending on the sustainable use and exploitation of marine biodiversity. This includes tourism, fisheries and aquaculture but also new industries that explore and commercialise marine genetic and chemical products.

**Referència:** LSHB-CT-2004-005137.

**Modalitat:** Network of excellence.

**Títol:** *Biosimulation. A new tool in drug development.*

**Acrònim:** BioSim.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TORAL GARCÉS, Raúl.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2004.

**Fi:** 2009.

### Socis

Vrije Universiteit Amsterdam/Faculteit Aard en Levenswetenschappen (Holanda)

The Cancellor, Master and Scholars of the University of Oxford (Regne Unit)

Phillips-Universitaet Marburg (Alemany)

University of Manchester (Regne Unit)

Universitaet Postdam (Alemany)

Forshungszentrum Juelich GmbH (Alemany)

Lund University (Suècia)

Linkoepping University (Suècia)

Université Libre de Bruxelles (Bèlgica)

Universitat de València (Espanya)

University of Copenhagen (Dinamarca)

University of Warwick (Regne Unit)

University of Sheffield (Regne Unit)

Danish University of Pharmaceutical Sciences (Dinamarca)

Technische Universität Dresden (Alemany)

Institute of Experimental Pharmacology (Eslovàquia)

Institut of Enzymology (Hongria)

Charité Universitätsmedizin Berlin (Alemany)

University of Bordeaux 2 (França)

University of Leeds (Regne Unit)

Institut National de la Santé et de la Recherche Médicale (França)

EML Research GmbH (Alemany)

Simcyp Limited (Regne Unit)

InNetics AB (Suècia)

MXM Laboratories, SA (França)

InterActive Systems GmbH (Alemany)

Fraunhofer-Chalmers Research Centre for Industrial Mathematics (Suècia)

SOLVO Biotechnology Inc. (Hongria)

Zealand Pharma A/S (Dinamarca)

Novo Nordisk A/S (Dinamarca)

Danish Medicines Agency (Dinamarca)

Agencia Española de Medicamentos y Productos Sanitarios (Espanya)

Medicines Evaluation Board (Holanda)

Medical Products Agency (Suècia)

Lasdale Limited (Regne Unit)

Coordinador: Technical University of Denmark (Dinamarca)

### **Summary**

The BIOSIM network focuses on the structuring of efforts devoted to the development of simulation models for the design, selection and testing of drugs. In silico simulation models using pharmacokinetic, function mechanism and side-effect describing parameters and interaction profiles should be developed for biological systems (cells and tissues) enabling to predict the efficacy of drugs. The integration of regulatory and industrial aspects is particularly important to the success of research under this line. International competition in the pharmaceutical industry is increasingly becoming a competition with respect to the ability to understand complex biological processes and exploit the rapidly growing amount of biological information. The methods that are currently applied in the development of new medicines suffer from the lack of effective means to evaluate, combine, and accumulate biological knowledge. Essential improvements must involve the use of computational models that can provide a dynamic and more quantitative description of the relevant biological, pathological, and pharmacokinetic processes. The BIOSIM Network of Excellence aims to restructure and strengthen the area of biosimulation by focusing on the development of professional, physiologically-based models that can help the pharmaceutical industry develop safe and effective drugs at significantly lower costs. The modelling approach is strongly recommended by the American Food and Drug Administration that already uses mathematical models in its evaluation of applications for drug approval. Academic institutions in Europe have significant expertise in biological modelling, and several groups are individually at the research front in their specific areas. At the present, however, the research is strongly fragmented, and the industry itself has relatively few qualified experts in the field. The Network will provide a new forum for collaboration across disciplinary boundaries as well as between industry, regulatory authorities, and academia.

The BioSim Network involves 26 academic organisations, 9 small and medium-sized enterprises, 1 large pharmaceutical company, and the Danish, Spanish, Dutch, and Swedish regulatory agencies. The Network collaborates with the European Federation for Pharmaceutical Sciences (EUFEPS).

**Referència:** SIP3-CT-2003-502885.

**Títol:** *Marine Environment and Security for the European Area.*

**Acrònim:** MERSEA.

**Investigador responsable:** ÁLVAREZ DÍAZ, Alberto.

**Categoria:** Investigador científic del CSIC.

**Inici:** 2004.

**Fi:** 2008.

### **Summary**

MERSEA aims to develop a European system for operational monitoring and forecasting on global and regional scales of the ocean physics, biogeochemistry and ecosystems. The prediction time scales of interest extend from days to months. This integrated system will be the Ocean component of the future GMES system. At the core of the system is the collection, validation and assimilation of remote sensed and in situ data into ocean circulation models that allow for the self consistent merging of the data types, interpolation in time and space for uniform coverage, nowcasting (i.e. data synthesis in real-time), forecasting, and hindcasting, and delivery of information products.

The project will develop Marine Applications addressing the needs of both intermediate and end-users, whether institutional or from the private sector, with the objective to improve the safety and efficiency of maritime transport and naval operations ; to enable the sustainable exploitation and management of ocean resources (offshore oil and gas industry, fisheries); to more efficiently mitigate the effects of environmental hazards and pollution crisis (oil spills, harmful algal blooms) ; to improve contribution to ocean climate variability studies and seasonal climate prediction and its effects on coastal populations; to improve national security and reduce public health risks ; and to advance marine research with the aim to better understand the global climate, the ocean and its ecosystems.

The project will lead to a single high-resolution global ocean forecasting system shared by European partners together with a coordinated network of regional systems for European waters which will provide the platform required for coastal forecasting systems. During the project the main preoperational systems will be transitioned towards operational status and three of the centres will converge on a single ocean model framework suitable for both the deep ocean and shelf-seas.

**Referència:** STREP FP6-2003-Global-2.

**Títol:** *Life cycle transformations among HAB species, and the environmental and physiological factors that regulate them.*

**Acrònim:** SEED.

**Investigador responsable:** BASTERRECHEA OYARZÁBAL, Gotzon.

**Inici:** 2004.                      **Fi:** 2007.

### **Summary**

SEED aims to understand how and to what extent anthropogenic forces influence the non-vegetative stages of the life cycles of harmful algal species thereby contributing to the increase in harmful algal blooms in European marine, brackish and fresh waters systems. The overall objectives are to improve and extend our understanding of the transition between the different life history stages to identify the environmental and physiological factors that regulate those transitions, and hence the relative importance of anthropogenic versus natural causes, and to integrate the recent acquire knowledge in the development of new simulation model or refining existing ones. This will allow improved prediction, mitigation and management strategies. The approach of SEED is comparative, from species to ecosystem level. It is imperative to recognize common patterns of response among species to facilitate the development of conceptual and numerical models of HAB dynamics. SEED will focus on an array of target HAB species, ranging from marine to brackish to fresh water organisms, and covering a broad range of phylogenetic types. SEED research is multifaceted, as the problems in life history transitions are complex and processes occur over a wide range of scales. SEED will combine field studies and laboratory experiments. Field work is centered on areas where ongoing monitoring programs and much baseline information about distribution of species and physical-chemical data already exists. The innovation is to implement the most appropriate research strategies to be applied to the non-vegetative phases which determine the success of HABs and their expansion due to anthropogenic forcing. Moreover, a mitigation strategy, analogous to sterile insect releases that are an effective element of agricultural pest control on land will be investigated for the dormancy stages of HAS.



**Referència:** G5CA-CT-2002-01891.

**Títol:** *Towards accreditation and certification of age determination of aquatic resources.*

**Acrònim:** TACADAR.

**Investigadora responsable:** MORALES NIN, Beatriz.

**Categoria:** Científica titular del CSIC.

**Inici:** 2002.                      **Fi:** 2006.

### **Summary**

The main objective is to increase the reliability of age reading procedures in the European Community, also in the light of future establishment of European wide international fisheries laboratories. TACADAR aims to increase the adoption of working procedures that include quality assurance and quality control mechanisms, for the improvement of stock assessment and environmental management techniques and to stimulate the achievement of a higher level of quality within and integration between the member institutions of TACADAR, concerning fish age determination.

**Referència:** GOCE-CT-2004-505403. Network of Excellence.

**Títol:** *Implementation of high-throughput genomic approaches to investigate the functioning of marine ecosystems and the biology of marine organisms.*

**Acrònim:** MARINE GENOMICS.

**Investigador responsable:** ROSSELLÓ MORA, Ramon.

**Categoria:** Científic titular del CSIC.

**Inici:** 2004.                      **Fi:** 2008.

### **Summary**

Experts in genomics, proteomics and bioinformatics from several Centres of Excellence in genomics in Europe will be grouped and networked with marine biologists who can make use of high-throughput genomics data. The network aims among others at sharing existing technological platforms; enabling access to major genomic centres; establishing a common DNA Stock Centre and a common Bioinformatics Centre. Marine Genomics will also develop complementary dissemination strategies, targeting public, private and institutional communities with the purpose of enhancing the integration of marine biologists in the ERA.

**Referència:** 022745 (SSP8).

**Títol:** *Probabilistic assessment, management and advice model for fishery management in the case of poor data availability.*

**Acrònim:** POORFISH.

**Investigadora responsable:** MORALES NIN, Beatriu.

**Categoria:** Científica titular del CSIC.

**Inici:** 2005.                    **Fi:** 2008.

**Socis**

The Secretary of State for Environment, Food and Rural Affairs (Regne Unit)

Institute de Recherche pour le Developpement (França)

Helsingin Yliopisto (Finlàndia)

Suomen Ymparistokeskus (Finlàndia)

Coordinador: Univesity of Portsmouth (Regne Unit)

**Referència:** 015539.

**Modalitat:** Integrating and strengthening the European Research Area.

**Títol:** *Open network for connecting excellence in complex systems.*

**Acrònim:** ONCE-CS.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SAN MIGUEL RUIBAL, Maximino.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2005.

**Fi:** 2008.

### Socis

Centre National de la Recherche Scientifique (França)  
Ecole Normale Supérieure de Lyon (França)  
University of Oxford (Regne Unit)  
Fondazione Istituto per l'Intercambio Scientifico (Itàlia)  
International University Bremen (Alemanya)  
University of Surrey (Regne Unit)  
Institut National de Recherche en Informatique et en Automatique (França)  
Collegium Budapest (Hongria)  
Politechnika Warszawska (Polònia)  
Københavns Universitet (Dinamarca)  
Universidad de Chile (Xile)  
Genopole Evry (França)  
Max-Planck Gesellschaft zur Förderung der Wissenschaften (Alemanya)  
Santa Fe Institute (EUA)  
Universität Wien (Àustria)  
Vrije Universiteit Brussel (Bèlgica)  
The London School of Economics and Political Science (Regne Unit)  
Budapesti Műszaki és Gazdaságtudományi Egyetem (Hongria)  
Institut za Matematiko, Fiziko in Mehaniko (Eslovènia)  
Protolife S.R.L. (Itàlia)  
Ecole Polytechnique Fédérale de Lausanne (Suïssa)  
Hadassah Medical Organization (Israel)  
Coordinador: The Open University (Regne Unit)

### **Summary**

ONCE-CS will strengthen the network of the Complex Systems community in Europe by coordinating the currently fragmented organisation of meetings, workshops, and conferences. It will connect the different parts of the community reducing the possibility of clashing events as currently happens. It will organise Thematic Institutes, Thematic Schools, and Thematic Workshops where these are needed to coordinate the academic community, and connect it better to industry and government. It will pay special attention to integrating the new and applicant states. It will actively link the European CS community to the rest of the world. ONCE-CS has strong mission in coordinating education in the CS community. It will do this by combining existing open-source methods for individual scientists to create interdisciplinary courses, using a well managed and well indexed database open sources resources such as images, videoclips, text, presentations, software, data and so on. It will use the well-supported open source authoring and content management software. ONCE-CS will

coordinate scientific research in the community by providing open source simulation software and open source data sets provided by the CS community, allowing replication of innovative experiments, rapid research progress arising from them, and rapid dissemination. The ONCE-CS project centres on the web-based Portal which will use robust professionally-managed industrial hardware-software infrastructure to provide all the above services to the community. The content of the interactive portal will be community driven. The success of ONCE-CS can be measured objectively by network measures including the number of new nodes and links added, vertically in terms of countries, institutions, individuals, and horizontally in terms of the academic, industry and government networks.

**Referència:** LIFE02/NAT/E/8608. Programa LIFE.

**Títol:** *Estudio de las poblaciones de aves marinas en las islas Columbretes y en los islotes de Benidorm.*

**Acrònim:** AUDOVAL.

**Investigador responsable:** ORO DE RIVAS, Daniel.

**Categoria:** Científic titular del CSIC.

**Inici:** 2002.                   **Fi:** 2006.

**Referència:** LIFE03 NAT/E/000061. Programa LIFE.

**Títol:** *Modelo demográfico de la metapoblación de gaviota de Audouin: factores locales y repercusión de las actuaciones de conservación. Influencia de las actividades pesqueras en la dinámica de poblaciones locales y en los procesos de emigración-inmigración.*

**Acrònim:** AUDOMUR.

**Investigador responsable:** ORO DE RIVAS, Daniel.

**Categoria:** Científic titular del CSIC.

**Inici:** 2004.                   **Fi:** 2007.

**Referència:** 2004-04-4.3-F-099.

**Modalitat:** INTERREG III B.

**Títol:** *Mytilos*.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casasnovas.

**Investigadora responsable:** DEUDERO COMPANYY, Salut.

**Categoria:** Aj. U (àrea de coneixement: Zoologia).

**Inici:** 2004.                      **Fi:** 2006.

### Socis

Institut Français de Recherche pour l'Exploitation de la Mer (França)

Instiut Espanyol d'Oceanografia (Espanya)

Istituto Centrale per la Ricerca Scientifica e Tecnologica Applicata al Mare (Itàlia)

PSTS S.c.p.a. (Itàlia)

Institut d'Investigacions Químiques i Ambientals de Barcelona (Espanya)

Coordinador: Toulon Var Technologies (França)

### **Summary**

At the Mediterranean Sea most of the anthropogenic problems are mainly encountered at the coastal zone. The risk of pollution at the littoral zone is highly increased by industrial activities and coastal uses mainly linked with organic loads. Pollution input and dispersal can be diffuse or localised due to hydrodynamics. This project aims to set a network of biomonitoring at the western Mediterranean basin in order to provide information available to the regional governments regarding a set of measures for prevention of environmental disasters. The interest of the 'sentinel' organisms as indicators for the assessment of contaminants at the marine environment is well known worldwide. The bioaccumulation capacities of the mussels *Mytilos galloprovincialis* will allow to measure the background levels of pollution and to discern effects in critical areas such as aquaculture production zones, touristic areas. The project focus in the evaluation of the chemical contamination of the natural water masses within the Water Framework Directive.

**PROJECTES FINANÇATS PEL GOVERN ESPANYOL**

**I PEL GOVERN DE LES ILLES BALEARS**

# **DEPARTAMENT DE BIOLOGIA**



**Referència:** SAF2003-00232. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa nacional en biomedicina.

**Títol:** *Minerval: un nuevo y potente fármaco antitumoral.*

**Acrònim:** MUNYPFA.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** ESCRIBÁ RUIZ, Pablo Vicente.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2003.

**Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Escribá Ruiz, Pablo Vicente	TU	0.5
Besalduch Vidal, Joan		0.5
Barceló Mairata, Francesca M.	TU	0.5
Gutiérrez García, Antonio Manuel		0.5
Barturen Fernández, Fernando		0.5
Rodríguez Diaz-Pavón, José		0.5
Ventayol Bosch, Pere	Tèc.	1
Vögler, Oliver	B	1
Nagy, Tünde	B	1
Borchert, Gudrun	B	1
Baamonde Calzada, Carmela	B	1
Castro Marrero, Jesús	B	1
Terés Jiménez, Silvia	B	1
Casas Rodríguez, Jesús	B	1
Martínez Serra, Jorge	B	1

**EDP del grup investigador de l'entitat sol·licitant: 8.**

### **Summary**

During the last few years we have discovered a new cell signalling mechanism, in which the plasma membrane structure is involved. Moreover, we have discovered that this cellular mechanism is associated with the antitumor activity of certain drugs, such as anthracyclines and HMBA. From the knowledge of the cell signalling and antitumoral mechanisms, we have designed molecules that showed marked antitumor activities. 2-Hydroxy-9-octadecenoic acid (Minerval) alters the cell membrane structure, which modulates the cellular localization and activity of protein kinase C. This alteration induces an increase in cytosolic concentrations of p21<sup>Cip1</sup>, an antiproliferative protein that induces cell cycle arrest and decreases in the levels of various cyclins and cdks in transformed cells. In this project we propose an in-depth study of the cellular and antitumoral mechanisms of this molecule (patented by our group in Spain and in the rest of the world) and to determine the action spectrum of this new drug. For this purpose, different experimental models will be used, such as cell lines and animal models of cancer. The research on the mechanisms of action of Minerval will be assessed, among other experimental approaches, by genomic analyses. Our preliminary results indicate that Minerval induces reversion of various types of tumor processes. In addition, the lack of important side-effects, its low toxicity and the oral administration of this drug suggest that this molecule can be used in human therapies. The results derived from this project may bring important advances in human health and basic knowledge.

**Referència:** SAF2004-05249. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biomedicina.

**Títol:** *Bases moleculares del efecto hipotensor del ácido hidroxioléico.*

**Acrònim:** BMEHAH.

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** ESCRIBÁ RUIZ, Pablo Vicente.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2004.

**Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Escribá Ruiz, Pablo Vicente	TU	0.5
Barceló Mairata, Francisca	TU	0.5
López Bellan, Alicia	Tèc.	1
Barturen Fernández, Fernando		0.5
Serra Trespallé, Juan Enrique		1
Egea Merlos, Carolina	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Bachiler, Daniel	UCLA School of Medicine	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

The project would continue project SAF2001-0839, entitled "Pharmacological modulation of blood pressure through lipids that alter the structure of membranes". As a result of such project, we designed and patented a molecule, 2-hydroxyoleic acid (2OHOA), which has a marked hypotensive activity, lacks of side-effects and has an oral administration. In this project we propose the study of the molecular bases of the pharmacological effects mediated by this compound, which can be a valuable tool in the treatment of cardiovascular pathologies. The present study will be carried out at five levels. (1) Study of the modulation of the membrane lipid structure by 2OHOA. (2) Research on the effect of such modulation on the plasma membrane-protein interactions of signaling proteins involved in the control of blood pressure. (3) Study of the regulation of membrane lipid levels after 2OHOA treatments. (4) Regulation of the expression of signaling proteins (G protein-coupled receptor pathways) involved in blood pressure regulation. (5) Generation of an animal model (knockout for PKC $\alpha$ ) and investigation of the signaling mechanisms modulated by 2OHOA to exert its action. For these reasons, the present project has a great interest in basic science. Being cardiovascular pathologies the main cause of death in our country, the clinical implication of this project result of special relevance.

**Referència:** REN2003-00024. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *Islas en el interior de islas: identificación de unidades evolutivas en insectos amenazados endémicos de Canarias.*

**Acrònim:** CEICAN.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** JUAN CLAR, Carles.

**Categoria:** TU (àrea de coneixement: Genètica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Juan Clar, Carles	TU	0.5
Petitpierre Vall, Eduard	CU	0.5
Contreras Díaz, Hermans G.	B	1
Moyà Mesa, Óscar.	Tèc.	1
<b><u>Investigadors d'altres entitats</u></b>		
Oromí Masoliver, Pedro	Universitat de La Laguna	
Fragoso Jerez, Rosario	Universitat de La Laguna	
Arechavaleta Hernández, Manuel J.	CCAA de Canarias	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

The Canary archipelago constitutes one of the 25 'hot spots' of world-wide biodiversity. Of the enormous existing diversity in the islands, practically a fifth of the 6700 species of terrestrial invertebrates are endemic beetles. Numerous beetles and some grasshoppers are threatened or in danger of extinction in the Canary Islands by different causes. In the present project we focus on the study of endemic species of these groups which are particularly fragile. Fragility is produced either by their limited dispersal ability, food specialisation, or irreversible adaptation to the subterranean life, many species or taxa being considered as paleo-endemisms. Conservation does not only require to protect biodiversity, but also to obtain a knowledge of the evolutionary processes that generated it, delimiting what to conserve. Nowadays, the methodological and potential of molecular genetic analyses allows to test different hypotheses and to establish evolutionary conservation units in species or fragmented populations. The main objectives of the project refer to the study of genetic variability, evolutionary relationships and identification of conservation units in hypogean species of *Wolltinerfia*, *Trechus* and related genera (*Coleoptera*, *Carabidae*) and also in the highly endangered taxa of the endemic genus *Acrostira* (*Orthoptera*). This will be achieved using DNA sequences and phylogenetic/population based analyses.

**Referència:** REN2003-03667. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *Filogenia molecular de la subfamília Chrysomelinae (Coleoptera, Chrysomelidae).*

**Acrònim:** FILCHRYS.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PETITPIERRE VALL, Eduard.

**Categoria:** CU (àrea de coneixement: Genètica).

**Inici:** 2003.                      **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Petitpierre Vall, Eduard	CU	0.5
Juan Clar, Carles	TU	0.5
Tous Pascual, Maria Esperança	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Gómez-Zurita Frau, Jesús	Natural History Museum of London	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

The higher taxonomic categories of the subfamily *Chrysomelinae*, tribes, subtribes and even some genera, are subjects of discussion and there are opposite views among the different authors. We propose a sequencing of four or five gene fragments, mitochondrials and nuclears, in roughly 70-100 species of nearly 30 representative genera of the subfamily, in order to achieve consistent phylogenetic results. A combined phylogenetic analysis using these four or five gene markers together, would allow to test the validity of the suggested higher taxa, their evolutionary interrelationships, and maybe also their biogeographic origin, with an especial emphasis in the possible Gondwanian roots of the group. All the Iberian and Balearic genera and a significant part of their species will be studied in this project, which will lead to a much better knowledge of our fauna and may provide useful tools towards their conservation too. This project is an enlargement of the previous ones, devoted to set up the molecular phylogeny and the possible intrageneric trends of chromosomal evolution in *Timarcha*, *Chrysolina* and *Cyrtonus*, genera of a complex taxonomy and all of them belonging to this same subfamily.

**Referència:** REN2003-08432-C02-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *La evolución en condiciones de insularidad: estudio genético y demográfico de la biodiversidad de las poblaciones de lagartijas baleares.*

**Acrònim:** INSULAEVOL.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** RAMON JUANPERE, Misericòrdia.

**Categoria:** TU (àrea de coneixement: Genètica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ramon Juanpere, Misericòrdia	TU	1
Picornell Rigo, Antònia	TEU	1
Castro Ocón, José Aurelio	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 2.5.

### **Summary**

The main aims of the project are the determination of the molecular diversity existing in the different lizard populations of *Podarcis lilfordi* and *Podarcis pityusensis* from Balearic archipelago, by means the study of the sequence variability of six mitochondrial DNA regions and nuclear gene c-mos. Also, the maximum information about the size, density and structure of each population that live in the principal island and the different islets of the archipelago will be obtained.

DNA sequences will permit to make the phylogenetic inference and the determination of the genetic variability, both items are indispensable to know the evolutionary pattern for the species in Balears and in their relation with the others species of the genera *Podarcis*. This information will be important to know the response of the species to an environmental with adverse conditions. This project aims to incorporate not only molecular data, but also that obtained from ecological studies of these insular populations. It will focus primarily on demographic aspects of each population, including size and basic age and sex structure. It will also include a morphometric study which incorporates data from all the studied populations, and uses all available museum specimens. The comparison of molecular and morphometric data will allow us to reach decisive conclusions on the systematic status of the two species and their numerous populations. However, more importantly it will also allow us to establish the primary processes that have led to the considerable biodiversity in such an apparently very short evolutionary time. The combination of molecular and demographic data will allow a precise evaluation of the situation of each population, providing a sound scientific basis for political decisions on conservation priorities.

**Referència:** PI031218. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Estudio farmacológico y molecular del efecto del minerval sobre la presión arterial.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casasnovas.

**Investigadora responsable:** ALEMANY ALONSO, Regina.

**Categoria:** INVESTIGADORA CONTRACTADA.

**Inici:** 2003.

**Fi:** 2006.

**Membres de l'equip**

**Categoria**

Alemany Alonso, Regina	Inv.
Delgado Ramis, Carlos	Col.
Egea Merlos, Carolina	B
Baamonde Calzada, Carmela	B
Terés Jiménez, Silvia	Col.

**Summary**

Among the several causes to develop severe cardiac pathologies, hypertension is a major risk factor, the treatment of which is one of the main aims of cardiovascular therapies. However, it has been shown that the treatment of high blood pressure is not enough to increase life span in patients with cardiovascular pathologies, and that the control of two or more risk factor is also necessary. Recently, we have designed, synthesized and patented a drug, Minerval, that is able to regulate 3 cardiovascular risk factors: hypertension, overweight and lipoprotein profile in serum. This drug has been developed based on a new mechanism of action, consisting in the control of cellular signals through the regulation of the lipid membrane structure. Minerval and its derivatives are capable of modulating the membrane structure which alters the propagation of cellular signals. The regulation of the membrane propensity to form hexagonal phases ( $H_{II}$ ) regulates the cellular localization and activity of certain membrane proteins, such as heterotrimeric G proteins and protein kinase C (PKC). Preliminary results showed that the administration of Minerval reduces blood pressure and body weight without apparent side-effects. This project proposes the pharmacological and molecular study of Minerval to evaluate its effect on blood pressure and its use for treatment of cardiovascular pathologies. For this purpose, we will first study the effect of Minerval on vascular tone and blood pressure in different experimental models. Afterwards, it will be performed an in-depth study of the molecular bases and signaling mechanisms modulated by this compound at the central and peripheral levels and in cell cultures. This study will include the genomic analysis of different tissues (vascular and neural). Likewise, the possible toxicity of this drug and its effect on body weight will be investigated.

**Referència:** SAF2004-03685. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biomedicina.

**Títol:** *La vía de señalización del receptor FAS/FADD en la adicción a opiáceos.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** GARCÍA SEVILLA, Jesús A.

**Categoria:** CU (àrea de coneixement: Farmacologia).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
García Sevilla, Jesús A.	CU	1
Miralles Socias, Antoni	TU	1
Moranta Mesquida, David	B	1
García Fuster, Maria J.	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Saus Sarrias, Carles	IB-SALUT	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

### **Summary**

The aim of this project is to investigate the interactions between opioid receptors and the signaling pathway of the Fas/FADD (Fas Associated-Death Domain) receptor, involved in the regulation of apoptosis and neuronal plasticity. Previously, it has been shown that opiate addiction (tolerance and dependence) is associated with increases of native and glycosylated Fas in rat brain. This project postulates that opiate drugs and opiate addiction modulate key elements of the Fas receptor pathway (Fas aggregates, adaptor FADD and caspases 8 and 3) and/or other apoptotic proteins of the mitochondrial pathway (cytosome C, Bax, Bid) in brain, and that the interactions between opioid receptors and Fas might be mediated directly (protein contacts between Gi/FADD) or indirectly through other intracellular signaling proteins (p35/cdk-5, ERK1/2). The main aims are: 1) to quantitate the acute and chronic effects of opiate drugs (agonists and antagonists of  $\mu$ -,  $\delta$ -,  $\kappa$ -opioid receptors) on the signaling pathway of Fas; 2) to identify the opioid receptor type (animals genetically deficient in opioid receptors) that modulates the effector complex Fas/FADD; 3) to localize the groups of neurones that co-express both Fas and opioid receptors; and 4) to investigate in vivo and in vitro some mechanisms related to opioid receptors/Fas and ERK-cdk5/Fas interactions.

**Referència:** CGL2004-00838/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Análisis de secuencias multilocus en estudios de taxonomía, filogenia y evolución de pseudomonas.*

**Acrònim:** PseudoMLSA.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casasnovas.

**Investigadora responsable:** GARCÍA-VALDÉS PUKKITS, Elena.

**Categoria:** TU (àrea de coneixement: Microbiologia).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
García-Valdés Pukkits, Elena	TU	1
Lalucat Jo, Jordi	CU	0.5
Bennàsar Figueras, Antoni	Contr. dr.	0.5
Cladera Cerdà, Aina	B	1
Ramon Manera, Cristina	Tèc.	1
Rúa Amo, Beatriz	Tèc.	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

The genus *Pseudomonas* includes many species of environmental, clinical, agricultural and biotechnological interests. It is well defined phenotypically and genotypically. However, numerous new species are being described continuously within the genus. The accepted method for discriminating bacterial species is the DNA-DNA hybridization, but this method has limitations (time consuming, needs experience to be done, does not define distances between species, is not accumulative). In this project, we propose the development of a new, accumulative and reliable method for the species definition in the genus *Pseudomonas* based on the MLST (Multilocus Sequence Typing) method. Main objectives of the project are:

1. Maintenance of a well described *Pseudomonas* strains collection.
2. Construction of a sequence-based database of selected genes of members of the genus.
3. Implementation of analytical bioinformatic tools for the multi-sequence-based identification of *Pseudomonas* species.



**Referència:** AGL2005-06927-C02-01/AGR. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de recursos i tecnologies agroalimentàries.

**Títol:** *Optimización del uso del agua en la vid: regulación y control fisiológico y agronómico y efectos en la calidad del fruto.*

**Acrònim:** AGUAVID.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** MEDRANO GIL, Hipólito.

**Categoria:** CU (àrea de coneixement: Fisiologia Vegetal).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Medrano Gil, Hipólito	CU	1
Bota Salort, Josefina	Col.	0.5
Gulias León, Javier	Aj.	1
Cifre Llompert, Josep	Col.	0.5
Sánchez Forss, Antonio L.	Tèc.	0.5
Vadell Adrover, Jaume	TEU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
García Escudero, Enrique	Govern de La Rioja	
Ibáñez Pascual, Sergio	Govern de La Rioja	
Schubert, Andrea	Università degli Studi di Torino	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

**Referència:** CTM2005-01783/MAR. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies mediambientals.

**Títol:** *Respuesta de comunidades microbianas marinas a contaminación por hidrocarburos: diversificación, funcionalidad y mecanismos genéticos de adaptación.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** NOGALES FERNÁNDEZ, Balbina.

**Categoria:** INVESTIGADORA CONTRACTADA.

**Inici:** 2005.

**Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Nogales Fernández, Balbina	Inv.	1
Bosch Zaragoza, Rafel	TEU	1
Martín Cardona, Celia	B	1
Lanfranconi, Mariana Patricia	B	1
Christie Oleza, Joseph Alexander	B	1

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

Hydrocarbon pollution is very frequent in the marine environment and it is especially important in coastal areas, which have great economical and recreational relevance. The conservation of the integrity of the ecosystem is paramount for a sustainable development of the coastal environment. Therefore, a good knowledge on the impact that hydrocarbon pollution has in the coastal ecosystem is necessary.

Despite the fact that microorganisms are the main players in hydrocarbon degradation in marine environments, information on the microbial communities in hydrocarbon polluted environments, their functionality and adaptation mechanisms is scarce. This project proposes a study of microbial communities of coastal environments, in order to elucidate the impact of hydrocarbon pollution on them. The analysis will be based in the use of molecular biology techniques, the analysis of environmental samples, experiments in microcosms subjected to different treatments, and with the isolation of bacteria from the environments studied. Firstly, the structure and composition of the microbial communities in the presence and absence of hydrocarbons will be compared and changes in response to pollution will be analysed. Special attention will be dedicated to the study of two important marine bacterial groups, SAR11 and *Roseobacter* groups. Secondly, the changes in community global gene expression will be analysed, as well as the expression of selected functional genes, important for the functionality of the community (photosynthesis, carbon fixation, processes in the nitrogen cycle, hydrocarbon degradation genes). Following these two approaches, the response of the communities by proliferation and/or disappearance of certain microorganisms will be determined, but also information about the functional response of the community to the presence of pollutants will be obtained by following changes in gene expression. Finally, mechanisms for the genetic adaptation of bacterial populations within the community to the stress caused by hydrocarbon pollution will be studied. In particular, the role of insertion sequences and hypermutation in the adaptation to the presence of hydrocarbons in the environment will be analysed.

**Referència:** BFU2005-03102/BFI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biologia fonamental.

**Títol:** *Efecto de la sequía sobre la fotosíntesis y la respiración: aclimatación y recuperación.*

**Acrònim:** FORESER.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** FLEXAS SANS, Jaume.

**Categoria:** TEU (àrea de coneixement: Fisiologia Vegetal).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Flexas Sans, Jaume	TEU	1
Ribas Carbó, Miquel	Inv.	1
Galmés Galmés, Jeroni	Aj.	1
Pons Ros, Rosa	As.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Lambers, Johannes Thieo	University of Western Australia	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

The study the combined responses of photosynthesis and respiration to water stress is of significant importance to understand the underlying physiological mechanisms that permit plants to survive under arid and semi-arid conditions, with an important effect on agricultural production and water economy. In the previous project the physiological basis of these processes were determined as a function of the intensity of the stress and its timing. However, it is important not only to know the response of these processes during the imposition of the stress but also its acclimation and its recovery capacity. The present proposal intends to study these aspects rather unknown regardless of its unmistakable relevance.

The core of this proposal is the hypothesis that foresees that the intensity of the stress would affect the recovery of both the photosynthetic and the respiratory metabolism after the stress. It also predicts that the physiological response to both the stress imposition and its recovery will depend on previous acclimation to the stress. Furthermore, the hypothesis suggest that photosynthesis and respiration interact closely during the stress, its acclimation and its recovery, and particularly, the hypothesis gives an important role to the cyanide-resistant alternative respiration during the recovery period. These interactions between intensity, acclimation and recovery and between photosynthesis and respiration should have a clear sign with the specific patterns of gene expression. The specific objectives of this proposal are the following:

1. To confirm that CO<sub>2</sub> availability at the chloroplast level is the main limiting factor of photosynthesis under water stress conditions and during plant recovery.
2. To elucidate how the intensity of water stress affects the velocity and the degree of the photosynthetic recovery after re-hydration, as well to find out which physiological mechanisms are the most limiting for each recovery case.
3. To discover the main physiological adjustments contributing to the acclimation of photosynthesis and respiration to water stress.

4. To study the regulation of respiration in different tissues under simulated and its relation with photosynthesis and the total plant carbon balance.
5. To analyse the possible role of the cyanide-resistant respiration on the recovery of photosynthesis after severe water stress.
6. To relate gene expression with the physiological response to different water stress scenarios.

**Referència:** AGL2005-06150/GAN. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de recursos i tecnologies agroalimentàries.  
**Títol:** *Desarrollo de estrategias de control de las poblaciones de culicoides (Diptera; Ceratopogonidae), vectores del virus de la lengua azul.*  
**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.  
**Investigador responsable:** MIRANDA CHUECA, Miguel Ángel.  
**Categoria:** TEU (àrea de coneixement: Zoologia).  
**Inici:** 2005. **Fi:** 2008.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Miranda Chueca, Miguel Ángel	TEU	1
Rincón Otero, Cristina	As.	1
<b><u>Investigadors d'altres entitats</u></b>		
Borràs Borràs, David	Institut de Biologia Animal	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

The Blue Tongue (BT) is a disease of ruminants with a wide distribution in the Mediterranean Basin. BT is included in the List A from the OIE that includes obligatory declaration diseases that have important impact on the economy of farmers and affects very seriously the trade of animals in the areas where it is present.

In recent years the BT has been detected in our country. Firstly, during 2000 and 2003 in the Balearic Islands, and secondly, during autumn 2004 in the South of Spain, in particular in Andalucía and Extremadura regions. In all these episodes, the main hypothesis that explains the incursion of BT virus (BTV) in Spain is based on the fact that the BTV could be introduced by vector insects that are transported by air streams from the neighboring areas that are already infected with the BTV. Within these areas we should include Corsica, Sardinia and Sicily in the case of the introduction in the Balearics, and Morocco in the case of the Peninsula.

The vectors are the only way for transmitting the virus among animals, thus, they have an enormous importance in epidemiology issues and for this reason, the main objectives from this proposal have been focused on the following points:

- 1.- To study the biology of the vectors as a basic background knowledge for controlling their populations. This objective is specially focused on the larvae and pupae environmental breeding sites.
- 2.- To evaluate the activity periods of *Culicoides* adults in relationship with their haematofagous feeding behavior, in order to develop efficacious strategies for controlling them.
- 3.- To evaluate which strategies related with farming managing could decrease *Culicoides* populations, specially those related with managing of possible breeding sites.
- 4.- To evaluate the efficacy of insecticides and repellents as a method for the reduction of bite rate and then causing a decrease of the virus transmission.

**Referència:** SAF2005-01466. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biomedicina.

**Títol:** *Caracterización molecular de nuevos mecanismos de resistencia a los antimicrobianos.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** ALBERTÍ SERRANO, Sebastià.

**Categoria:** TEU (àrea de coneixement: Microbiologia).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Albertí Serrano, Sebastià	TEU	1
Hernández Allés, Santiago	Tèc.	1
Franco Capó, Marta	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Doménech Sánchez, Antonio	Saniconsult Mallorca	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

Bacterial resistance to antimicrobial agents represents a worldwide problem that is very frequent in our country and results in an increase of the morbidity and mortality of the infectious diseases.

Among the general mechanisms exhibit by the microorganisms to resist the antimicrobial agents: inactivating enzymes, target modifications and reduction of intracellular antimicrobial agent concentration, it is probably the last mechanism the most common among different bacterial species. In addition, the combination of this mechanism with one of the other mechanisms results in a very efficient reduction of the antimicrobial drug effects.

Using as model *K. pneumoniae*, we have described two mechanisms that allows to the pathogen to reduce the intracellular antimicrobial drug concentration: reduction of porin expression and expression of efflux pumps. However, the molecular mechanisms that reduce porin expression and the factors involved in this reduction as well as the efflux pumps systems of this microorganism are poorly studied. The goal of this project is to characterize both mechanisms using molecular biology techniques in order to design better treatments to avoid antimicrobial resistance and to identify novel mechanisms of resistance to develop new antimicrobial drugs. It is likely that results obtained in this project will be useful for other microorganisms since antimicrobial resistance mechanisms are quite similar among different pathogens.

**Referència:** CGL2006-10893-C02-01/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Integrando la evolución, la ecología y la biología de los lacertidos insulares del Mediterráneo.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** RAMON JUANPERE, Misericòrdia.

**Categoria:** TU (àrea de coneixement: Genètica).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ramon Juanpere, Misericòrdia	TU	1
Picornell Rigo, Antònia	TEU	1
Castro Ocón, José Aurelio	TU	0.5
Terrasa Pont, Bàrbara	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

Several groups of islands and islets with endemic populations of lacertid lizards are present over the Mediterranean basin. They are clear examples of adaptation to local conditions and seem to rise from parallel evolutionary processes in front of similar environmental conditions. Together with the previous knowledge on genetic variability and population dynamics showed by the two endemic lacertid lizards of Balearic Islands, *Podarcis lilfordi* and *Podarcis pityusensis*, our research project will include the study of genetic variability, population structure and behavioural ecology of *Podarcis filfolensis*, another endemic lacertid lizard inhabiting Malta Islands and its coastal islets. One of the main targets of the project will be the study of patterns of molecular and morphological evolution of *Podarcis filfolensis* as a replication of the study carried out at Balearic Islands and with the aim to test previous hypotheses of the microevolutionary process at this archipelago. We will enlarge the available genetic information for the three species, including the study of MC1R gene involved in the expression of melanistic coloration, a relevant morphological trait at insular populations of lacertid lizards, being its adaptive significance still under debate. In addition, the project wants to evaluate the health state of population as well as the adaptive responses in terms of behavioural ecology traits and their phylogeographical patterns. We will compare these traits using phylogenetic contrasts within each species. The target is to obtain robust evidences about causal factors to explain present day ecological features of each population. To do that, we will employ general linear models to integrate in common analyses genetical, morphological and ecological traits to explain the particular relation between phenotype and genotype in these species and to construct a predictive model integrating the evolution of populations and their ecological characteristics.

**Referència:** CGL2006-08810/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Filogenia molecular de la subfamília Chrysomelinae con especial énfasis en la fauna australiana (Coleoptera, Chrysomelidae).*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PETITPIERRE VALL, Eduard.

**Categoria:** CU (àrea de coneixement: Genètica).

**Inici:** 2006.                      **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Petitpierre Vall, Eduard	CU	1
Jurado Rivera, José A.	B	1

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

In this project we try to set up a robust molecular phylogeny of the subfamily Chrysomelinae based upon the nucleotide sequences of five nuclear and mitochondrial gene fragments: 28S, 18S, 16S, 12S and COI. Thus we shall analyze species of roughly 90 genera from the total of the 136 so far described, with an especial emphasis on some 40 from the Australian region, and secondarily on some Neotropical (~20) and Paleoafrican (~10), to be added to the 23 just checked mostly from the Palearctics. The findings to be obtained will be discussed in relation with hypotheses on the possible trends of chromosomal evolution, and future cladistic analyses focused on morphological characters. Furthermore, the study of several closely related genera will allow to verify whether their genetic divergences are corresponded or not with the paleogeography of the austral subcontinents derived from the ancient Gondwana.



**Referència:** CGL2006-01365/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Factores evolutivos y biogeográficos en la adaptación a la vida subterránea: casos de estudio en invertebrados de los archipiélagos Balear y Canario.*

**Acrònim:** SUBLIFEVOLUTION.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casasnovas.

**Investigador responsable:** JUAN CLAR, Carles.

**Categoria:** TU (àrea de coneixement: Genètica).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Juan Clar, Carles	TU	1
Jaume Llabrés, Damià	Científic titular	0.5
Villacorta Martín, José C.	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Oromí Masoliver, Pedro	Universitat de La Laguna	
Fragoso Jerez, María del R.	Universitat de La Laguna	
López Hernández, Heriberto D.	Universitat de La Laguna	

**EDP del grup investigador de l'entitat sol·licitant: 2.5.**

### **Summary**

Subterranean ecosystems represent perfect natural laboratories for the study of the effects of spatial and temporal isolation on genetic differentiation. The main goal of this project is studying the evolutionary transition to the underground habitat in populations of cave animals, testing hypotheses on the timing and mode of evolution of subterranean lineages using molecular data. Only two species of talitrid amphipods (terrestrial crustaceans) are known to be adapted to cave life, being exclusively troglodytic, one of them (*Palmorchestia hypogaea*) in lava tubes of the island of La Palma (Canary Islands) while the other occurs in Hawaii. The Canarian species is one of the few known cases where a direct epigeal ancestor can be identified and is still alive in the vicinity of a cave-adapted species. On the other hand, another (aquatic) amphipod species (*Metacrangonyx longipes*) lives in underground waters of the islands of Mallorca and Menorca (Balearic Islands), having relatives in the Canarian island of Fuerteventura, North Africa, Elba Island (Italy), the Dead Sea region (Israel) and the Dominican Republic. This extremely disjunct distribution, shared with many other anchialine organisms (occurring in caverns flooded by brackish or marine water), has been explained by vicariance *via* plate tectonics, which would have separated littoral populations of ancestral species once widespread in late Mesozoic epicontinental seas. Using these and other organisms we will derive phylogenetic-phylogeographic patterns and genetic diversity estimates using mitochondrial and nuclear DNA sequences. We want to elucidate if there is genetic flow and/or dispersion across the hypogean environment, between the epigeal and hypogean populations, and if the phylogenetic patterns of aquatic cave species are concordant with vicariance caused by plate tectonics. The results will also include on more general aspects of basic and applied Biodiversity research, i. e. speciation and adaptation processes, neutral and selective evolution, establishment of significant units of biological conservation and intrinsic causes of species threat.

**Referència:** PI05-1340. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Estudio farmacológico y molecular del efecto de ácidos grasos naturales y modificados sobre la obesidad y patologías relacionadas.*

**Centre:** Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** VÖGLER, Bernhard Oliver.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2005.

**Fi:** 2008.

**Membres de l'equip**

**Categoria**

Vögler, Bernhard Oliver

Inv.

Alemany Alonso, Regina

Inv.

Tofe Povedano, Santiago

**Summary**

The prevalence of obesity has increased to epidemic proportions in many parts of the world, reflection an imbalance between energy uptake (by food intake) and energy expenditure (by metabolization). Food intake is basically regulated in the hypthalamus, which stimulates or inhibits appetite due to the energetic state of the organism. On the other hand, energy expenditure is regulated by the activation of certain nuclear receptors (PPAR), which are able to augment energy consumption by expression of metabolic enzymes, and by uncloupling proteins (UCP), which increase energy expenditure by thermogenesis. It has been demonstrated that the function of the hypothalamus as well as the activation of PPARs and the expression of UCPs can be modulated by fatty acids. In this context, modification of the chemical structure of fatty acids could become a valuable tool to potentitate their pharmacological efficiency and to develop new potent drugs for the treatment of obesity. Recently, our laboratory has patented a synthetic derivative of oleic acid, 2-hydroxyoleic acid, that reduces very efficently body weight in animals. Moreover, in order to extend our knowledge about this prhysiological effect of structural modifcations, we have planned to synthetize other modified fatty acids, e.g. 2-methyloleic acid. This project proposes a pharmacological and molecular study of four natural fatty acids (stearic, elaidic, oleic and linoleic acid) and two modified ones (2-hydroxyoleic and 2-methyloleic acid) to evaluate their effects on body weight, food intake, lipid metabolism and thermogenesis in animals. Furthermore, the capacity of these fatty acids in reverting the pathological changes observed in obesity, like the plasma levles of glucose and insulin, triglycerides, cholesterol and the profile of the lipoproteins LDL/HDL, will be investigated in an obese animal model. The results will elucidate the role that the chemical structure of the fatty acid has on its effect and the mechanisms by which certain fatty acids regualte body weight.

**Referència:** 201/2004/1. Ministeri de Medi Ambient.

**Modalitat:** Pla nacional de residus i recuperació de sòls contaminats.

**Títol:** *Proyecto demostrativo para un parque integrado de depuración alternativa de aguas residuales y compostage de lodos de depuración.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** MARTÍNEZ TABERNER, Antoni.

**Categoria:** TU (àrea de coneixement: Ecologia).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>
Martínez Taberner, Antoni	TU
Moyà Niell, Gabriel	TU
Ramon Pérez de Rada, Guillem	TU
Vadell Adrover, Jaume	TEU
Moià Pol, Andreu Antoni	P. Col.
Martínez Moll, Víctor	TEU
Coll Mayor, M. Dèbora	P. Col.
Cladera Bohigas, Antoni	P. Col.

**Referència:** Ministeri d'Agricultura, Pesca i Alimentació.

**Modalitat:** Acció estratègica conservació dels recursos genètics d'interès agroalimentari.

**Títol:** *Caracterización, saneamiento y conservación del principal material vegetal vitícola de la isla de Mallorca (islas Baleares).*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** CIFRE LLOMPART, Josep.

**Categoria:** P. Col. (àrea de coneixement: Producció Vegetal).

**Inici:** 2004. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>
Cifre Llompart, Josep	P. Col.
Medrano Gil, Hipólito	CU
Escalona Lorenzo, José M.	As.
Rosselló Veny, Joan	As.
Sampol Trujillo, Bartomeu	B
Martorell Nicolau, Antoni	

**Referència:** Fundació Biodiversitat.

**Modalitat:** Realització d'activitats mediambientals.

**Títol:** *Herbario virtual del mediterráneo occidental.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** RITA LARRUCEA, Joan.

**Categoria:** TU (àrea de coneixement: Botànica).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** PRIB2004-10147. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Proteínas apoptóticas y mecanismo de acción de los fármacos opiáceos. Relevancia en la adicción a la heroína.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** MIRALLES SOCIAS, Antoni.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2004.                   **Fi:** 2007.

**Referència:** PRIB2004-10319. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Identificación y tipado molecular de mycobacterias ambientales.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** LALUCAT JO, Jordi.

**Categoria:** CU (àrea de coneixement: Microbiologia).

**Inici:** 2004.                   **Fi:** 2006.

**Referència:** 15AA/2004. Conselleria de Salut i Consum del Govern de les Illes Balears.

**Títol:** *Estudi de les bases moleculars de la pèrdua de massa muscular.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** LLADÓ VICH, Jerònia.

**Categoria:** Investigadora

**Inici:** 2004.                   **Fi:** 2006.

**Referència:** Conselleria d'Economia, Hisenda i Innovació del Govern de les Illes Balears.

**Títol:** *Identificación y caracterización de nuevos mecanismos de resistencia bacteriana a los antimicrobianos.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** ALBERTÍ SERRANO, Sebastià.

**Categoria:** TEU (àrea de coneixement: Microbiologia).

**Inici:** 2004.                   **Fi:** 2007.

## Participacions a altres projectes

**Referència:** REN2003-01176. Ministeri de Ciència i Tecnologia.

**Títol:** *Influencia de los factores ambientales sobre la estrategia reproductora y evolución de las larvas de atún rojo (Thunnus thynnus L. 1758) y especies afines en aguas de Baleares.*

**Investigador responsable:** ALEMANY LLODRÀ, Francesc X.

**Centre:** Centre Oceanogràfic de Balears.

**Investigadores de la UIB:**

MORENO CASTILLO, Isabel.

**Categoria:** CU (àrea de coneixement: Zoologia).

DEUDERO COMPANYY, Salut.

**Categoria:** Aj. U (àrea de coneixement: Zoologia).

**Inici:** 2003. **Fi:** 2006.

**Referència:** CGI2004-00223/BOS. Ministeri d'Educació i Ciència.

**Títol:** *Estudio filogeográfico del endemismo vegetal tirrénico.*

**Investigadora responsable:** MAYOL MARTÍNEZ, Maria.

**Centre:** Universitat de Barcelona.

**Investigador de la UIB:** Mus Amézquita, Maurici.

**Categoria:** TEU (àrea de coneixement: Botànica).

**Inici:** 2004. **Fi:** 2007.

**Referència:** 034/2002 Ministeri de Medi Ambient.

**Títol:** *Diversidad genética y microespeciación en especies vegetales endémicas del parque nacional del archipiélago de Cabrera (Islas Baleares): implicaciones para la gestión.*

**Investigador responsable:** ROSSELLÓ PICORNELL, Josep A.

**Centre:** Institut Botànic Cavanilles. Universitat de València.

**Investigador de la UIB:** Mus Amézquita, Maurici.

**Categoria:** TEU (àrea de coneixement: Botànica).

**Inici:** 2003. **Fi:** 2006.

**Referència:** BFU2005-00503. Ministeri d'Educació i Ciència.

**Títol:** *Efecto de los compromisos sobre la eficacia biológica de los virus de RNA.*

**Investigador responsable:** MOYA SIMARRO, Andrés.

**Centre:** Universitat de València.

**Investigador de la UIB:** Castro Ocón, José A.

**Categoria:** TU (àrea de coneixement: Genètica).

**Inici:** 2005. **Fi:** 2008.

**Referència:** SAF2005-00551. Ministeri d'Educació i Ciència.

**Títol:** *Mecanismos moleculares implicados en la muerte celular inducida por fármacos que reconocen específicamente el DNA.*

**Investigador responsable:** PORTUGAL MINGUELA, José.

**Centre:** Institut de Biologia Molecular de Barcelona (CSIC).

**Investigadora de la UIB:** Barceló Mairata, Francesca M.

**Categoria:** TU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2005.

**Fi:** 2008.

**DEPARTAMENT DE BIOLOGIA FONAMENTAL  
I CIÈNCIES DE LA SALUT**

**Referència:** BFI2003-04439. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Aproximación nutrigenómica funcional a la regulación del peso corporal.*

**Acrònim:** NUTRIGEN.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Palou Oliver, Andreu	CU	0.5
Serra Vich, Francesca	CEU	0.5
Picó Segura, Catalina	CEU	0.5
Bonet Piña, M. Lluïsa	CEU	0.5
Oliver Vara, Paula	TEU int.	0.5
Ribot Riutort, Joan	TEU int.	0.5
Rodríguez Guerrero, Ana M.	Aj. U	0.5
Miralles Barrachina, Olga	As.	0.5
Ramis Morey, Joana M.	B	0.5
Rodríguez Parrona, Enrique	B	0.5
Felipe Legaz, Francisco	B	0.5
Sánchez Roig, Joana	B	0.5
Fuster Roca, M. Antònia	B	0.5
Gelabert Valls, Maria	Tèc.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Roman Piñana, Juana María	Hospital Universitari Son Dureta	
Moreiro Socias, José	Hospital Universitari Son Dureta	
Pareja Bezares, Antonio	Fundació Hospital Son Llàtzer	
Balliu Badia, Pere Ramon	Hospital Universitari Son Dureta	
Soro Gonsalvez, José Antonio	Hospital Universitari Son Dureta	

**EDP del grup investigador de l'entitat sol·licitant: 7.**

### **Summary**

The project intends to contribute to the knowledge of the genetic and molecular basis involved in the control of energy balance and obesity and its regulation by nutrients. It is the continuation of the tasks of a consolidated research group, continuously supported by national and european grants during last 17 years and, in particular, it is intended to face the likely integration of the group in a European Research network of Excellence in Nutrigenomics. The social-economical interest of the subject is noticeable because of the high incidence of obesity in our society and because the development of specific functional foods for this population has a vast potential. The hypothesis behind this project is that selected nutrients (we already have identified some fatty acids and derivatives, carotenoids, retinoic acid and, likely, vitamin D) may play an important role in the regulation of energy balance promoting or preventing the onset of obesity and its medical complications.



The objectives of the project are:

To study the effects of specific nutrients of the thermogenic system and the adipogenic process, their mechanism of action and their impact on whole body adiposity.

To characterize the effect of selected nutrients and/or derivatives on the expression and secretion of some adipocytokines and its relation with the medical complications of obesity, in particular, the insulin resistance.

To characterize the gastric leptin system and its function on the control of food intake in the short/medium term and/or on nutrient absorption; and research conducted to test the efficacy of leptin as a nutritional supplement to avoid overweight in the adult life.

To study the differential expression of genes in adipose tissue depots of lean and obese humans and its eventual reversion upon body weight normalization. To analyze its potential relation to specific genetics variants.

To develop a transcriptomic and proteomic approach to the effect of selected nutrients on adipose tissue and skeletal muscle samples.

**Referència:** AGL2004-07496/ALI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de recursos i tecnologies agroalimentàries.

**Títol:** *Bases científicas de ingredientes alimentarios funcionales de potencial aplicación en la obesidad. Interrelaciones y aspectos mecanísticos de interés en la evaluación del balance beneficio/riesgo.*

**Acrònim:** ALIOBEN.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Palou Oliver, Andreu	CU	1
Bonet Piña, M. Lluïsa	CEU	1
Picó Segura, Catalina	CEU	1
Serra Vich Francesca	CEU	1
Ribot Riutort, Joan	TEU int.	1
Oliver Vara, Paula	TEU int.	1
Rodríguez Guerrero, Ana M.	Aj.	1
Miralles Barrachina, Olga	As.	1
Sánchez Roig, Joana	B	1
Rodríguez Parrona, Enrique	B	1
Felipe Legaz, Francisco	B	1
Fuster Roca, M. Antònia	B	1
Mercader Barceló, Josep	B	1
Dietrich Planas, Lucrecia	B	1
Van Hoeck, Els	B	1
Sandbichler, Sandra	Tèc.	1
<b><u>Investigadors d'altres entitats</u></b>		
Caimari Jaume, Maria	Ib-Salut	
Román Piñana, Juana María	Ib-Salut	

**EDP del grup investigador de l'entitat sol·licitant: 16.**

## Summary

The project is envisaged to study the scientific basis of the activity of potentially functional ingredients to control body weight and of their balance benefit/risk. Scientific evidences supporting health claims, in particular those based in the knowledge of mechanistic aspects and on safety are critical aspects in the evaluation of new functional foods. This research may orientate the design and development of novel functional foods of interest in obesity, contributing to establish the molecular basis of their beneficial effects, characterizing undesirable side-effects and defining function biomarkers associated to exposure and end-points biomarkers. The socio-economical interest of the topic is enormous, particularly because of the importance of the obesity problem in our society.

The initial hypothesis, supported by previous contributions made by the research team and others, is that the enrichment of diets with specific nutrients may favour a reduction in adiposity as a consequence of the largely confluent effects of these nutrients on key biochemical processes involved in the regulation of the energy balance. The specific aims of the project are:

- 1.- Characterization of the molecular basis of the slimming effect of dietary calcium and the influence of the dietary source of calcium on this effect.
- 2.- Study of the effects of selected nutrients (vitamin A, conjugated linoleic acid) on lipolysis in white adipose tissue and on the thermogenic capacity and fatty oxidation in target tissues. Benefit/risk of diet enrichment with these nutrients.
- 3.- Analysis of the potential of  $\beta$ -carotene on the protection against obesity. Benefit/risk of supplementation with  $\beta$ -carotene.
- 4.- Study of peptides present in maternal milk, particularly leptin. Determination of its function in the neonatal development and its repercussion in adulthood. Benefit/risk of the use of leptin as a nutritional supplement.
- 5.- Analysis of the effect of combination of the nutrients and doses selected in a dairy vehicle on the development of dietary obesity and on the slimming during caloric restriction.

The project is a continuation of the labor of a consolidated group of researchers in the field of obesity, with participation in national and EU programs since more than 17 years, with previous collaborative experience with industries and integrated in a Research European Network of Excellence in Nutrigenomics.

**Referència:** DEP2005-00238-C04-02. Ministeri d'Educació i Ciència.

**Modalitat:** Acció estratègica Esport i Activitat Física.

**Títol:** *Alimentos funcionales potenciadores de las defensas antioxidantes y su interacción con el entranamiento de deportistas.*

**Acrònim:** ACED.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.

**Investigador responsable:** PONS BIESCAS, Antoni.

**Categoria:** TU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Pons Biescas, Antoni	TU	1
Tur Marí, Josep A.	TU	1
Aguiló Pons, Antoni	P. Col.	1
Tauler Riera, Pere	Aj.	1
Sureda Gomila, Antoni	B	1
Ferrer Reynés, Miquel D.	B	1
Romaguera Bosch, Dora	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Llompart Alabern, Isabel	Hospital Universitari Son Dureta	
Fuentespina Vidal, Emilia	Hospital Universitari Son Dureta	
Roche Collado, Enrique J.	Universitat Miguel Hernández	
Micol Molina, Vicente	Universitat Miguel Hernández	

**EDP del grup investigador de l'entitat sol·licitant: 16.**

### **Summary**

There is a reasonable doubt on the necessity of using vitamins and nutritional supplements by the competition athlete. But it is certain that there is an oxidative stress induced by exercise when it is performed intense, long duration, or under different conditions hipercaloric, hiper/hipoproteic intake, or special climatic conditions of heat, humidity or cold. The idea of this coordinated project is develop a work from different points of view on the effect of some different types of functional nutrients, and dietary supplements and how they work on the prevention of oxidative stress of exercise under these different conditions, competition, intense exercise, heat, cold, or reduced caloric intake.

**Referència:** AGL2006-04887/ALI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de recursos i tecnologies agroalimentàries.

**Títol:** *Nutrigenómica funcional en la obesidad. Efecto de componentes de la leche materna y nutrientes específicos durante el desarrollo postnatal temprano sobre la resistencia a la obesidad y sus complicaciones.*

**Acrònim:** NUTRIGEN-C-OB.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Palou Oliver, Andreu	CU	1
Bonet Piña, M. Lluïsa	CEU	1
Picó Segura, Catalina	CEU	1
Serra Vich Francesca	CEU	1
Ribot Riutort, Joan	TEU int.	1
Oliver Vara, Paula	TEU int.	1
Rodríguez Guerrero, Ana M.	TEU	1
Miralles Barrachina, Olga	As.	1
Sánchez Roig, Joana	B	1
Fuster Roca, M. Antònia	B	1
Mercader Barceló, Josep	B	1
Priego Cuadra, Teresa	Inv.	1
Caimari Palou, Antoni	B	1
Parra Moya, Pilar	B	1
Amengual Terrasa, Jaume	B	1
Granados Borbolla, Nuria	B	1
Servera Barco, Maria	B	1
Tobaruela Arbona, Aixa	B	1
Palou March, Mariona	B	1

**EDP del grup investigador de l'entitat sol·licitant: 19.**

**Referència:** PI05-1276. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.  
**Títol:** *Estudio de la prevalencia de la obesidad infantil y juvenil en las Islas Baleares (estudio OBIB).*  
**Centre:** Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.  
**Investigador responsable:** TUR MARÍ, Josep Antoni.  
**Categoria:** TU (àrea de coneixement: Fisiologia).  
**Inici:** 2005. **Fi:** 2008.

**Membres de l'equip**

**Categoria**

Tur Marí, Josep Antoni	TU
Pons Biescas, Antoni	TU
Aguiló Pons, Antoni	P. Col.
Fuentespina Vidal, Emilia	
Llompart Alabern, Isabel	
Riesco Prieto, Maria del T.	
Tauler Riera, Pere J.	B
Romaguera Bosch, Maria A.	B
Reynés Ferrer, Miquel D.	B

**Summary**

The main objective of this project is to know the current obesity and overweight prevalence in the child and youth population of the Balearic Islands, its predictive factors (diet quality, physical activity, socio-demographic factors, lifestyle, and the biochemical, hematic and genetic profile) and comorbidity, evolution and trends during the next three years. A longitudinal epidemiological study will be carried out on a population based sample. The sample population will be all residents aged 2 to 18 years registered in the official population census of the Balearic Islands. The estimated theoretical sample size is 2000 individuals, randomly selected from natural clusters of individuals (conglomerates) in the study population of the Balearic Islands. The estimated theoretical sample size population of the Balearic Islands. The sampling technique includes stratification according to 5 geographical areas (Mallorca, Menorca, Ibiza, Formentera and Palma de Mallorca) x 4 age groups (2-5 years, 6-9 years, 10-13 years and 14-18 years) x 2 sexes: 40 strates of 50 individuals. Each selected individual will be interviewed twice, first at the beginning of the study and secondly during the last year of the study; therefore 4000 interviews will be carried out in two stages of 2000 interviews each stage. These individuals will undergo an anthropometric study, nutritional status assessment through a semiquantitative food frequency questionnaire and a 24 hours recall, description of their socio-demographic status and lifestyle, assessment of their nutritional knowledge, opinions and preferences, measurements of biochemical parameters and genetic factors of obesity, and measurement of the arterial pressure. The description of the profile of obese children in the Balearic Islands will be carried out, as well as the distribution map of overweight and obesity prevalence in children and adolescents of the Balearic Islands. Trends to excess weight in children and adolescents and its projection will be described, as well as the influence of the predictive factors on this tendency.

**Referència:** PI05-2174. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Fundamentos biológicos en la terapia de la obesidad.*

**Centre:** Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2005. **Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>
Palou Oliver, Andreu	CU
Picó Segura, Catalina	CEU
Bonet Piña, M. Lluïssa	CEU
Serra Vich, Francesca	CEU
Ribot Riutort, Joan	TEU
Oliver Vara, Paula	CEU
Rodríguez Guerrero, Ana Maria	TEU
Sánchez Roig, Joana	B
Priego Cuadra, Teresa	Inv.
Miralles Barrachina, Olga	B
Caimari Palou, Antoni	B
Mercader Barceló, Josep	B
González Galindo, José Luis	B
Parra Moyà, Pilar	B
Amengual Terrasa, Jaume	B

### **Summary**

In the present project, our group intends to continue with the study of the mechanisms involved in body weight control and, in particular, the effect of specific nutrients (carotenoids, retinoic acid, calcium, and fatty acids and derived) on the thermogenic system, the adipogenesis and their impact on the body adiposity, and we have characterized the effect of these nutrients on the expression and secretion of diverse adipokines and its relation with the medical complications of the obesity, in particular insulin resistance. It is planned to finalize these studies in animals and based on these results and genes identified in this first stage, we will check in humans the effect of the ingestion of certain nutrients on the expression of key genes in body weight control. On the other hand, we have results in animal models showing the importance of the gastric leptin, pointing their possible implication in the control of the short- and medium- term system of food intake. The effect of the intake of leptin during lactation on food intake has been characterized in neonate rats. In this project we will continue the study of the characterization of the gastric leptin system, its regulation, and its possible implication in the control of body weight in different experimental models. The project also includes the application of the transcriptomics and proteomics methodologies in the field of nutrition and nutrigenomics, functional foods and the treatment of obesity for the characterization of the effect of specific nutrients and the identification of early biomarkers of interest in this scope.

**Referència:** PI04-2294. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Poliformismos de genes candidatos de riesgo cardiovascular en la respuesta a la dieta mediterránea. Estudio de modelos animales de las bases moleculares que relacionan el estrés oxidativo con el proceso aterogénico.*

**Centre:** Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** PROENZA ARENAS, Ana María.

**Categoria:** TEU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2004. **Fi:** 2007.

**Membres de l'equip**

**Categoria**

Proenza Arenas, Ana María	TEU
Gianotti Bauzà, Magdalena	CEU
Roca Salom, Maria Pilar	TU
García Palmer, Francisco José	TU
Lladó Sampol, Isabel	TEU
Oliver Oliver, Jordi	TEU
Balaguer Covas, Jaume	As.
Fiol Sala, Miquel	
Thomàs Moyà, Elena	B
Valle Gómez, Adamo	

**Summary**

The aims of the project are:

1. To assess whether the possible beneficial effects of Mediterranean Diet on cardiovascular risk factors are modulated by polymorphisms of candidate genes. To determine the consequences of the supplementation with specific foods.
2. To determine the atherogenic effect and the oxidate stress induced by a cafeteria diet and the consequences of a dietary supplementation with foods that have a potential antioxidant effect.
3. To investigate the role of PON1 in the response to the oxidate stress induced by dietary factors and the obese status, and its regulation by Mediterranean Diet.
4. To establish a relationship between the diet and obesity-induced oxidative stress and the fibrinolic process by studying the signal pathways leading to PAI-1 expression.
5. To determine the influence of the diet on the function of NADH/NADPH oxidase p22phox subunit in the respiratory chain (the main source of ROS production in endothelial cells). To make a comprehensive study of the molecular mechanisms implicated in p22phox function.
6. To establish a relationship between diet- and obesity-induced oxidative stress on endothelial function by studying the eNOS.

In order to reach these objectives, it has been devised an experimental design tha includes studies both in high cardiovascular risk patients undergoing a diet intervention and studies in animal models of cafeteria diet induced-obesity (an oxidative stress generator) supplemented with specific foods.



**Referència:** PI04-2377. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Implicación del estrés oxidativo inducido por una dieta hiperlipídica en la alteración de la sensibilidad y la secreción de insulina. Diferencias entre géneros.*

**Centre:** Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** LLADÓ SAMPOL, Isabel.

**Categoria:** TEU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2004. **Fi:** 2007.

**Membres de l'equip**

**Categoria**

Lladó Sampol, Isabel	TEU
Gianotti Bauzà, Magdalena	CEU
Roca Salom, Maria Pilar	TU
García Palmer, Francisco José	TU
Proenza Arenas, Ana María	TEU
Oliver Oliver, Jordi	TEU
Pablo Cánaves, Josep A.	B
Pisano Pérez, Maria Estela	As.
Alcolea Delgado, Maria del Pilar	B
Colom Pomar, Bartomeu	B

**Summary**

The aim of this project is to analyze the molecular mechanisms inherent to the different incidence between genders of insulin resistance development and the dysfunction of pancreatic beta cells. Both events can be related to the intake of a high fat diet which is inductive of oxidative stress.

The basic goals of the project are the following:

1. To determine the oxidative stress status generated by feeding a high fat diet and the degree of insulin resistance induced in skeletal muscle.
2. To study the effects of high fat diet induced oxidative stress on pancreatic beta cell functionally.
3. To determine the expression and secretion of pro-inflammatory cytokines by adipose tissue in relation to the oxidative stress situation generated by the diet.
4. To analyze the effect of these pro-inflammatory cytokines on pancreatic beta cell functionally and the potential mechanisms of this effect.
5. To determine the effect of sex hormones on pancreatic beta cell functionally and insulin resistance parameters in skeletal muscle.

The achievement of these proposed goals involve the concurrent development of both in vitro and in vivo studies. In vivo studies will use adult Wistar rats of both genders, which will be fed with an oxidative stress inducing high fat diet. In vitro studies will allow us to go further into the knowledge of the underlying molecular mechanisms using isolated cells and/or cell lines.

**Referència:** CAL03-060-C4-2. Institut Nacional d'Investigació i Tecnologia Agrària i Alimentària.

**Títol:** *Estudio de las variables que afectan al mecanismo de formación de acrilamida durante el procesado industrial de alimentos, evaluación de su biodisponibilidad en alimentos.*

**Centre:** Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.

**Investigadora responsable:** PICÓ SEGURA, Catalina.

**Categoria:** CEU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2004.                      **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>
Picó Segura, Catalina	CEU
Palou Oliver, Andreu	CU
Bonet Piña, M. Lluïsa	CEU
Serra Vich, Francesca	CEU
Oliver Vara, Paula	CEU
Ribot Riutort, Joan	TEU
Rodríguez Guerrero, Ana María	TEU

**Referència:** PI060293. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Influencia del género en la función y biogénesis mitocondrial inducida por estrés oxidativo.*

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.

**Investigadora responsable:** GIANOTTI BAUZÀ, Magdalena.

**Categoria:** CEU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2006. **Fi:** 2009.

**Membres de l'equip**

**Categoria**

Gianotti Bauzà, Magdalena	CEU
García Palmer, Francisco J.	TU
Proenza Arenas, Ana María	TEU
Balaguer Covas, Jaume	As.
Estrany Martorell, Maria Elena	As.
Gómez Pérez, Yolanda	B

**Summary**

Previous results from our research group have shown that there are mitochondrial morphofunctional differences between genders, which could be related with the different incidence in men and women of several pathologies caused by oxidative stress related mitochondrial dysfunction. Oxygen reactive species (ROS) would constitute the nexus between oxidative stress and mitochondrial biogenesis through several signalling pathways, the PI3K/Akt being one of them.

The hypothesis of this research project sets up that these mitochondrial morphofunctional differences are due, at least in part, to the different regulation of mitochondrial biogenesis by ROS, and that the estrogens could modulate the pathways which control this process, as the PI3K/Akt. In order to corroborate this asseveration, we shall study ROS induced mitochondrial biogenesis in both genders, setting the limits of both estrogens and endothelial nitric oxide synthase roles in this process.

The methodology will be based on *in vivo* experiences, using both genders animals, and *in vitro* cell cultures, using tissues also from both genders animals. The morphology and mitochondrial function and biogenesis, and the signalling pathway which would mediate the ROS induced activation of the process will be studied in an oxidative stress inducing dietetic situation: overfeeding by cafeteria diet.

In order to better establish the gender influence, ovariectomized rats treated with 17-beta estradiol will be used. Cell cultures will constitute a controlled system where it can be elucidated the activation sequence of the induction pathway of the oxidative stress induced mitochondrial biogenesis, testing the direct effect of estrogens.

**DEPARTAMENT DE CIÈNCIES DE LA TERRA**

**Referència:** BSO2003-01844. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *¿Hacia el sector ganadero sostenible? La ganadería en Mallorca en el tránsito del desarrollismo al postproductivismo.*

**Acrònim:** GSDP.

**Centre:** Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

**Investigador responsable:** BINIMELIS SEBASTIÁN, Jaume.

**Categoria:** CEU (àrea de coneixement: Geografia Humana).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Binimelis Sebastián, Jaume	CEU	1
Ginard Bujosa, Antoni	TU	1
Ordinas Garau, Antoni	TEU	1
Salvà Tomàs, Pere A.	CU	1

**EDP del grup investigador de l'entitat sol·licitant:** 4.

### **Summary**

The project studies the process of change of the sector cattle raiser of Majorca island. The integration in the European Union marked the traffic of the sector cattle raiser that had been headed from the sixties by the bovine subsector, subsector that had been guaranteed in a state of intensive exploitation and capitalized. Currently, thanks to impulse of the agrarian politics that bet on sustainable and extensive states and to the processes of endogenous rural change, the panorama of the sector cattle raiser is presided by a vaccine stockbreeding subsector in franca regression, the control of the extensive, ovine subsector, subsidized and of subsistence and the cattle raisers of new modalities emergency connected with the activities of leisure and recreation.

**Referència:** CGL2005-07664-C02-02/CLI. Ministeri d'Educació i Ciència.

**Títol:** *Análisis de la irregularidad pluviométrica a diferentes escalas temporales en la península ibérica y Baleares y sus conexiones regionales.*

**Acrònim:** IPIBEX.

**Centre:** Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

**Investigador responsable:** GRIMALT GELABERT, Miquel.

**Categoria:** TU (àrea de coneixement: Geografia Física).

**Inici:** 2005.                   **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Grimalt Gelabert, Miquel	TU	1
Laita Ruíz de Asúa, Mercedes	CEU	0.5
Florit Alomar, Francesca	CEU	1
Rosselló Geli, Joan	As.	1
González de Alaiza, José Javier	TEU	1
Ramon Molinas, Jerònia	As.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Tudela Villalonga, Lluís    Fundació Universitat-Empresa (Balears)		

**EDP del grup investigador de l'entitat sol·licitant: 5.**

**Referència:** CGL2005-00537/BTE. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Análisis genético de plataformas carbonatadas mesozoicas y cenozoicas; la arquitectura de facies en función de los cambios de producción de sedimento y de acomodación.*

**Acrònim:** GEPLAT.

**Centre:** Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

**Investigador responsable:** POMAR GOMÀ, Lluís.

**Categoria:** CU (àrea de coneixement: Estratigrafia).

**Inici:** 2005. **Fi:** 2008.

**Membres de l'equip**

**Categoria**

**Dedicació (EDP)**

Pomar Gomà, Lluís

CU

1

Mateu Vicens, Guillem

B

1

**Investigadors d'altres entitats**

Obrador Tudurí, Antoni

Universitat Autònoma de Barcelona

Bossellini, Francesca

Università di Modena e Reggio Emilia

**EDP del grup investigador de l'entitat sol·licitant: 2.**

**Referència:** SEJ2006-07256/GEOG. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *La funcionalización turística de las Islas Baleares (1955-2000): adaptación territorial y crisis ecológica del archipiélago.*

**Centre:** Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

**Investigador responsable:** RULLAN SALAMANCA, Onofre.

**Categoria:** TU (àrea de coneixement: Anàlisi Geogràfica Regional).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Rullan Salamanca, Onofre	TU	1
Blázquez Salom, Macià	TU	1
González Pérez, Jesús M.	TEU	1
Artigues Bonet, Antoni A.	TEU	1
Murray Mas, Iván	As.	1
Bauzà Van Slingerlandt, Alícia	As.	1
Pons Esteve, Antoni	As.	1
Ramis Sastre, Margalida M.	B	1

**EDP del grup investigador de l'entitat sol·licitant:** 8.

### **Summary**

This project attempts to analyse the territorial transformation the Balearic archipelago has experienced during the second half of the twentieth century, within the context of the political and economic relations which emerged after the Second World War and have been developing until nowadays.

At a European scale, the economic process is considered as the most independent variable of the geographical change. Nevertheless, other variables need to be analysed because of being considered essential for the socio-economic process to materialize. These variables are land cover and land use change, intraurban transformation of the main cities, the energy system evolution, and natural resources required by the Balearic economy to achieve present-day situation of economic development and ecological deterioration.

The main goal of this research is to develop a comparative analysis of the experiences on other islands, with the intention of exporting the Balearic experience to other regions with similar features, and which will be able to learn from our successes and mistakes. At the same time, we can import to the Balearic Islands similar experiences from other regions with a more advanced position within the global tourist market. The analysis of those advanced islands might give some piece of advice about future risks in order to achieve sustainability. The comparison will be addressed to insular cases which have a "Mediterranean position", this means an equidistant position between a developed North and a developing South, in terms of semi-periphery. Some examples are: the Caribbean Islands sited between USA and South America, the South East Asian Islands between the development of Japan and Australia, and the Mediterranean Islands placed between the Europe and the Africa.



**Referència:** CGL2006-11242-C03-01. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El litoral carbonatado mediterráneo: morfogénesis kárstica y litoral y registros sedimentarios respectivos, como respuesta a la variabilidad paleoclimática cuaternaria.*

**Acrònim:** MECARLI.

**Centre:** Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

**Investigador responsable:** FORNÓS ASTÓ, Joan Josep.

**Categoria:** TU (àrea de coneixement: Estratigrafia).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Fornós Astó, Joan Josep	TU	1
Ginés Gracia, Ángel	As.	1
Ginés Gracia, Joaquín	As.	1
Pons Buades, Guillem X.	TEU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Gracia Lladó, Francisco		
Tuccimei, Paola	Università di Roma Tre	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

The study of the endokarst –cave systems existing in the carbonate lithologies– and its associated deposits represents an investigation field that reports many paleoenvironmental data, which can be complementary to those geomorphological and geochronological information based on conventional studies on fluvial and littoral landscapes. Recent absolute dating methods allow for a proper location of the recognized events within a valid Quaternary time scale. Endokarstic milieus usually contain records of geochronological interest, basically in the way of carbonate mineral deposits: the speleothems. The potential of these chemical deposits, under the geochronological and paleoenvironmental point of views, are nowadays internationally recognized thanks to the advances in isotopic geology. In general terms the geomorphological and sedimentary records associated to the endokarst present a good preservation, since they have not been affected by many of the active mechanisms of the littoral dynamics. The recent application of subaquatic exploration techniques to the study of coastal caves, allows the access to the flooded parts of the littoral subterranean systems. This makes possible the collection of morphogenetic and sedimentary evidences controlled by the regressive paleosealevels of the Mediterranean, which corresponds to the Quaternary cold episodes. The information from the study of the coastal caves will be correlated with the Pleistocene and Holocene epigeal sedimentary sequences of many coastal areas along the Western Mediterranean. The project we propose has several different fields of investigation. Firstly, in order to establish a detailed speleogenetic evolution and characterise and locate chronologically some deposits, we will carry additional geomorphological investigations of the karstic coastal caves –mainly of Mallorca and Menorca, but also of Sardinia or Malta-. The investigation will also include new aspects as the detritic sedimentation observed in these subterranean phreatic systems or the hydrological behaviour of these high permeability littoral karstic aquifers. Additional radiometric datings of the collected phreatic speleothems must be also performed. We will use these new data to establish the evolutionary sequence of the

coastal endokarst and how this sequence is related with the paleoclimatic events that affected Western Mediterranean basin. A well-differentiated second part of the project consists in the detailed morphogenetic study of the coastal fringe, with special attention focused to the Pleistocene dune systems of the study areas as well as to the influence of tectonic and lithological factors. A dating programme (OSL) of the eolian deposits will be carried out in order to precisely locate in the time scale these deposits, generally associated to regressions of the sea level in the Mediterranean. This dual approximation to the interpretation of the littoral environments (which implies the study of both endokarst and epigean morphogenetic systems) will bring valuable data about marine paleolevels lower than the present one and the complex morphosedimentary evolution of the littoral geodynamic environment.

In other way, with reference to the morphogenetic evolution of coastal limestone landscapes in the Mediterranean, carbonate rocks are responsible for the development of very specific fluvial and littoral processes, fully conditioned by the progress of karstification. In fact, karstic and fluvial processes operate on the limestone materials to form an atypical network of non-functional meandering gorges and valleys, ending in narrow littoral coves (called "calas" in Spanish language). The "calas" constitute incised valleys formed during sea level regressive periods, being afterwards flooded and filled up by the Holocene postglacial transgression; eolianites are very frequent in these coastal emplacements. This geomorphic model, proposed for the reefal platforms of Menorca and Mallorca, must be tested in other environmental systems like the Caroig platform (province of Valencia) and in Malta, a Miocene reef platform similar to Migjorn area in Menorca island. The methodology to be applied in this third part of the investigation includes: the detailed geomorphological cartography of the studied zones, the morphometric analysis of the drainage fluvial network (by means of DTM techniques), the study of hydrological and sedimentary processes in the gorges that cross the carbonate platforms, as well as the morphometric analysis of the coastal belt in order to deepen in the genetic mechanisms of the "calas". The development of specific software tools (based on GIS and DTM applications) is envisaged, in order to proceed to the great-scale morphometric characterization of the fluvio-karstic landscapes in carbonate littoral platforms and the processes involved in their shaping.

## Participacions a altres projectes

**Referència:** REN2003-07906. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *Sistemas de indicadores en la planificación sostenible del turismo: los recursos de agua en áreas turísticas litorales.*

**Acrònim:** AGUATUR.

**Investigadora responsable:** VERA REBOLLO, José Fernando.

**Centre:** Universitat d'Alacant.

**Investigador de la UIB:** Rullan Salamanca, Onofre.

**Categoria:** TU (àrea de coneixement: Anàlisi Geogràfica Regional).

**Inici:** 2003.                    **Fi:** 2006.

**DEPARTAMENT DE CIÈNCIES HISTÒRIQUES  
I TEORIA DE LES ARTS**

**Referència:** BHA2003-04785. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Sociedad y organización fiscal: los impuestos indirectos en el Reino de Mallorca (siglos XIV-XVI).*

**Acrònim:** SOFIS.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigador responsable:** CATEURA BENNÀSSER, Pau.

**Categoria:** CU (àrea de coneixement: Història Medieval).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cateura Bennàsser, Pau	CU	1
Morelló Baget, Jordi	Aj. U	0.5
Fernández González, M. Carmen	TU	1
Navarro Gómez, Ricardo	Aj. U	1
Tudela Villalonga, Luis	Tèc.	1
Sánchez Nievas, Enrique	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Urgell Hernández, Ricard	Govern Balear	
Maíz Chacón, Jorge	UNED	

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

Indirect fiscal policy is the key of Majorcan's kingdom financial system. So it was understood in 1405, on consigning all the indirect taxation to the paying of interests national debt from the kingdom. Knowing why was so, it makes us to study its nature, qualities and measures and also politicians, economics and social involved elements.

The technical structure: a) indirect consumer taxes; b) indirect commercial taxes; c) the method of receipt and collection.

The legal structure: a) the applicable regulation and its development; b) a legal study of leasehold contracts.

The political, social and financial dimension: a) indirect taxes and the role of the Crown; b) municipalities' fiscal policy and the social repercussions; c) indirect taxes in the income structure of municipal treasuries.

**Referència:** HUM2004-00750/HIST. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Recursos y subsistencia en un medio insular mediterráneo. Las comunidades humanas baleáricas durante la prehistoria.*

**Acrònim:** ARQUIB.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigador responsable:** GUERRERO AYUSO, Víctor Manuel.

**Categoria:** TU (àrea de coneixement: Prehistòria).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Guerrero Ayuso, Víctor Manuel	TU	1
Calvo Trias, Manuel	Aj. EU	1
Ensenyat Alcover, Josep Francesc	As.	1
Salvà Simonet, Bartomeu	As.	1
Gornés Hachero, Josep Simó	As.	1
Garcia Rosselló, Jaume	B	1
Fornés Bisquerra, Joan	B	1
Quintana Abraham, Carles		1
Juncosa Vecchierini, Elena		1
<b><u>Investigadors d'altres entitats</u></b>		
Albert Cristóbal, Rosa Maria	Universitat de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 9.**

### **Summary**

Island environments are known to be less variable ecologically as well as more fragile than the continental ones. This is more so in the case of a relatively small group of islands like the Balearics. The present project will try to study the management strategies for both biotic and non-biotic resources by the Balearic communities throughout prehistory (c.3000-123 BC). We know that each basic archaeological period, Chalcolithic (c. 2500-1900 BC), Bronze Age (c. 1900/1800-1000 BC) and Iron Age (c.1000/900 BC) had different subsistence models although the empirical basis that sustain the models currently in use are not strong enough. The available studies are still partial and geographically biased. Chalcolithic and Bronze Age do not have enough archaeological record for a deep and detailed scientific discussion while the Iron Age, even though is better documented the archaeological record is restricted to few sites (one in Menorca and two in Mallorca). The research group is currently conducting the archaeological excavation of five major sites: Son Gallard, Son Torrella, Clossos de Ca'n Gaià, and La Morisca, in Mallorca, and Biniparratxet, in Menorca. These sites cover the full chronological sequence between c. 3000 and 200/123 BC, which guarantees the possibility of a wide comparative cultural and diachronic study. The project's basic strategic objectives are: Reconstruction of the vegetal landscape during the chronological stages cited. Establish clear relationships between each social group and the changes recorded in the island's environment. Consider in each case how husbandry and agriculture operate. Study the exploitation of non-biotic resources in each phase, particularly imports of metal raw materials. A complete study of the relationship between the islander and the sea in its two fundamental aspects: the exploration of marine resources (fishing and salt) and the sea as communication and extra-insular exchange route among the islands of the archipelago and between the islands and the continent. Definition of the gene pool of the insular prehistoric communities.

**Referència:** HUM2005-03467/HIST. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Oligarquías y grupos de poder en la Mallorca Moderna.*

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigador responsable:** JUAN VIDAL, Josep.

**Categoria:** CU (àrea de coneixement: Història Moderna).

**Inici:** 2005. **Fi:** 2008.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Juan Vidal, Josep	CU	1
Vaquer Bennàssar, Onofre	As.	1
Picazo Muntaner, Antoni	As.	1

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

The study of the power élites existing in Mallorca during the Modern Age proposes to comprise a collection of biographies of people connected with the exercise of power, including not only representatives of the high royal administration within the island kingdom but also members of the reigning administration. on the one part viceroys, captain generals, royal magistrates, commissioners, regents and Royal Court judges, and on the other hand jurors, advisors, officials, lawyers and councillors as well as important people who, in the service of the monarchy, circulated around the various kingdoms of the Crown of Aragon, the Crown of Castile and the Crown of Italy. It is interesting to reveal their family relationships, social interactions and the relation between their kinship, their economic interests and their aspirations to power.

The primary objectives will be, by means of the cross-referencing of documentary sources, to identify those people who occupied positions of great importance in the kingdom, determining their "cursus honorum", their economic relations, their heritage, their patronage and political customers as well as other mechanisms whereby the enjoyment of power was assured to them for a determined length of time in modern age Mallorca.

**Referència:** HUM2005-04035/ARTE. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Guillem Sagrera y la escultura arquitectónica del siglo XV.*

**Acrònim:** GSEA.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigadora responsable:** SABATER REBASSA, Sebastiana M.

**Categoria:** TU (àrea de coneixement: Història de l'Art).

**Inici:** 2005.                      **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Sabater Rebassa, Sebastiana M.	TU	1
Escandell Proust, Isabel Joana	TEU	1
Capellà Galmés, Miquel À.	TEU	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.



**Referència:** HUM2005-05819/ARTE. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Pintura y crítica en las Islas Baleares (1898-1936)*.

**Acrònim:** PINCRIBA.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigadora responsable:** CANTARELLAS CAMPS, Catalina.

**Categoria:** CU (àrea de coneixement: Història de l'Art).

**Inici:** 2005.                      **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cantarellas Camps, Catalina	CU	1
Lladó Pol, Francesca	TU	1
Falero Folgoso, Francisco José	TU	1
Brotons Capó, M. Magdalena	TEU	1

**EDP del grup investigador de l'entitat sol·licitant:** 4.

**Referència:** HUM2005-06200/HIST. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Organización y práctica de la sanidad marítima en España, 1720-1904. Un estudio regional.*

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigadora responsable:** MOLL BLANES, Isabel.

**Categoria:** CU (àrea de coneixement: Història Contemporània).

**Inici:** 2005.                      **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Moll Blanes, Isabel	CU	0.5
Salas Vives, Pere	As.	1
Canaleta Safont, Eva	B	1
Pujadas Mora, Joana Maria	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Montaner Alonso, Pere	Reial Acadèmia de Medicina i Cirurgia	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

**Referència:** HUM2006-01329. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *El crédito y el sistema financiero en el Reino de Mallorca (siglos XIV-XV).*

**Acrònim:** CREFIBAL.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigador responsable:** CATEURA BENNÀSSER, Pau.

**Categoria:** CU (àrea de coneixement: Història Medieval).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cateura Bennàsser, Pau	CU	1
Fernández González, M. Carmen	TU	1
<b><u>Investigadors d'altres entitats</u></b>		
Urgell Hernández, Ricard	Govern Balear	
Navarro Gómez, Ricardo	Govern Balear	
Mayol Llompарт, Antoni	Arxius i Biblioteques	
López Bonet, Josep F.	Consell de Mallorca	
Tudela Villalonga, Lluís	UNED	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

The agrarian and commercial expansion of the 13th century is directly related to the term of credit. The development of the commercial activities is incomprehensible without the concepts of credit, as usual methods for the financing of companies. In the area of the real estate property new methods like the buying and selling of received census over properties, the alienation of the eminent lands by the allodial owners and, finally, the National debt have been developed. The project, based on the kingdom of Majorca of the 14-15th centuries, will have the following objectives:

- a) Analysis and chronology of each credit product: from the short-term credit (loans) to the long-term credit (census).
- b) The applicable legal regime for the different credit formulas over the legislation of the period (public control of interests and credits and rules about census)
- c) The introduction of the municipalities to the credit offer. The creation of organizations aimed at deposit-taking (municipal banking) and deposit-taking strategies: bank deposit, compulsory and census credit.

**Referència:** HUM2006-07725. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *La recuperación de la decoración mural en la arquitectura religiosa de las Islas Baleares*

**Acrònim:** RDMARIB.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

**Investigadora responsable:** GAMBÚS SÁIZ, Mercè.

**Categoria:** TU (àrea de coneixement: Història de l'Art).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Gambús Sáiz, Mercè	TU	1
Villalonga Vidal, Andreu J.	TEU	1
Forteza Oliver, Miquela	Aj. Dr.	1
Bauzá de Mirabó Gralla, Maria C.	TEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Reig Morro, Antònia	Bisbat de Mallorca	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

This research project aims to study the different manifestations of mural decoration conserved in the religious architecture of the Balearic Islands as a way of contributing to its documentary and material recovery. Mural paintings, sgraffito, ceramic facings and monumental sculpture are the different languages and techniques that have been applied to architectural decoration and have played a significant role with singular links to religious architecture in the Balearic Islands from the time Jaime I conquered the island until today.

Irreparable losses, progressive deterioration and the absence of special studies define the current status of a heritage which is in need of conservation and which has no systematic intervention plan at present. Thus, this project's main objective is to open a line of research in the Balearic Islands that employs artistic and historical studies on mural decoration as a way to conserve documentation, the step which must be taken before any material intervention, conservation plan and dissemination plan.

The project specifies objectives to recover two mural painting areas in the same number of convents (Llucmajor-Mallorca and Ciutadella-Menorca), conduct an inventory, devise a catalogue and prepare a historic-artistic study of the sgraffito and ceramic facings in the Cartuja de Valldemossa, Mallorca, and document and draft a conservation plan for a modern ceramic facing in Palma de Mallorca Cathedral.

## Participacions a altres projectes

**Referència:** BHA2002-03830. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa sectorial de promoció general del coneixement.

**Títol:** *La arquitectura fantástica en España. La creación espontánea, entre el surrealismo, el po y el art brut.*

**Investigadora responsable:** RAMÍREZ DOMÍNGUEZ, Juan Antonio.

**Centre:** Universitat Autònoma de Madrid.

**Investigador de la UIB:** Seguí Aznar, Miquel.

**Categoria:** CU (àrea de coneixement: Història de l'Art).

**Inici:** 2003.                    **Fi:** 2006.

**Referència:** HUM2005-04179/ARTE. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Thesaurus Architecturae Hispaniae Mediaevalis.*

**Investigador responsable:** BANGO TORVISO, Isidro G.

**Centre:** Universitat Autònoma de Madrid.

**Investigador de la UIB:** Carrero Santamaría, Eduardo.

**Categoria:** TU (àrea de coneixement: Història de l'Art).

**Inici:** 2005.                    **Fi:** 2008.

**DEPARTAMENT DE CIÈNCIES MATEMÀTIQUES I  
INFORMÀTICA**

**Referència:** TIN2004-07926. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies informàtiques.

**Títol:** *Integración de escenarios virtuales con agentes inteligentes 3D.*

**Acrònim:** INEVAI3D.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** PERALES LÓPEZ, Francisco José.

**Categoria:** TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Perales López, Francisco José	TU	1
Jaume Capó, Antoni	Tèc.	1
Fontanet Nadal, Gabriel	TEU	1
Bibiloni Coll, Antoni	TEU	0.5
Mas Sansó, Ramon	TU	1
Mascaró Oliver, Miquel	TEU	1
Amengual Salas, Antoni	Tèc.	1
Varona López, Javier	Tèc.	1
Manresa Yee, Cristina-Suemay	Tèc.	1
Igelmo Ganzo, Ángel	CEU	1
González Hidalgo, Manuel	TU	0.5
Miró Julià, Margarita	TEU int.	0.5
Palmer Rodríguez, Pere A.	TEU	1
Mascaró Portells, Miquel	TEU	1
Fiol Roig, Gabriel	TU	0.5
Buades Rubio, Josep M.	P. Col.	1
Abasolo Guerrero, María José	Vis.	1
Clar Matheu, Albert	Tèc.	1
Sola Venteo, Antonio	Tèc.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Cruz Berg, Alexandre	ULBRA	
Rosecler Bez, Marta	ULBRA	
Noll do Matos, Patricia	ULBRA	
Baldassarri, Sandra	Universitat de Saragossa	
Cerezo Bagdassarian, Eva M.	Universitat de Saragossa	
Pulido Trullén, Juan I.	Universitat de Saragossa	
Remiro Fernández, Virgino	Universitat de Saragossa	
Pina Calafi, Alfredo	Universtiat Pública de Navarra	

**EDP del grup investigador de l'entitat sol·licitant:** 16.5.

### **Summary**

The present project defines a global and unified framework with intelligent tri-dimensional agents for the actual systems and the future virtual environments. Nowadays electronic communication among persons includes from basic chats and GSM services to virtual immersive sceneries with great realism. The differences are obvious, and virtual immersive sceneries provide mechanisms for interacting

virtual elements (avatars, information, passive objects) with the sceneries that participate virtually in a universe.

This is a very wide and ambitious field and it's necessary to define clearly which are the issues to develop in this project. The four important issues to develop can be summarized in: a) Unified Integration of Virtual Scenarios (Web, GSM, UMTS, chat, TV, 3D, etc.); b) Intelligent Humanoid simulation (Agents); c) Human Motion Analysis using force sensors; d) New Multimodal Interfaces and their application in domotic environments with 3D Agents.

Tic's impact on the domestic environment is very important and the diversity of intercommunication systems on the networks also. Multiple and heterogeneous communication systems and providers exist (IEEE 802.11x, GPRS, UMTS, Blue Tooth, Mobile IP, Ipv6). All virtual sceneries systems and electronic presence in general are interested in the interaction among remote actors that base their interaction's quality on the network characteristics. Due to this, it is a very important aim to guarantee an interaction's quality independently of the underlying communication systems and to provide a scalable, consistent and fault tolerant requirements' implementation.

Virtual environments own characteristics that allow the user to select their own point of view and to be represented with an avatar. Although a realistic representation of the virtual environment elements is important we consider avatars behaviour simulation as a very interesting field to develop. Intelligent agents will allow the person to interact in the immersive environment through geometric and behaviour models of the virtual elements of the defined world. Persistence and portability guarantee of these agents among the different virtual worlds must be accomplished. Computer interaction is through physical and logical devices; therefore a person human's motion analysis can modify the agents or the elements' behaviour of the virtual scene. Due to this, it is important to consider the inclusion of an avatar analysis and synthesis section using no-invasive techniques and others that allow force captures (haptics).

Through our experience in other projects (TIC2001-0931, TIC1998-0302-C02), we know that computer vision systems allow to capture the motion and to interpret the user's actions. The aim of this project is to advance one more step forward and to use the previous systems including kinetic models and haptic devices for enhancing the studied techniques. The necessity of a visual and physical immersion has to be a key point in the virtual collaborative environments. In previous projects, advanced issues on avatars had not been treated, but in this project have to be studied. In particular, a domotic application on realistic facial modelling would be a key issue to consider. User's expression captures and advanced facial representation of 3D agents that understand those expressions is a new interaction setting in virtual environments. An issue to be treated is the realistic modelling of the multilevel face (cranium, muscles and skin) for studying in example facial aging and to be able to model avatars with these characteristics.

Finally we should be aware that normally virtual or augmented reality systems are very specific and expensive therefore their spreading and their application fields are limited. We think that domotic is a very important field and with a great growing in a near future. The results' application of the previous sections in domotic environments would be achieved with virtual reality domestic systems and 3D agents. The person-home interaction will allow important synergies in both fields. Simultaneously we want to study new communication systems between men-machine, specially directed to disabled persons where their functional limitation can be supported through advanced domotic systems and specific intelligent interfaces.

As a conclusion, tools and software have to be adapted to the current standards and portability and compatibility properties should be achieved. Previous experiences showed us that using UML methodology for requirements specifying, analysis and process design is necessary in big projects where many physical and logical resources are managed.



**Referència:** BFM2003-05308. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Funciones de agregación sobre cadenas acotadas. Normas triangulares discretas. Aspectos teóricos y aplicaciones.*

**Acrònim:** FASCA.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** MAYOR FORTEZA, Gaspar.

**Categoria:** CU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Mayor Forteza, Gaspar	CU	1
Aguiló Pons, Isabel	TEU	1
Suñer Llabrés, Jaume	TEU	1
Martín Pelayo, Javier	P. Col.	1
Garí Ruíz, Rut	Aj. EU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Calvo Sánchez, Tomasa	Universitat d'Alcalá	
Muel Muel, Enriqueta	Universitat d'Alcalá	
Lázaro García, Jesús	Universitat d'Alcalá	

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

In this project our general aim is the study of aggregation functions on bounded chains. In particular, our main interest is the study of triangular norms defined on countable bounded chains. From some results obtained in the finite case, we plan a characterization of families of aggregation functions defined on infinite countable bounded chains. An objective to be included also in this work is the study of multidimensionality of aggregation functions (associative or not), in particular for means and ordered means. On the other hand, given the great interest of the information aggregation topics, we deal with practical aspects in this framework as for instance the problem of data fusion with some kind of imprecision: fusion of fuzzy numbers, etc. In general, we face the problem of the adequate choice of aggregation operators in the construction of intelligent systems.

**Referència:** TIC2003-06293. Ministeri de Ciència i Tecnologia.

**Modalitat:** Tecnologies de la informació i les comunicacions.

**Títol:** *Modelado de prestaciones de sistemas de tiempo real.*

**Acrònim:** MOPRESIT.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** PUIGJANER TREPAT, Ramon.

**Categoria:** CU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

**Inici:** 2003.

**Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Puigjaner Trepato, Ramon	CU	0.5
Juiz García, Carlos	TEU	0.5
Galmés Obrador, Sebastià	TEU	0.5
Lladó Matas, Catalina	TEU	0.5
Guerrero Tomé, Carlos	P. Col.	0.5
Anciano Martín de la F., Juan L.	Tèc.	0.5
 <u>Investigadors d'altres entitats</u>		
Rodeño Arraez, Miguel Jesús	Universitat d'Alcalá	
Alcaraz Carrasco, Salvador	Universitat Miguel Hernández	
Galiano Ibarra, Vicente	Universitat Miguel Hernández	
Gilly de la Sierra, Katja	Universitat Miguel Hernández	
García Crespí, Federico	Universitat Miguel Hernández	
Pomares Padilla, Alejandro	Universitat Miguel Hernández	
Garrido Abenza, Pedro P.	Universitat Miguel Hernández	
Migallón Gomis, Héctor F.	Universitat Miguel Hernández	

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

Designing real time systems needs to consider the non-functional requirements of temporal type, if possible since the first phases of the design. If not, the fulfilment of the requirements is just verified after the implementation. If they are not met, it is necessary to go back and reprogram and even redesign the system. This project intends to develop a tool allowing the prediction, since the first phases of the design what will be the temporal behaviour of the system and, in this way, reduce the risk of erroneous decisions taken during the design. Obviously, for doing this prediction, it is necessary to complement the design information with other concerning the temporal behaviour of the system, which will be included in the system as annotations. In order to experiment the design best annotation way, two notably different design approaches will be used: MASCOT and UML. The first one, originated for the design of hard real-time systems, is a method oriented to the data flow and based on activities interchanging information through interchange data areas. The second one, result of merging a set of diagrams proposed by several authors, allows the description of the different dimensions needed for the design of real-time systems of great size. From the annotated designs in these two methods, we intend to that the tool derives queuing network models able to be processed by simulation methods and, if possible, by analytical methods.

**Referència:** SEG2004-02229. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de seguretat.

**Títol:** *Repudio en el intercambio de valores equitativo con servicios TTP.*

**Acrònim:** RIVEST.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** FERRER GOMILA, Josep Lluís.

**Categoria:** TU (àrea de coneixement: Enginyeria Telemàtica).

**Inici:** 2004.

**Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ferrer Gomila, Josep Lluís	TU	0.5
Huguet Rotger, Llorenç	CU	0.5
Payeras Capellà, Magdalena	TEU	0.5
Mut Puigserver, Macià	As.	1
Femenias Nadal, Guillem	TU	0.5
Furió Caldentey, Ignasi	TEU	0.5
Carrasco Martorell, Lorenza	TEU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 4.

### **Summary**

The fundamental objective of the project is to design protocols for two cases of fair exchange of values: the electronic signature of contracts and the certified electronic mail. Each part has an element to exchange, but he doesn't want to give its element without having the guarantee that he will receive that of the other part (fairness). The participants should not be able to deny later their participation in the exchange: non repudiation services must be used. It is well known that the only valid solutions are those that count with the existence and possible involvement of a Trusted Third Party (TTP). In a second phase the exchange will be extended to multiple parts (multiple signatories of the same contract or multiple recipients of the certified mail). It is also confronted in this project the objective of defining specifications that allow to settle down standards. In the case of the signature of contracts the initial proposal will head to the use of XML, participating in discussion groups in the W3C. For the certified mail, the initial base will be the *de facto* standard S/MIME, being integrated in working groups of the IETF.

On the other hand, the juridical mark that the European Directive and the Spanish law on electronic commerce settle down, as well as the legislation in relation to electronic notifications, forces us to refocus the investigation being carried out in the technical environment. So, we want to stand out the novel character of the project. This way, the solutions that will be presented will have been revised from a technical analysis of juridical documentation. Also, the pertinent feedback in contrary sense will allow to carry out recommendations so that laws, orders and regulations settle down, more appropriate to the possibilities of the technique.

**Referència:** HUM2004-04992. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *La recuperación y catalogación del patrimonio científico de las Islas Baleares.*

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** BUJOSA HOMAR, Francesc.

**Categoria:** CU (àrea de coneixement: Història de la Ciència).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Bujosa Homar, Francesc	CU	1
Moll Blanes, Isabel	CU	0.5
Sureda Garcia, Bernat	CU	0.5
Marín Gelabert, Miquel	Inv.	1
<b><u>Investigadors d'altres entitats</u></b>		
Vidal Hernández, Josep M.	Consell de Menorca	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

**Referència:** MTM2005-08567. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de matemàtiques.

**Títol:** *Modelos matemáticos para el tratamiento y análisis de imágenes y aplicaciones.*

**Acrònim:** MATIMA.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** COLL VICENS, Bartomeu.

**Categoria:** TU (àrea de coneixement: Matemàtica Aplicada).

**Inici:** 2005.                      **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Coll Vicens, Bartomeu	TU	1
Sbert Juan, Catalina	TU	1
Lisiani Roca, Josep Lluís	TEU	1
Rocha Cardenas, Jairo	TEU int.	0.5
Buades Capó, Antoni	B	1
Petro Balaguer, Ana B.	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Morel, Jean Michel	ENS-CACHAN	

**EDP del grup investigador de l'entitat sol·licitant:** 5.5.

### **Summary**

The proposed project is a project on applied mathematics, with applications to the field of digital images analysis and processing. The main goals of the project are:

- 1) Experimentation, modelization and mathematical analysis of some problems in the field of digital images analysis and processing. Specifically, these problems are: color images filtering with partial derivatives equations (PDE's); restoration of noisy images (denoising) by using variational and statistical models; study of the halftoning problem, which consists of representing an image with a reduced number of colors, after its modelization as a discrete dynamical system; basic study of colors, having as a goal the automatic classification of the colors of an image; efficient registration of satellite images.
- 2) Study and development of the numerical algorithms that correspond to each one of the previously enumerated problems.
- 3) Practical application of the obtained algorithms and results to different fields such as: restoration of photographic images, with emphasis in the low resolution pictures obtained with cameras such as the ones integrated in mobile telephones; automatic indexing of image databases, based on color features; fast, automatic and accurate registration of satellite images; improvement in the quality of digital images prints; etc.

**Referència:** TEC2005-00997/TCM. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies electrònica i de comunicacions.

**Títol:** *Diseño intercapas aplicado a sistemas basados en MIMO-MC/OFDM-CDMA adaptativo para redes integradas móviles de banda ancha.*

**Acrònim:** MARIMBA.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** FEMENIAS NADAL, Guillem.

**Categoria:** TU (àrea de coneixement: Enginyeria Telemàtica).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Femenies Nadal, Guillem	TU	0.5
Riera Palou, Felip	Inv.	1
Cardona Juanals, Gabriel	TEU int.	0.5
Carrasco Martorell, Lorenza	TEU	0.5
Furió Caldentey, Ignasi	TEU	0.5
Ramis Bibiloni, Jaume	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 4.

#### **Summary**

Project MARIMBA will be dedicated, on the one hand, to the design and analysis of adaptive and reconfigurable MIMO-OFDM/CDMA (Multiple Input-Multiple Output-Orthogonal Frequency Multiplex/Code Division Multiple Division Access) systems and of the corresponding system level control mechanisms, for their incorporation to multiplatform mobile radio environments and, on the other hand, to the implementation of a software demonstrator that allows to validate the previous designs in realistic scenarios. MIMO technology allows the reconfiguration of the system based on the propagation characteristics, the traffic conditions, the service requirements and the number of antennas available at the base stations and mobile terminals. Therefore, it is hoped to obtain an increase of the spectral efficiency at the link level, a capacity increase at a system level and to provide interoperability in environments made up of different mobile systems (multiplatform environments). Although one assumes that in the mobile communication networks beyond the third generation (3G+) and in those of fourth generation (4G) a great variety of systems and services will coexist, project MARIMBA will be centered in UMTS, IEEE 802.xx and HIPERLAN/2 (High PERFORMANCE LAN) since these systems seem to have a high commercial interest and are appropriate candidates for mobile communication networks of 3G+ and 4G systems. The best possible performance together with a reasonable complexity will be obtained by jointly optimizing (cross-layer design) all the stages of an adaptive system. The study will include, among others, the analysis of the main functions of physical and MAC/DLC layers, the evaluation of MIMO-OFDM/CDMA techniques, the analysis of antenna and/or beam selection in MIMO-OFDM/CDMA environments, the development of channel estimation and synchronization algorithms, the combination of space-time processing with adaptive modulation techniques and the combination of space-time codes, turbo-codes, LDPC (Low-Density Parity-Check) codes and hybrid-ARQ strategies for the control of errors in physical and MAC layers. The system will not be optimized /a priori/, instead it will be adapted and reconfigured based on the user needs and on the variable characteristics of the environments. In a sense, this constitutes a step towards what has been called /software radio/ in fourth generation systems and surpasses the present state of the mobile communications systems, including the cellular mobile systems of third generation (p. e., UMTS) and the IEEE 802.xx and HIPERLAN/2 standards.

**Referència:** DPI2005-09001-C03-02. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de disseny i producció industrial.

**Títol:** *Guiado y posicionado de un AUV para inspección de cables y emisarios submarinos.*

**Acrònim:** AIRSUB.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** OLIVER CODINA, Gabriel.

**Categoria:** TU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

**Inici:** 2005.

**Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Oliver Codina, Gabriel	TU	1
Guerrero Sastre, José	P. col.	0.5
Rodríguez-Navas, Guillermo	P. Col.	0.5
González Cid, Yolanda	TEU	0.5
Proenza Arenas, Julián	TEU	0.5
Antich Tobaruela, Javier	P. Col.	0.5
Burguera Burguera, Antoni	P. Col.	0.5
Ortíz Rodríguez, Alberto	TEU	0.5
Barranco González, Manuel	Aj.	0.5
Rigo Vadell, Joan	As.	0.5
Bonnín Font, Francesc Jesús	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 6.5.

### **Summary**

This project is part of a bigger one in which the researchers propose the design and development of the necessary technologies for the adaptation of the prototypes of the low-cost underwater vehicles GARBIROV, GARBIAUV, URIS and RAO II for their use in shallow waters. First, a catalogue of industrial applications will be created. For each and every of these missions, the adequate scenario will be established, as well as a mission preliminary schedule. Next, each subproject, led by a different research group, will be focused in one of these industrial applications: dam inspection of hydroelectric plants by UdG; underwater cable and pipe inspection by UIB and inspection of harbours by UPC.

Concerning the UIB, the main objective of the project is the design of an autonomous video-based cable tracker able to work on real environments. As a natural extension, the vehicle could also be tested, with minor changes, to track any other object similar in appearance to a cable such as oil, gas or waste water pipes. Moreover, the plans for the cable tracking system include the automatic detection of the more frequent defects and anomalous situations of those equipments including cable coverage loss and free-span. It is essential for the project to have a vehicle with a structure robust enough to reach and work at depths of almost 100 meters. To this end, the Systems, Robotics and Vision (SRV) group has acquired a unit of the low-cost commercial ROV SeaLion prepared to work at 250 m depth. In this project the vehicle will be mechanically and electronically modified to transform it into a new AUV prototype which will be called RAO-II. As concerns research in robotics, new algorithms of control architectures, computer vision, navigation strategies, behaviours, and learning, among others, will be studied and developed.

**Referència:** MTM2006-08322. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de matemàtiques.

**Títol:** *Generación aditiva de normas triangulares sobre espacios de funciones. Aplicaciones.*

**Acrònim:** GANT.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** MAYOR FORTEZA, Gaspar.

**Categoria:** CU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial.

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Mayor Forteza, Gaspar	CU	1
Aguiló Pons, Isabel	TEU	1
Suñer Llabrés, Jaume	TEU	0.5
Martín Pelayo, Javier	P. col.	1
Casasnovas Casasnovas, Jaume	CEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Calvo Sánchez, Tomasa	Universitat d'Alcalà	
Lázaro García, Jesús	Universitat d'Alcalà	

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

This project consists of three parts. The first part is devoted to the study of the problem of the additive generation of triangular norms (t-norms) defined on discrete domains. In particular, we deal with the proof of the conjecture 'Any t-norm defined on a finite chain has an additive generator'. In the second part t-norms are studied in the general setting of bounded partially ordered sets, with emphasis on product lattices. An important question in this part of the project is the direct decomposability of t-norms on product lattices. We claim to obtain, in different cases, a characterization of those t-norms which are direct product of t-norms defined on the the lattices we start with. The third part deals with the application of results to some fields. In particular, the acquired knowledge allows us, for the natural numbers ordered by divisibility, the definition of a prime number with respect to a t-norm  $T$ , and the possibility of decomposition of any number into  $T$ -primes by means of a divisible (smooth) t-conorm. Finally, it seems also interesting to apply some concepts and results to the definition of generalized operations with some classes of multisets.



**Referència:** MTM2006-05540. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de matemàtiques.

**Títol:** *Operadores de agregación y sus funciones de implicación derivadas. Aplicaciones.*

**Acrònim:** OPAGIMA.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** TORRENS SASTRE, Joan.

**Categoria:** CEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial.

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Torrens Sastre, Joan	CEU	1
González Hidalgo, Manuel	TU	0.5
Mir Torres, Arnau	TU	0.5
Monserrat Antich, Miquel	TU	1
Mas Grimalt, Margalida	TEU	1
Suñer Llabrés, Jaume	TEU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

In this project we deal with the study of aggregation operators and their derived implications from the theoretical point of view and from their applications. The field of aggregation operators and fusion of information is of increasing interest due to the necessity of suitable tools allowing to fuse several inputs or data in just one, in mathematics and also in other fields as physics, engineering, computer science, economics and social sciences. On the other hand, implications are essential in fuzzy logic and approximate reasoning and they have proved to be useful in other fields also, especially in mathematical morphology and image processing. All that leads to set out a research centred on aggregation operators and their implications.

In this project we deal with general aggregation functions but also with specific ones, mainly with uninorms. The main objectives will be: To solve functional equations associated to them; the characterization of new families of implications derived from uninorms and other types of aggregation functions as well as the study of their properties; the study of the discrete case (aggregation operators and implications defined on a finite chain), due to their applicability in the fusion of qualitative data and in the computation with words; the applications of some aggregation functions to mathematical morphology and image processing. In this last case, the implementation of the morphological operators, morphological filters, and distances obtained from uninorms will be of great importance. It is interesting to compare the results with the classical ones and the fuzzy morphology (based until now on the use of t-norms), in the fields of edge detection and non-linear filtering.

**Referència:** TIN2006-02265. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies informàtiques.

**Títol:** *Calidad de servicio en el modelado de sistemas de información mediante ontologías.*

**Acrònim:** QUASIMODO.

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** PUIGJANER TREPAT, Ramon.

**Categoria:** CU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Puigjaner Trepas, Ramon	CU	1
Juiz García, Carlos	TEU	1
Galmés Obrador, Sebastià	TU	1
Lladó Matas, Catalina	TEU	1
Serra Cifre, Bartomeu	CU	1
Erica Ruiz, María del C.	TEU	1
Guerrero Tomé, Carlos	P. Col.	1
Sancho de la Jordana, Pere P.	Tèc.	1
Tramullas Vich, Joan	As.	1
<b><u>Investigadors d'altres entitats</u></b>		
Alcaraz Carrasco, Salvador	Universitat Miguel Hernández	
Gilly de la Sierra, Katja	Universitat Miguel Hernández	

**EDP del grup investigador de l'entitat sol·licitant: 9.**

## Participació a altres projectes

**Referència:** TIN2004-0668C03. Ministeri d'Educació i Ciència

**Modalitat:** Programa nacional de tecnologies informàtiques.

**Títol:** *Innovación e integración de métodos para el desarrollo y gestión cuantitativa de proyectos software.*

**Acrònim:** IN2GESOFT.

**Investigador responsable:** DOLADO COSÍN, José Javier.

**Centre:** Universitat del País Basc.

**Investigadora de la UIB:** MAS PICHACO, Antònia.

**Categoria:** TEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2004.                   **Fi:** 2007.

# **DEPARTAMENT DE DRET PRIVAT**

**Referència:** BJU2003-01998. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Aspectos jurídicos de los medios de pago en el comercio electrónico.*

**Acrònim:** EPIS.

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigadora responsable:** MARTÍNEZ NADAL, Apol·lònia.

**Categoria:** TU (àrea de coneixement: Dret Mercantil).

**Inici:** 2003.

**Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Martínez Nadal, Apol·lònia	TU	1
Ferrer Gomila, Josep Lluís	TU	0.5
Flaquer Riutort, Joan	TU	0.5
Pons Irarazábal, Fèlix	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The effective development of electronic commerce requires of sure and suit payment instruments. On one hand, it is necessary generate trust and security for persons of electronic commerce, specially in the phase of payment, because users are afraid of non authorised uses of their payment instruments. So it is necessary the study of juridical consequences of this non authorised uses of traditional payment instruments such as credit and debit cards, and it's also necessary the juridical analysis of technical systems established to give security to these traditional instruments in electronic commerce (mainly protocols SSL and SET).

On the other hand, it's necessary the existence of payment instruments adapted to the features and requirements of electronic commerce (because traditional instruments as payment cards can be sometimes unsuit). So, from a technical and commercial point of view, new payment instruments are offered: electronic money, micropayments and even electronic checks. These new instruments generate, from a juridical point of view, new questions (validity, juridical nature, rights and obligations of parts, liability, ...) that we will try to solve in this study.

In fact, the aim of this project is the study of juridical problems of payment instruments in electronic commerce, in order to resolve the possible doubts and uncertainties generated by the use of the different (traditional or new) instruments in this new context of electronic contracting. And the final objective is generate security, essential for the effective development of electronic commerce.

**Referència:** SEJ2006-04975. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Información sanitaria y autonomía del paciente (tratamiento de datos personales y consentimiento informado).*

**Acrònim:** ISAP.

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** GRIMALT SERVERA, Pedro.

**Categoria:** TU (àrea de coneixement: Dret Civil).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Grimalt Servera, Pedro	TU	1
Paniza Fullana, Antonia	TEU	0.5
Tur Faúndez, Maria Nélide	TU	0.5
Feliu Álvarez de Sotomayor, Sílvia	Aj. EU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Osuna Carrillo de Albornoz, Eduardo	Universitat de Murcia	
Fernández Salmerón, Manuel	Universitat de Murcia	
Valero Torrijos, Julián	Universitat de Murcia	
Sánchez Martínez, Daniel	Universitat de Murcia	
Thibault Aranda, Javier	Universitat Autònoma de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant:** 2.5.

**Referència:** SEJ2006-05872. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El alojamiento turístico y sus especies: hacia la construcción de su estatuto jurídico público y privado.*

**Acrònim:** EAT.

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** TORRES LANA, José Ángel.

**Categoria:** CU (àrea de coneixement: Dret Civil).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Torres Lana, José Ángel	CU	1
Tur Faúndez, María Nélide	TU	0.5
Paniza Fullana, Antonia	TEU	0.5
Ferrer Tapia, Belén	As.	1
Garau Sobrino, Federico	TU	0.5
Feliu Álvarez de Sotomayor, Sílvia	Aj. EU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
San Julián Puig, Verónica	Universitat de Navarra	
Pérez Guerra, Raúl	Universitat d'Almeria	
Ceballos Martín, Matilde	Universitat d'Almeria	
Rodrigues Masseno, Manuel D.	Instituto Politécnico de Beja	
Roca Fernández-Castanys, Maria L.	Universitat Autònoma de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

**Referència:** SEJ2006-03694. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Derecho de sociedades y nuevas tecnologías. En particular, su aplicación a la organización y funcionamiento interno de la sociedad y sus órganos colegiados.*

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigadora responsable:** MARTÍNEZ NADAL, Apol·lònia.

**Categoria:** TU (àrea de coneixement: Dret Mercantil).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Martínez Nadal, Apol·lònia	TU	1
Flaquer Riutort, Joan	TU	1
Buades Feliu, Joan	As.	1
Pons Irazazábal, Fèlix	As.	1
<b><u>Investigadors d'altres entitats</u></b>		
De Gispert Pastor, Maria Teresa	Universitat de Barcelona	
Gual Dalmau, Maria Asunción	Universitat de Barcelona	
Font Ribas, Antoni	Universitat de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

### **Summary**

The use of new technologies in Company Law, and in particular for the organization of the general meeting of shareholders and the board of directors, offers advantages to the company and its shareholders. But nowadays this also produces doubts about its juridical security, due to the lack of legislation and studies on the matter.

So, we consider it's necessary to study the legal admisibility, and the juridical consequences, of the use of new technologies in Company law.

We'll analyze questions such electronic vote o virtual meetings. In order to propose solutions which can vary depending of the kind of company and also the kind of body (the general meeting of shareholder or the board of directors).



**Referència:** SEJ2006-10284. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Tratamiento integral de la violencia contra las mujeres y la ejercida en el ámbito intrafamiliar. Aspectos civiles, penales y procesales.*

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigadora responsable:** FERRER VANRELL, M. Pilar.

**Categoria:** CU (àrea de coneixement: Dret Civil).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ferrer Vanrell, M. Pilar	CU	1
Verdera Izquierdo, Beatriz	TU	0.5
Coca Payeras, Miquel	CU	0.5
Vila Ribas, Carme	TU	0.5
Ramon Ribas, Eduard	TU	0.5
Cardona Guasch, Olga	As.	0.5
Arrom Loscos, Rosa	CEU	0.5
Nadal Gómez, Irene	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

Domestic violence or produced within the family framework has different ways of becoming apparent: physical violence and psychological violence (limitations to freedom, verbal and emotional abuses) which is performed against women or the couple, against under aged or elder people.

All these ways of becoming apparent has to be tacked with preventive and amendments actions, but also with legislative measures. In recent times, the legislative, mainly through Act LO 1/2004, de 28 de diciembre de Medidas de Protección Integral contra la violencia de Género has given a important step in order to coordinate the Integral Statute which creates this Act through the Protection Order.

Therefore, on the basis of a strict analysis of the current legislation in force, both at state and regional level and the existing jurisprudence in the field of crimes and faults related to domestic violence, we pretend to adopt legal conclusions which will be translated into an action and proposal plan. It will also include measures adopted in order to make effective the Integral Statute that demands the attention to the victims of violence, not only for prevention, but also for his familiar and social rehabilitation at civil, criminal and social level. This project will treat on the legal aspects in civil, criminal and procedural law.

**Referència:** SEJ2006-03101. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Turismo residencial. Aspectos económicos y jurídicos.*

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** MUNAR BERNAT, Pedro A.

**Categoria:** TU (àrea de coneixement: Dret Civil).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Munar Bernat, Pedro A.	TU	1
Coca Payeras, Miquel	CU	0.5
Vila Ribas, Carme	TU	0.5
Llodrà Grimalt, Francesca	TU	1
Verdera Izquierdo, Beatriz	TU	0.5
Garau Vadell, Joan B.	TU	0.5
Martorell Cunill, Onofre	TEU	0.5
Robledo Camacho, Marco A.	TU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Martos Calabrus, María A.	Universitat d'Almería	
Núñez Iglesias, Álvaro	Universitat d'Almería	
Botana García, Gema A.	Universitat Europea	
Lasarte Álvarez, Carlos	UNED	

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

Residential tourism is characterized by a group of people, usually gathered into family unities that, in a determined temporary process, move to specific areas, normally traditional tourist destinies, linking themselves to those places through real-estate relationships, where they stay for a longer period than traditional tourists and eventually establishing their usual residence there.

This new tourist option is increasingly becoming important from an economic standpoint and it has generated a relevant number of studies and analysis concerning the socioeconomic aspects of this new figure.

Currently, and taking into account the importance of this new figure, it is necessary to face the study of the legal aspects of this new phenomenon, questioning which has to be the legal instrument for its regulation. We can not forget that in this process of regulation different rules apply: on one hand, administrative rules concerning the legal regime of those properties where stays take place; and, on the other hand, rules concerning the relationships between those who participate in the real-estate legal transaction.

The legal linkage which exists may be double: a) An important number of tourists buy a property in a vacation area, but the problem which arises has no relation with the purchase of a right to property, mainly after the accession of Spain to the European Union and the non appliance to EU nationals of restrictive national rules on national security concerning the acquisition of properties in strategic areas of the national territory; b) As a general rule, tourists rent a lodging. In this framework, different problems arise and to which it is necessary to define the legal regime applicable, is in relation to private legal relationships derived from

housing rental, either by Spanish citizens who live in those areas or by tourists who have bought a house and that only use it a period of time. Currently, it is under discussion which rule is applicable: it is not clear whether it is a rental contract regulated by the Spanish Civil Code or a temporary rental regulated by the Urban Rental Act. At the same time, at this moment, different state and regional acts have also an impact on the regulation of this figure.

Taking into account all the questions mentioned above, the aims of this research project are as follows:

- To identify the defining characters of this legal figure.
- To distinguish between the way of acquisition of the property and the way of renting a lodging.
- To analyze state and regional rules currently into force which has an impact on the regulation of residential tourism.
- Concerning the acquisition of the property, it is important to think about unifying the acquisition systems of the property in order to give a solution that foreigner face in Spain when they buy a property.
- To study the possibility of having a specific regulation for this kind of rental.
- To analyze solutions given by Comparative Law.
- To study the state and regional competence for enacting rules concerning this figure.
- To think about the possibility of enacting a directive on vacation lodging as an instrument for promoting the development of tourism and to make the free movement of persons within the EU real and effective.

At the same time, this legal analysis effort cannot forget residential tourism which is at the basis of the problem. In this sense, it is necessary to carry on an analysis in order to determine the extent and the economic implications of this phenomenon taking into account:

- A descriptive analysis of residential tourism.
- An analysis of tourist's behavior and characters.
- An economic analysis.

**Referència:** SEJ2006-11612/JURI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El nuevo Derecho Mercantil Internacional: nueva lex mercatoria y derecho uniforme.*

**Centre:** Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** ALCOVER GARAU, Guillem.

**Categoria:** CU (àrea de coneixement: Dret Mercantil).

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Alcover Garau, Guillem	CU	1
Martínez Cañellas, Anselm M.	TU	1
Mateo Hernández, José Luis	TEU int.	1
Conde Tejón, Antonio	Aj. Dr.	1
Antich Ferrà, Amador	As.	1
Nadal Gómez, Irene	TU	0.5
Arbona Femenia, Miquel À.	As.	1
Arrom Loscos, Rosa	CEU	0.5

**EDP del grup investigador de l'entitat sol·licitant: 7.**

# **DEPARTAMENT DE DRET PÚBLIC**

**Referència:** SEJ2004-07831/JURI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El impacto de la ampliación de la Unión Europea sobre la política común de extranjería.*

**Centre:** Departament de Dret Públic. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** GARAU JUANEDA, Lluís.

**Categoria:** CU (àrea de coneixement: Dret Internacional Privat).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Garau Juaneda, Lluís	CU	1
Garau Sobrino, Federico F.	TU	0.5
Tarabini-Castellani Aznar, Margarita	TU	0.5
Álvarez Rodríguez, Aurelia	TU int.	1
Trinidad García, María Luisa	TU int.	1
Vargas Gómez-Urrutia, Marina	As.	0.5
Alcover Casasnovas, Antoni L.	TEU int.	0.5
González González, María J.	TU int.	0.5

**EDP del grup investigador de l'entitat sol·licitant: 5.5.**

**Referència:** SEJ2006-03867. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Cooperación y confrontación en el diseño de un nuevo sistema de seguridad colectiva: detección y análisis de las nuevas pautas de regulación y de institucionalización.*

**Acrònim:** CCDNSSC.

**Centre:** Departament de Dret Públic. Edifici Gaspar Melchor de Jovellanos.

**Investigadora responsable:** HUESA VINAIXA, M. Rosario.

**Categoria:** CU (àrea de coneixement: Dret Internacional Públic i R. Internacionals).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Huesa Vinaixa, M. Rosario	CU	1
Janer Torrens, Joan David	TU	1
Capellà Roig, Margalida	Aj. dr.	1
Rupérez Cornell, Pilar	TEU int.	1
<b><u>Investigadors d'altres entitats</u></b>		
Fernández Tomás, Antonio	Universitat de Castilla-La Mancha	
Sánchez Legido, Ángel	Universitat de Castilla-La Mancha	
Forcada Bayona, Ignacio	Universitat de Castilla-La Mancha	
Ortega Terol, Juan Miguel	Universitat de Castilla-La Mancha	
Martínez Carmena, María	Universitat de Castilla-La Mancha	
Soroeta Licerias, Juan	Universitat del País Basc	
Alonso Moreda, Nicolás	Universitat del País Basc	
Abalde Cantero, Óscar	Universitat del País Basc	
Bollo Arocena, María Dolores	Universitat del País Basc	
Quel López, Javier	Universitat del País Basc	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

### **Summary**

The research conducted up to now by the research team with the title "Human rights, international responsibility and collective security: intersection of systems" (BJU 2002-00559) has showed that it is not possible to face the restructuring of that system without taking into account the great human and socioeconomic challenges. However, in order to fulfil that objective the dialectic between cooperation and confrontation plays an important role. The starting hypothesis is that that confrontation in the approximation of the new challenges determines the appearance of new trends in the construction of the legal and institutional system of collective security which, necessarily, will have an impact on the features of the international legal order. It is time to analyse the trends of renovation – or new creation – of the legal and institutional structures directed to safeguard the collective security under the influence of the relationship between cooperation and confrontation. Again, the relations between different systems will conduct the methodology of the research project which, based on the collective security system, will focus on the new dimensions of human rights, development cooperation, terrorism and armamentism. The study of the relationships between all those questions should allow the research team to reach reliable conclusions

concerning the evolution of the new trends of regulation and institutionalization of the new international legal order of the XXI century.

The objective of the research project is, therefore, to give continuity to a relevant research line, conducted by a solid research team, which concerns a subject of scientific importance and daily relevance: the adaptation of the legal and institutional system of collective security to the new political, economic, ideologic, military and social challenges.



**Referència:** SEJ2006-15174-C03-02. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El derecho fundamental de la no discriminación por razón de edad: derecho interno y comunitario.*

**Acrònim:** DISCRIMEDAD.

**Centre:** Departament de Dret Públic. Edifici Gaspar Melchor de Jovellanos.

**Investigadora responsable:** BALLESTER PASTOR, María Amparo.

**Categoria:** TU (àrea de coneixement: Dret del Treball i de la Seguretat Social).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ballester Pastor, María Amparo	TU	1
Jurado Segovia, Ángel	Aj.	0.5
Llompart Bennàssar, Magdalena	TEU	0.5
Monreal Bringsbaerd, Erik	TEU	0.5
Riera Vayreda, Carlos	TEU	0.5
Tarabini-Castellani Aznar, Margarita	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant: 3.5.**

**DEPARTAMENT D'ECONOMIA APLICADA**

**Referència:** SEJ2004-06649/ECON. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.  
**Títol:** *Historia económica del turismo de masas en España, 1940-2000: Las Islas Baleares y los contrastes mediterráneos.*  
**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** MANERA ERBINA, Carles.  
**Categoria:** CU (àrea de coneixement: Història i Institucions Econòmiques).  
**Inici:** 2004. **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Manera Erbina, Carles	CU	1
Escartín Bisbal, Joana M.	TU	1
Morey Tous, Antònia	TEU	0.5
Serra Cantallops, Antoni	TU	1
Garau Taberner, Jaume	Aj.	1
 <b><u>Investigadors d'altres entitats</u></b>		
Pellejero Martínez, Carmelo	Universitat de Málaga	
Martín Rojo, Inmaculada	Universitat de Málaga	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

The project has as its principal objective to analyze the evolution of mass tourism in southern Europe and in some concrete chronological coordinates (1940-2000), with special emphasis on a region that occupies in present day a preminent position in the global tourism economy: the Balearic Islands. Its contrasts with other regional economies –as in Andalucía, also determinant in tourism economy– and in other insular mediterranean economies –in particular, that of Sicily, Sardinia, and Malta– will permit to buy those that are the transits occurring in those economic spaces, that coincide completely with one of the european development axis –Western Europe, from the Tuscan-Ligurian coast to the southern Iberian peninsula, plus the islands that form part of the partnership of the IMEDOC (Islas del Mediterráneo Occidental)–, outline the stimulated touristic typology –cultural, sun and beach, mixed components– and evaluate the threats they currently present to follow its individual development process, in that the environmental externals have a gradual crucial weight. We have to indicate that, from an evolutionary perspective, until present day this kind of analysis realised in Spain does not exist in the scope of Economic History. That's why the project raises an added value more: the beginning of a new line of investigation in our country, that centers itself in an essential way in the intervention of the regional economic processes, without eluding comparative analysis of international character.

**Referència:** SEJ2005-08783-C04-03/ECON. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.  
**Títol:** *Imposición Óptima Aplicada: una aplicación de la microsimulación.*  
**Acrònim:** IOTAMO.  
**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** SPADARO, Amedeo.  
**Categoria:** TU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2005. **Fi:** 2008.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Spadaro, Amedeo	TU	1
Oliver Rullan, Francesc	TEU	1
Rosselló Villalonga, Joan Carles	TU	1
<b><u>Investigadors d'altres entitats</u></b>		
Badenes Plà, Nuria	Universitat Complutense de Madrid	
Racionero Llorente, Maria del M.	Australina National University Canberra	
Del Rey Canteli, Elena	Universitat de Girona	
Arrondel, Luc	CNRS França	
Verdier, Thierry	Ecole des Hautes Etudes en Ciencias Sociales	

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

Several attempts were recently made at analyzing existing redistribution systems in several countries within the framework of optimal taxation theory. The basic question asked in that literature is whether it is possible to justify the most salient features of existing systems by some optimal tax argument. A key element when analyzing these issues, omitted in previous works, is the dynamical one. The economic problem behind this issue is that the agents' productivity (or any other characteristic that can influence the final outcome) evolves in time due to education decisions, learning by doing mechanisms, etc. It seems reasonable to think that this evolution is endogenous to the redistribution at each period. To our knowledge, although a lot of work has been reported on dynamical aspects of capital taxation [in line with Chamley (1986) or Judd (1985) for example], nothing seems to have been done in the direction of dynamical optimal taxation with endogenous productivities. Our research project follows this direction. The main objectives are two. First, to extend the knowledge about the effects of taxation and redistribution both from the efficiency and the equity point of view in a dynamic framework when abilities of agents are endogenous to redistribution. Second, to refine the empirical use of optimal tax theory for the analysis of real redistribution schemes. The main interest of realizing the work described in our research project consist in having a theoretical and empirical instrument allowing for a better rationalization of the debate efficiency vs. equity. This debate has important implications from economic, social and political perspectives. This project will contribute to quantify and describe the microeconomic impact of alternative redistribution schemes.

**Referència:** SEJ2005-07781/ECON. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.  
**Títol:** *Modelización de procesos periódicos autorregresivos.*  
**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** SANSÓ ROSSELLÓ, Andreu.  
**Categoria:** TU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2005. **Fi:** 2008.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Sansó Rosselló, Andreu	TU	1
<u>Investigadors d'altres entitats</u>		
Del Barrio Castro, Tomás	Universitat de Barcelona	
Pons Rotger, Gabriel	University of Copenhagen	

**EDP del grup investigador de l'entitat sol·licitant: 1.**

### **Summary**

The main purpose of this research project is to develop new methodological tools for the periodic autoregressive model. It has been shown in the literature how such stochastic process properly captures the dynamics of a wide range of seasonal economic time series. The representation of periodic processes through a multivariate model for the different seasons turns out to be very useful to discuss relevant issues like stationarity or forecasting. In addition, this multivariate treatment of the periodic autoregressive process allows extending well known methods for macroeconomic time series to periodic variables, i.e. cointegration analysis, or serial correlation common feature analysis.

The specific goals of the research project are organized in five blocks. The first part is devoted to the discussion of Johansen cointegration analysis when some observations are affected by outliers. Then, in the second part we attempt to provide statistical tests capable to detect outliers at periodically correlated time series. The third goal is to analyse the properties of the test for periodic integration of Boswijk and Franses (1996) when: 1) time series are contaminated by atypical observations and 2) when the structural breaks are present at deterministic component of the process. The fourth goal focuses in the study of cointegration relationship and common trends between periodic integrated processes. Finally, the last objective is to propose methods to restrict the periodic autoregressive model, mainly by means of reduced rank type restrictions like common deterministic component or serial correlation common features.

**Referència:** PRIB2004-10095. Conselleria d'Economia, Hisenda i Innovació.  
**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.  
**Títol:** *Modelització a partir de dades d'alta freqüència, de la relació entre el Turisme i algunes variables mediambientals i econòmiques.*  
**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** SANSÓ ROSSELLÓ, Andreu.  
**Categoria:** TU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2004.                    **Fi:** 2006.

**Referència:** PRIB2004-10142. Conselleria d'Economia, Hisenda i Innovació.  
**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.  
**Títol:** *Competitividad de regiones turísticas, restricciones medioambientales y desarrollo sostenible. El caso de Baleares.*  
**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** REY-MAQUIEIRA PALMER, Javier.  
**Categoria:** TU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2004.                    **Fi:** 2007.

# **DEPARTAMENT D'ECONOMIA DE L'EMPRESA**

**Referència:** SEJ2004-07530/ECON. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.  
**Títol:** *Gobierno de la empresa: estructura de incentivos y eficiencia de mercados.*  
**Acrònim:** GEEIEM.  
**Centre:** Departament d'Economia de l'Empresa. Edifici Gaspar Melchor de Jovellanos.  
**Investigador responsable:** CRESPI CLADERA, Rafel.  
**Categoria:** CU (àrea de coneixement: Economia Financera i Comptabilitat).  
**Inici:** 2004. **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Crespí Cladera, Rafel	CU	1
Bru Martínez, Lluís	TU int.	0.5
Calveras Maristany, Aleix	TU	1
Deyà Tortella, Bartomeu	TU	1
Lozano Arnica, Gonzalo	TU	1
Massot Perelló, M. Magdalena	TU	1
Munar Muntaner, Esperança	CEU	1
Orfila Sintés, Francesca M.	Aj. EU	1
Pascual Fuster, Bartomeu	TU	1
Pascual Gascó, Robert	TU int.	1
Solà Belda, Carles	TU	1
Barrera Barceló, Fernando	Tèc.	0.5
 <b><u>Investigadors d'altres entitats</u></b>		
Renneboog, Luc	University of Tilburg	

**EDP del grup investigador de l'entitat sol·licitant: 11.**

**Summary**

This research programme gathers an important number of researchers interested in the study and development of the competitiveness of Spanish enterprises, combining empirical analysis with a microeconomic perspective, and the application of theoretical models verified in the economic analysis. A considerable number of the researchers in the group has already an extensive experience in the research of different factors that determine the efficiency and competitiveness of the firm. Special emphasis has been given to the organisational solution the firm adopts for its internal structure (ownership structure, the role of boards, management of human resources, organisational and technological changes, R&D activities...) and also to the legal framework relevant to financial and labour issues (on one hand the relations with banks and on the other the influence of bankruptcy and company law). In the past, because of the complexity of the analysis the group has developed different complementary research lines, which this project plans to continue and extend, incorporating other related topics. In particular, we propose to deep further on the consequences that different financial and governance structures have on the efficiency of the firm, on the management of human resources and its relations to technological change and on protection given to creditors. This project also pretends to extend the research to new areas like the analysis of growth and development facing family businesses, the role of non-profit organisations competing with listed companies, and the effects that multiple goals have on good governance. However, the main effort will be on studying in depth, both from a theoretical and an empirical point of view, the principal interactions between the different factors already mentioned and their impact on the capacity of the firm to adapt to important technological changes and on the efficiency and competitiveness. In order to achieve this goal a new data set will be created with information from one thousand Spanish firms, that will be collected through personal interviews in the company.



## Participació a altres projectes

**Referència:** SEC2003-04438/ECO. Ministeri de Ciència i Tecnologia.

**Títol:** *Sistemas contables de costes completos. Integración de costes medioambientales en los informes anuales de las empresas (InCoMIAE).*

**Investigador responsable:** LARRINAGA GONZÁLEZ, Carlos.

**Centre:** Universitat de Burgos.

**Investigador de la UIB:** Llull Gilet, Antoni.

**Categoria:** TEU (àrea de coneixement: Economia Financera i Comptabilitat).

**Inici:** 2004.                    **Fi:** 2006.

**DEPARTAMENT DE FILOLOGIA CATALANA I  
LINGÜÍSTICA GENERAL**

**Referència:** HUM2006-06108/FILO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Teoría y práctica de la narrativa experimental catalana (1970-1985): análisis y estudio contextual.*

**Centre:** Departament de Filologia Catalana i Lingüística General. Edifici Ramon Llull.

**Investigadora responsable:** PONS JAUME, Margalida.

**Categoria:** TU (àrea de coneixement: Filologia Catalana).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Pons Jaume, Margalida	TU	1
Picornell Belguier, Caterina Mercè	Aj. dr.	0.5
Rosselló Bover, Pere	CU	0.5
Muntaner González, Maria	B	1
Mas Vives, Joan	CU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Martínez Gili, Raúl-David Université Paris III Sorbonne Nouvelle		

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

It is our aim in this project to investigate textual and contextual issues that led to the production of experimental narrative in Catalan between 1970 and 1985. Research will be based on *a)* analysis of a corpus of thirty novels, *b)* study and recovery of dispersed and/or unpublished narrative texts; *c)* testimony through interviews with experimental authors. With regard to production, this project intends to analyze works produced in a period which is unique because of the confluence of theory and practice: some novelists explicitly recognize the impact of critical discourses in their works (e.g. Biel Mesquida / Roland Barthes and Julia Kristeva) or approach criticism via translation (e. g. Quim Monzó / John Barth). The project will also study the historical and cultural frame that shapes and encourages narrative production: translation into Catalan of theoretical articles cultural projects in the margins of commercial publishing companies, and emergence of groups that generate their own critical production. The project intends to promote knowledge of this frame through *a)* a web page, *b)* a colloquium on experimentalism, and *c)* paper publishing (studies, text edition, testimonial documents).

**DEPARTAMENT DE FILOLOGIA ESPANYOLA, MODERNA I  
LLATINA**

**Referència:** BFF2003-06288. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Estudio de la oratoria del padre Jerónimo de Florencia (1565-1633) y edición crítica de sus sermones y oraciones fúnebres.*

**Acrònim:** ESOJEFLOREDCRISER.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigador responsable:** GARAU AMENGUAL, Jaume.

**Categoria:** TU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Garau Amengual, Jaume	TU	1
Servera Baño, Josep	CU	1
Monterrubio Prieto, Juan Miguel	TU	1
<b><u>Investigadors d'altres entitats</u></b>		
Cerdán Amorós, Francis	Université de Toulouse Le Mirail	

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The objective of this project is to undertake a study, cataloguing and critical edition of the previously unstudied sermons and funeral prayers of the Court preacher Jerónimo de Florencia (1565-1633). An important portion of this study will be dedicated to the analysis of the sermons found in Marial (1625), in panegyric sermons such as that delivered on the occasion of the beatification of Teresa de Jesús (1615) or his justly famous funeral prayers dedicated to García de Loaisa, Archbishop of Toledo (1599), to Queen María de Austria (1603), to Queen Margarita de Austria (1611), to King Felipe III (1621), to the Count of Lemos (1622) and to the Duke of Monteleón (1622). With the study of this singular and important body of work, i attempt to contribute to our understanding of sacred oratory during the reign of Felipe IV, from the perspective of a preacher very close to the seat of power.

**Referència:** BFF2003-04415. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Edición de materiales para el análisis de la autorrepresentación de la mujer en la poesía española (1939-1959).*

**Acrònim:** EMAPAUMU.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigadora responsable:** PAYERAS GRAU, Maria.

**Categoria:** TU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Payeras Grau, Maria	TU	0.5
Díaz de Castro, Francisco J.	CU	0.5
del Olmo Iturriarte, Almudena	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

### **Summary**

The project consists of the search, selection, digitalization and edition of poems that affect the self-representation of woman published by authors who occurred to know and developed a significant part of their literary production throughout the period between 1939 and 1959, in order to make a rise of textual corpus corresponding and to allow the later analysis from any possible approach.

**Referència:** HUM2004-05036/FILO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Corpus digitalizado de textos bíblicos en español antiguo.*

**Acrònim:** CORBA.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Lull.

**Investigador responsable:** ENRIQUE ARIAS, Andrés.

**Categoria:** TU int. (àrea de coneixement: Llengua Espanyola).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Enrique Arias, Andrés	TU int.	1
Bernat Vistarini, Antonio	TU	1
<b><u>Investigadors d'altres entitats</u></b>		
Matute Martínez, Cristina	Sant Louis University	
Davies, Mark	Brigham Young University	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

The objective of this project is recovering, preserving and disseminating a unique aspect of Spain's cultural heritage-its rich tradition of biblical translation-for interdisciplinary use by creating a corpus of biblical texts transcribed in a scientific and rigorous fashion so it can be also usable as a tool for linguistic and philological research. With these objectives in mind we will a) establish with accuracy the totality of the Old Spanish biblical texts transcribing with sound philological methodology unpublished texts and revising the existing transcriptions b) make available for scholars on Spanish historical linguistics a corpus of texts transcribed with reliable philological criteria and presented in a consistent form c) create an easily accessible computer application in the internet to make these digital texts available to scholars and the general public alike along with their Hebrew and Latin sources.

**Referència:** BFF2003-02586. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Edición de poéticas y de materiales para el estudio de la recepción de la poesía española entre 1939 y 2000.*

**Acrònim:** EPYMERPE.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigador responsable:** DÍAZ DE CASTRO, Francisco J.

**Categoria:** TU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Díaz de Castro, Francisco J.	CU	0.5
del Olmo Iturriarte, Almudena	TU	0.5
Payeras Grau, Maria	TU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Jiménez Millán, Antonio G.	Universitat de Málaga	
Rovira Planas, Pere	Universitat de Lleida	
Lanz Rivera, Juan José	Universitat del País Basc	
Celma Valero, María del Pilar	Universitat de Valladolid	
Iravedra Valea, Araceli	Universitat de Granada	

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

**Summary**

Constitution, study and edition of a "corpus" of poetics, reviews documents and writings towards the history and reception of Spanish poetry between 1939 and 2000.



**Referència:** HUM2005-03913/FILO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Los textos como fuente de información pragmática: estudio de la gestualidad en la antigüedad romana (II).*

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigadora responsable:** FORNÉS PALLICER, M. Antònia.

**Categoria:** TU (àrea de coneixement: Filologia Llatina).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Fornés Pallicer, M. Antònia	TU	1
Bosch Juan, M. Carme	CU	1
<b><u>Investigadors d'altres entitats</u></b>		
Quetglas Nicolau, Pere J.	Universitat de Barcelona	
Puig Rodríguez-Escalona, Mercè	Universitat de Barcelona	
Cabré Lunas, Laura	Universitat de Barcelona	
González Páez, Carmen	Universitat de Barcelona	
Gorga López, Gemma	Universitat de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

This project is embedded within the pragmatical situations and, more precisely, in the field of gesture. The goal of the present application is to continue the research initiated in 2001 under the project "Texts as a source of pragmatical information: study of gesture in the Roman Antiquity" (BFF2001-0916), which aimed at undertaking a thorough analysis of gesture in the Roman Antiquity. The amount of information gathered in this project beat our expectations and we are therefore forced to apply for its continuation. The aim of the project we are applying for is, on the one hand, to finish the study of facial gesture (up to now only gesture of the lower part of the face has been analysed) and, on the other hand, to study hand gesture in order to draw up a repertoire which covers most gesture in the Roman Antiquity. A study on gesture survival up to now will also be carried out and this will allow us to determine the origin and meaning of gesture language so characteristic of the present western culture.

**Referència:** HUM2006-11654/FILO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Edición de poéticas y de materiales para el estudio de la recepción de la poesía española entre 1939 y 2000 (cotinuación).*

**Acrònim:** EPYMERPE-C.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigador responsable:** DÍAZ DE CASTRO, Francisco J.

**Categoria:** CU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Díaz de Castro, Francisco J.	CU	0.5
Del Olmo Iturriarte, Almudena	TU	0.5
Payeras Grau, Maria	TU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Jiménez Millán, Antonio	Universitat de Málaga	
Rovira Planas, Pere	Universitat de Lleida	
Celma Valero, Pilar	Universitat de Valladolid	
Lanz Rivera, Juan José	Universitat del País Basc	
Iravedra Valea, Araceli	Universitat de Granada	

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

### **Summary**

Culmination of the edition of poetics and materials for the study of the reception of Spanish poetry between 1939 and 2000.

**Referència:** HUM2006-11438/FILO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Edición de materiales para la autorrepresentación de la mujer en la poesía española (1960-1980).*

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

**Investigadora responsable:** PAYERAS GRAU, Maria.

**Categoria:** TU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Payeras Grau, Maria	TU	0.5
Díaz de Castro, Francisco J.	CU	0.5
Del Olmo Iturriarte, Almudena	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

### **Summary**

This project aims to continue in time the one that was accepted in december 2003. For this reason the generic title is respected, and only modifies the dates that mark the chronological period of study, it's to say 20 years ahead: 1960-1980. Briefly, our project is to select, digitalise and edit poems concerning the woman's image projected by the authors that start their literary work in the period between 1960 and 1980, with the goal of making a database of textual "corpus".

**DEPARTAMENT DE FILOSOFIA I TREBALL SOCIAL**

**Referència:** BSO2003-06904-C03-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Identificación por MEG de patrones espaciales y temporales de activación de áreas cerebrales en la percepción visual compleja: hacia un modelo de la percepción estética. Aspectos evolutivos.*

**Acrònim:** IMPACT.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** CELA CONDE, Camilo José.

**Categoria:** CU (àrea de coneixement: Filosofia Moral).

**Inici:** 2003. **Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Cela Conde, Camilo José	CU	0.5
Miquel Novajra, Alexandre	TU	0.5
Riutort Serra, Bernat	TU	0.5
Valdivielso Navarro, Joaquim	Aj. EU	0.5
 <u>Investigadors d'altres entitats</u>		
Castro Nogueira, Laureano	UNED	
Candel Sanmartín, Miguel	Universitat de Barcelona	
Ruiz Altaba, Cristian	Govern Balear	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

Differences in the pattern of activation of brain areas when performing cognitive tasks of complex visual perception will be identified. Those tasks will be activated by stimuli qualified by participants as either aesthetic or not-aesthetic. The project is a continuation of a previous one that established what an 'aesthetic stimulus' is, grounding it on the preferences shown by participants. Several essays of localisation were carried out. A pilot-study in just one participant, by means of magnetoencephalography, pointed out that the main difference in activation patterns refers to the appearance of a mesocortical path. This path was present in the stimuli qualified as 'aesthetic', and it was absent in those qualified as 'non-aesthetic'. This project tries to confirm firstly the characteristics of such mesocortical path in a significant number of participants, as well as their evolutionary import. After, the project implies to perform factorial analyses introducing variables such as gender and previous training in either Art or History of Art. Finally, an evolutionary model of aesthetic perception and its brain correlates would be reached.

**Referència:** BFF2003-08156. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Antecedentes hispanos del método de la Janua Linguarum de Comenio.*

**Acrònim:** AMEJALINCOM.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** TORRES MARÍ, Francesc.

**Categoria:** TU (àrea de coneixement: Filosofia).

**Inici:** 2003.                      **Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Torres Marí, Francesc	TU	1
Llinàs Begon, Joan Lluís	As.	0.5
 <u>Investigadors d'altres entitats</u>		
Urbanek, Wladimir	Acadèmia de Ciències de Txèquia	
Benes, Jiri	Acadèmia de Ciències de Txèquia	

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

#### **Summary**

The aim is to investigate the sources of Comenius' *Janua Linguarum*, mainly the influence of the *Janua salmantina* and the connection between the reform of language and the social reform. We will study the influence of the utopian lulistic literature in the Renaissance and Barroc on the *Janua Linguarum*.

**Referència:** HUM2004-02295/FISO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Ruptura de la tradició. Nihilismo y transformación del tiempo y de la memoria en la formación de la consciencia actual.*

**Acrònim:** RDLT.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** AMENGUAL COLL, Gabriel.

**Categoria:** CU (àrea de coneixement: Filosofia).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Amengual Coll, Gabriel	CU	0.5
Vermal Beretta, Juan Luis	TU	0.5
Cabot Ramis, Mateu	TEU	1
Pascual Sastre, Sebastià M.	TEU	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The project's objective is to shed light on the profound change in the formation of the conscience of our time resulting from the radical modification of its relation with tradition. The rupture of tradition occurs throughout the second modernity and becomes a foundational element of the conscience of our time that is apparent in its characterizations with adjectives preceded by post- or with expressions beginning with "end of" or "death of." "Rupture of Tradition" is thus meant to convey that tradition is not in effect, does not direct or orient, and is not transmitted.

This phenomenon is best expressed in nihilism and in W. Benjamin. In F. Nietzsche (1844-1900), nihilism takes the form of a breach of history which starts with Plato and the search for a new beginning with a return to the pre-Socratic origins of philosophy. M. Heidegger (1889-1976) revisits Nietzsche's nihilism in search of its essence with the objective of overcoming it. The work of W. Benjamin (1892-1940) clearly exposes a crisis of historic conscience, both by referring to the breach and the search for a new access to it, and by its new understanding of aesthetics and culture.

We intend, in studying these authors, to compare their analyses and to identify contact points in their approaches and their proposals: for instance, their focus on decisive issues of our conscience, such as the creation of identity and the foundation of values, the relation with the past, their criticism of historicism, hermeneutics and narrative, their concept of the future, etc.

**Referència:** SEJ2004-04197/CPOL. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Globalización, legitimidad democrática y sostenibilidad: crisis del estado del bienestar, cambios en la sociedad del trabajo y consecuencias de la modernidad.*

**Acrònim:** GLDS.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** RIUTORT SERRA, Bernat.

**Categoria:** TU (àrea de coneixement: Filosofia moral).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Riutort Serra, Bernat	TU	1
Miquel Novajra, Alexandre	TU	0.5
Carbonero Gamundí, M. Antònia	TU	0.5
Valdivielso Navarro, Joaquim	Aj. EU	0.5

**EDP del grup investigador de l'entitat sol·licitant: 2.5.**

### **Summary**

The GLDS proposal seeks to develop and address the categories since which precedent projects have driven the research: justice, social change, constrains of Welfare State and sustainability in advanced societies. In this new stage of the research we consider the problems generated by changes in *politics* and *policy* to democratic legitimation in the age of globalisation: global environmental change, the consequences of last modernity, mutation in labour society and welfare regimes, limitations of social citizenship, and deficits in economic and social scope of State faced to social and environmental sustainability challenges. The GLDS proposal keeps on the characteristic approach of the research team. On one hand, it combines the philosophical, epistemological and counter-factual dimensions with some conceptual contribution from social sciences -mainly sociology, anthropology, political science and economy. On the other, such theoretical analysis are applied to the specific reality of Balearic and Spanish societies as well similar issues posed by European integration and by current social and political restructuring in Ibero-American countries.



**Referència:** HUM2005-07168/FISO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *La función de los valores en la ciencia reguladora.*

**Acrònim:** FVCR.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** LUJÁN LÓPEZ, José Luis.

**Categoria:** TU (àrea de coneixement: Lògica i Filosofia de la Ciència).

**Inici:** 2005. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
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Luján López, José Luis	TU	0.5
Todt, Oliver	Aj. Dr.	1

**Investigadors d'altres entitats**

Rodríguez Alcázar, Francisco Javier    Universitat de Granada

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

**Summary**

The main purpose of this research project is to formulate a model of methodological learning for regulatory science. This model will be achieved through the analysis of a) the function played by values (epistemic and non-epistemic) in science and b) the directives employed by regulatory agencies regarding standards of proof and rules of inference. The changes in these directives will be conceptualized like instances of methodological change. The learning model proposed (based in the interplay between values, substantive contents of scientific knowledge and methodologies) must be compatible with the discovered methodological changes.

**Referència:** HUM2005-07398/FISO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *Edición, con traducción, estudios y notas de 'Vida y doctrina de los filósofos ilustres' de Diogenes Laercio.*

**Acrònim:** ETENVDFIDL.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** CASADESÚS BORDOY, Francesc.

**Categoria:** TU (àrea de coneixement: Filosofia).

**Inici:** 2005. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Casadesús Bordoy, Francesc	TU	0.5
Megino Rodríguez, Carlos	B	0.5
Bordoy Fernández, Antoni	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Bares Partal, Juan de Dios	Universitat de València	
Román Alcalá, Ramón	Universitat de Córdoba	
Zamora Calvo, José María	Universitat Autònoma de Madrid	
Domínguez García, Vicente J.	Universitat d'Oviedo	
González Escudero, Santiago	Universitat d'Oviedo	

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

### **Summary**

This project aims to elaborate an edition with translation, commentaries and notes of the 'Diogenes Laertius life and doctrines of the eminent philosophers'. Moreover, it is aimed to make an exhaustive analysis which takes into account the following aspects: (a) a structural analysis of the book, (b) a study of the philosophical and (c) the comparison of the information given by Diogenes Laertius with other sources to establish reliable criteria. The book will be translated into Spanish and a computerized terminological index will be elaborated. Moreover, a database will be created and it will include the most relevant works of Diogenes Laertius, which will be sorted according to the main topics. The final aim is to obtain a complete and rigorous edition of this work, which is basic to know the Greek philosophy. It is important to remark that this work has not been scientifically studied in Spain yet. Our study will become a point of reference for other scholars.

**Referència:** HUM2006-12284/FISO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *El principio de precaución en la evaluación de riesgos.*

**Acrònim:** PPER.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** LUJÁN LÓPEZ, José Luis.

**Categoria:** TU (àrea de coneixement: Lògica i Filosofia de la Ciència).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Luján López, José Luis	TU	1
López Puertas, Ginés	As.	0.5
Todt, Oliver	Aj. Dr.	1
<b><u>Investigadors d'altres entitats</u></b>		
Rodríguez Alcázar, Francisco J.	Universitat de Granada	

**EDP del grup investigador de l'entitat sol·licitant: 2.5.**

### **Summary**

The main purpose of this research project is to analyze and value the implications of the precautionary principle for risk assessment. These implications will be analyzed according to the type of methodological shifts involved in risk assessment. This shifts on standards of evidence; on modifications on rules of inference; on proposals to incorporate new evidence sources; on proposals of new lines of scientific research about risks; and on heuristic proposals

**Referència:** HUM2006-11482/FISO. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'humanitats.

**Títol:** *La comunidad judía de Amsterdam y Spinoza. Examen y edición de textos filosóficos escritos en castellano en la comunidad de Amsterdam del XVII contra Spinoza.*

**Acrònim:** JCA.

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** BELTRAN MUNAR, Miquel Antoni.

**Categoria:** TEU (àrea de coneixement: Filosofia Moral).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Beltran Munar, Miquel Antoni	TEU	1
Llinàs Bégon, Joan Lluís	As.	0.5
Fullana Pastor, Guillermina	B	1

**EDP del grup investigador de l'entitat sol·licitant:** 2.5.

### **Summary**

The aim is to study the philosophical treatises written in Spanish by some political and religious leaders of the Jewish community of Amsterdam during the XVIIth century. Some of these treatises were directly written against Spinoza through attacks to some of his followers (and also the excommunications which happened before Spinoza's own (it's the case of Uriel da Costa), we will try to understand the mechanisms of excommunication in the community of those who tried to recover the true traditions). Our intention is to prove that the leaders of the community tried to preserve political stability by renouncing to the principles of true orthodoxy, introducing religious dogmas not belonging to original Judaism. We'll do it through the research about the content of those treatises (works written by Menasseh ben Israel, Saul Leví Morteira, Abraham Gomes Sylveira, Orobio de Castro, Abraham Pereyra or Miguel de Barrios on philosophical matters). Such a research, followed by the edition of some of the manuscripts, as the "Certamen Philosophico contra Bredenburg", by Orobio de Castro, or some first editions, like "De la Fragilidad Humana", by Menasseh ben Israel, or the "Esfuerzo Harmonico", by Miguel de Barrios will allow us to prove that the ban against Spinoza was the result of the philosopher's fight against the voluntary misunderstanding that the leaders of the community instigated of the principles of Judaic law and religious orthodoxy, supplanted as their main interest by the desire of political stability.

**Referència:** PRIB2004-10057. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Proyecto de localización de los orígenes de la cultura material en el Mioceno Superior africano.*

**Centre:** Departament de Filosofia i Treball Social. Edifici Ramon Llull.

**Investigador responsable:** CELA CONDE, Camilo José.

**Categoria:** CU (àrea de coneixement: Filosofia Moral).

**Inici:** 2004.                   **Fi:** 2006.

# **DEPARTAMENT DE FÍSICA**

**Referència:** REN2003-09435. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *Salidas de modelos de mesoscala a alta resolución: verificación y uso en cartografía climática.*

**Acrònim:** VERIMESO/CLI.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CUXART RODAMILANS, Joan.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cuxart Rodamilans, Joan	Investigador	0.5
Alonso Oroza, Sergio	CU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Guijarro Pastor, José Antonio	Institut Nacional de Meteorologia	
Terradellas Jubanteny, Enric	Institut Nacional de Meteorologia	

**EDP del grup investigador de l'entitat sol·licitant:** 1.

### **Summary**

Meteorological case-studies through high-resolution mesoscale modeling is common today. Every simulation generates a large amount of numerical information, that is usually under-exploited, whereas the results are used in graphical mode and evaluated in a subjective manner.

However, to employ this quantitative information for other uses, it must be verified against observations. This is a difficult subject at high-resolution, since the model often has much larger resolution than the available observational net. The same problem is undertaken when dealing with two or more models that have to be intercompared. Each model should be verified individually and the comparison should be made through objective indexes. In this project, the outputs of two high-resolution non-hydrostatic mesoscale models (Meso-NH and MM5) will be used as test cases for several verification methods. The chosen cases will be for weak synoptic pressure gradients, when the parameterizations of turbulence and surface processes are extremely important. We will concentrate on the object-oriented verification methods through the use of the 2D wavelet transform to identify structures and estimate errors parameters depending on the scale. The verification will be made against instrumental observational data and also using high-resolution satellite information (starting from 1 km) for irradiance and derived fields.

On the other hand, the high-resolution numerical fields will be used as initial guesses in multiple regression models for the making of high-resolution regional climatic cartography, together with the standard low-resolution climatological information, in order to generate more detailed spatial information for a given climatological state. As better verified fields become available, new cartography will be generated.

**Referència:** TIC2003-01075. Ministeri de Ciència i Tecnologia.

**Modalitat:** Tecnologies de la informació i les comunicacions.

**Títol:** *Desarrollo de nuevas estrategias de test para circuitos integrados CMOS RF.*

**Acrònim:** DET-CIRF.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** GARCIA MORENO, Eugeni.

**Categoria:** CU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Garcia Moreno, Eugeni	CU	1
Bota Ferragut, Sebastià A.	TU	0.5
Isern Riutort, Eugeni Miquel	TU	0.5
Rosselló Sanz, Josep Lluís	TEU int.	0.5
Font Rosselló, Joan	TEU	1
Calvo Ibáñez, Óscar Alberto	TEU int.	0.5
Picos Gayà, Rodrigo	P. Col.	1
Coll Mayor, M. Dèbora	P. Col.	1
<b><u>Investigadors d'altres entitats</u></b>		
Sicard, Etienne	INSA Toulouse	
Delmas-Bendhia, Sonia	INSA Toulouse	
Sainz Gómez, José Antonio	Universitat del País Basc	
Aguado Rodríguez, Luís Ángel	Universitat del País Basc	
Gil-García Leiva, José Miguel	Universitat del País Basc	
Oterino Echávarri, Fernando	Universitat del País Basc	
Sánchez Etchegaray, Jesús M.	Universitat del País Basc	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

Wireless communications, either replacing wired solutions or creating new applications, have suffered a great expansion during last years. This development has been possible thanks to the digital signal processing advances allowed by the CMOS VLSI technology, though the RF stage of the today's transceivers uses other technologies (SiGe BICMOS, GaAs). Next transceivers generation devoted to low-performance and low cost applications, such as WLAN or Bluetooth, would be manufactured in CMOS. It means that RF building blocks like LNA, VCO, mixers, PLL, or power amplifiers will be designed in this technology. For these CMOS RF circuits it will be necessary to develop new test strategies.

Functional test of these circuits is expensive in terms of time and test equipment, so the main goal of our project is to explore the possibilities of adopting strategies for parametric and structural test based on monitoring the supply current. To achieve this aim we have to determine previously the correlation between electrical performances (functional test) and the test observable chosen, the supply current. Given the difficulties to characterize the electrical performances of these blocks by using off chip measurement techniques, a different approach based on including some monitor blocks inside the chip in order to simplify the task is proposed. Finally it will be necessary to implement current sensors with the appropriate sensitivity to not damper the fault coverage without impacting the performances of the circuit under test.



**Referència:** AYA2003-00123. Ministeri de Ciència i Tecnologia.

**Modalitat:** Astronomia i astrofísica.

**Títol:** *Oscilaciones en estructuras magnéticas de la corona solar.*

**Acrònim:** OSOCO.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** BALLESTER MORTES, Josep Lluís.

**Categoria:** CU (àrea de coneixement: Astronomia i Astrofísica).

**Inici:** 2003. **Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Ballester Mortes, Josep Lluís	CU	1
Oliver Herrero, Ramon	TU	1
Carbonell Huguet, Marc	CEU	1
Arregui Uribe-Echevarría, Iñigo	Aj. EU	1
Diaz Medina, Antonio Jesús	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Terradas Calafell, Jaume	Catholic University of America	

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

The research Project we propose belongs to the research area known as Seismology of the Solar Corona. The main aim of coronal seismology is to use the oscillations detected in coronal structures as a tool to perform a diagnostic of the physical conditions of those structures and, in general, of the solar corona. Then, if we are able to obtain a deep knowledge about the oscillatory properties of accurate theoretical models of coronal structures, we can compare our predictions with observations, to establish a feed-back allowing to reach a perfect agreement between theory and observations. The main goal of the Project is to increase our knowledge about the oscillations of coronal magnetic structures, such as coronal loops, magnetic arcades and prominences, and its interpretation in terms of magnetohydrodynamic (MHD) waves. The Project is composed of a theoretical part, whose aim is to continue the study of the MHD modes of oscillations of coronal structure models, an observational part, whose aim is to obtain data about the oscillations of solar prominences using THEMIS, the third part deals with the analysis of observational data, coming from the data archives of SOHO and TRACE, with techniques implemented within our research group, and the last part is computational, with the aim of developing an already existing numerical code, in order to be used in more complex theoretical studies. The main objectives of the research Project are: (1) Theoretical study of the MHD modes of oscillation of sheared coronal magnetic arcades; (2) Theoretical study of the spatial and temporal damping of oscillations produced by non adiabatic MHD waves; (3) Theoretical study of the MHD modes of oscillation of multifibril prominences structures; (4) Data analysis of coronal loop oscillations by means of Empirical Mode Decomposition (EMD) and Complex Empirical Orthogonal Function (CEOF); (5) Analysis of observational data about prominence oscillations obtained with THEMIS telescope; (6) Development of an MHD numerical code suitable to study the MHD modes of oscillation of coronal magnetic structures.

**Referència:** FPA2004-03666. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de física.

**Títol:** *Fuentes de ondas gravitacionales.*

**Acrònim:** FOG.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** BONA GARCIA, Carles.

**Categoria:** CU (àrea de coneixement: Física Teòrica).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Bona Garcia, Carles	CU	0.5
Carot Giner, Jaume Jesús	TU	0.5
Mas Franch, Lluís	CU	0.5
Sintes Olives, Alícia Magdalena	TEU	0.5
Stela Fiol, Joan	TU	0.5
Palenzuela Luque, Carlos	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Husa, Sasha	Max-Plank-Institut für Gravitationsphysik	
Luan Bennásar, Manuel	Observatori de Mallorca	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

We propose to develop a cross-disciplinary project, 'Sources of Gravitational Waves', aimed at developing an understanding of some of the most exotic phenomena believed to exist in the Universe: Black Holes, Neutron stars and Gravitational Waves.

Anticipated for over 30 years, a number of European (GEO600, VIRGO) American (LIGO) and Japanese (TAMA) Gravitational Waves Observatories are now for the first time taking data. This implies an extreme urgency for the scientific community to both study realistic sources of Gravitational Waves and predict the signals they will produce on the detectors. The project will address this priority issues

By incorporating the most recent theoretical developments (constraint control, closeup boundary conditions, etc) in order to allow realistic simulations within the resolution and computer power limitations of present day computers.

By integrating in the team data analysis experts who are working to design algorithms based on such simulations.

By providing our group expertise and proven ability in training young researches in this emergent field.

**Referència:** CGL2005-07105-C03-01/CLI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Transcla parte III: Estudio de procesos por simulación numérica explícita y de mesoscala y su verificación.*

**Acrònim:** TRANSCLA.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CUXART RODAMILANS, Joan.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2005.                      **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
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Cuxart Rodamilans, Joan	Inv.	1
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**Investigadors d'altres entitats**

Conangla Triviño, Laura	Universitat Politècnica de Catalunya
Mahrt, Larry	Oregon State University
Jonker, Harmen	Technical University of Delft

**EDP del grup investigador de l'entitat sol·licitant: 1.**

**Referència:** CGL2005-05681/CLI. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos naturals.

**Títol:** *Aplicación de técnicas de predicción por conjuntos a episodios meteorológicos de gran impacto en el mediterráneo occidental.*

**Acrònim:** ENSEMBLE.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** HOMAR SANTANER, Víctor.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
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Homar Santaner, Víctor	Investigador	1
Ramis Noguera, Climent	TU	0.5
Martín García, Alberto	B	1

**Investigadors d'altres entitats**

Genovés Terol, Ana	Institut Nacional de Meteorologia
Campins Pons, Joan	Institut Nacional de Meteorologia
García-Moya Zapata, José A.	Institut Nacional de Meteorologia
Santos Burguete, Carlos	Institut Nacional de Meteorologia

**EDP del grup investigador de l'entitat sol·licitant: 2.5.**

**Summary**

Each year, high impact weather episodes affect the Western Mediterranean basin and still numerical models do not provide reliable forecast to forecasters, even for short lead-times (0 to 48 hours). The problem of predicting these episodes is even more difficult when low frequency extreme phenomena such as torrential floods, large hail, strong winds or tornadoes are analyzed. The lack of good severe weather forecasts and the necessity to devote weather research resources to improve them is urged by international projects MEDEX and THORPEX of the World Research program, endorsed by the World Meteorological Organization. Despite the ever-improving quality of the models initial conditions datasets (derived from better observations and analysis techniques) uncertainties in the forecast system exist. How and why errors evolve in the short-term numerical forecast of high impact weather episodes are important questions that require the use of new methods to improve the estimation of potentially hazardous weather cases in the forecast.

The ENSEMBLE project suggests using ensemble prediction systems (EPS) to tackle this problem in the Western Mediterranean. The EPS have been used at the major weather prediction facilities in the world to account for the uncertainties in the medium-range numerical prediction (3 to 15 days). However, the generation, interpretation and application of short-range mesoscale EPS is still currently explored. ENSEMBLE suggests exploring a set of EPS generation techniques focusing on extreme events in the Western Mediterranean, with special emphasis on techniques that use sensibility fields from lineal adjoint models. On the other hand, several postprocessing techniques that allow one to customize the use of EPS to the statistical forecast of extreme low-frequency events, responsible of the greatest human activity perturbators, will be explored.

Furthermore, as an additional benefit from the proposed project, a climatology of sensitivity fields will be built, that will complement the existing MEDEX and MEDEXIB (from this same *Plan Nacional*) climatology of severe weather cases. Real-time scientific support for the special observations periods within MEDEX is also included in the ENSEMBLE work plan. ENSEMBLE is aimed at improving the forecast of high-impact weather events by using ensemble prediction systems. The specific objectives of the project are: 1) Study the predictability and the sources of error in mesoscale numerical models in the Western Mediterranean, 2) Determine the optimal EPS generation method for the region, 3) Develop postprocessing techniques focused on severe weather in the region and 4) Implementation of the results in the INM operational framework, as well as in the UIB for academic and research purposes.

The ultimate beneficiaries of the results achieved in the project are the people threatened by severe weather episodes in the western Mediterranean basin. The new developments and conclusions obtained from the project will be directly transferred to the *Instituto Nacional de Meteorología* not only as a clear interested in the project but also as an active part in the research tasks. The use of probabilistic forecasts will be of considerable value to various economic sectors such as the energy, hydrologic, agriculture or aviation.

**Referència:** CGL2005-03918/CLI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Diseño de técnicas dinámico-estadísticas para la predicción de precipitación y ciclones mediterráneos.*

**Acrònim:** PRECIOSO.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ROMERO MARCH, Romualdo.

**Categoria:** TU (àrea de coneixement: Física de la Terra, Astronomia i Astrofísica).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Romero March, Romualdo	TU	0.5
Alonso Oroza, Sergio	CU	0.5
Ramis Noguera, Climent	TU	0.5
De Luque Sölheim, Ángel Luis	Aj.	0.5
Fita Borrell, Lluís	B	1
Amengual Pou, Arnau	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Jansà Clar, Agustí	Institut Nacional de Meteorologia	
Campins Pons, Joan	Institut Nacional de Meteorologia	
Picornell Alou, M. Àngels	Institut Nacional de Meteorologia	
Pons Reynés, M. Rosa	Institut Nacional de Meteorologia	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

### **Summary**

The western Mediterranean is a very cyclogenetic area and many of the cyclones developed or modified over that region are associated with high impact weather phenomena that affect the society of the coastal countries, very especially heavy precipitations. Both the international WWRP-WMO MEDEX project and the national MEDEXIB project, led by the Meteorological Centre of INM at the Balearic Islands (CMTIBAL) and the Meteorology Group of UIB, respectively, have formulated as their main objective the study of the structure and predictability of Mediterranean cyclones that produce hazardous weather and high social impact, by means of the construction of a dynamical climatology of cyclones and the assessment of the physical and dynamical factors that influence their genesis and evolution. Their final aim is to improve the short and mid-range numerical forecasts of cyclones based on the optimization of the observational resources and thus the construction of better initial states for numerical weather prediction models.

This new proposal (PRECIOSO) is complementary to the previous projects since it is also built from a better understanding of the physical and dynamical mechanisms that define the mediterranean precipitation and cyclones. But at the same time it is a natural continuation of the former projects, in that it puts the emphasis on probabilistic predictions rather than on deterministic ones, aware of the intrinsic uncertainty of any forecast system. It is also recognised the specific complexity of the precipitation variable, which spatial, temporal and quantitative details are so crucial for successful hydrologic simulations, a key tool in flood watching tasks. The specific objectives of the project are:  
a) Design of dynamical techniques for weather forecasting based on the generation of mesoscale ensembles using the non

hydrostatic MM5 model under varying physical parameterizations and initial conditions, b) Design of statistical techniques for the postprocess of meteorological numerical outputs in order to obtain improved precipitation fields (superensemble method, analogue procedure and neural network), c) Coupling of the HEC-HMS hydrological model to the different precipitation outputs, and d) Operational (daily) implementation of the above techniques in the computer systems of the group and dissemination of the results on the web at <http://mm5forecasts.uib.es>.

Despite the objectives of the project are constructed and tested taking as reference the cyclone and precipitation situations in the Mediterranean owing to its strong social impact, forecasting applications in contiguous regions and for other atmospheric circulation features are in fact considered in the proposed methodology. The real-time results that are pursued within the full prediction system and the expected benefits on the quality of the hydro-meteorological forecasts would remain entirely available to the Instituto Nacional de Meteorología in light of the agreement of scientific collaboration between the Ministerio de Medio Ambiente (which the INM belongs to) and the UIB, signed in July 2001, as well as to the agents involved in Civil Protection and similar tasks.

**Referència:** TEC2005-07799-C02-01/MIC. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de tecnologies electrònica i de comunicacions.  
**Títol:** *Dinámica y sincronización de láseres de semiconductor y aplicaciones.*  
**Acrònim:** LASEA.  
**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.  
**Investigador responsable:** MIRASSO SANTOS, Claudio Rubén.  
**Categoria:** TU (àrea de coneixement: Física de la Matèria Condensada).  
**Inici:** 2005. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Mirasso Santos, Claudio Rubén	TU	0.5
Colet Rafecas, Pere	Científic titular	0.5
Alessandro Scirè	Inv.	1
Montbrió Fairen, Ernest	Aj.	1
Jacobo, Adrián	B	1
Pérez López, Antonio	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Fischer, Ingo	Free University of Brussels	
Larger, Laurent	University of Franche-Comté	
Lin, Fan-Yi	National Tsing Hua University	

**EDP del grup investigador de l'entitat sol·licitant: 5.**



**Referència:** TEC2005-05712/MIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies electrònica i de comunicacions.

**Títol:** *Análisis estadístico de parámetros en circuitos digitales CMOS nanométricos: aplicación a métodos de diseño y test.*

**Acrònim:** ANESPA.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SEGURA FUSTER, Jaume Agapit.

**Categoria:** TU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Segura Fuster, Jaume Agapit	TU	1
Roca Adrover, Miquel Jesús	TU	1
Isern Riutort, Eugeni Miquel	TU	0.5
Bota Ferragut, Sebastià A.	TU	0.5
Rosselló Sanz, Josep Lluís	TEU	0.5
de Benito Crossetti, Carola	TEU	1
Alorda Ladaria, Bartomeu	P. col.	1
Rosales Palou, Marcos	B	1
Canals Guinand, Vicenç	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Hawkins, Charles	University of New Mexico	
Renovell, Michel	LIRM-CNRS	
Comte, Mariane	LIRM-CNRS	

**EDP del grup investigador de l'entitat sol·licitant: 7.5.**

### **Summary**

Technology scaling has surpassed the 100nm barrier and is now rapidly evolving to the 65nm technological node. One of the challenges of today's technology scaling is related to controlling geometric critical dimensions, not only from die-to-die. The impact of poor critical dimensions control results in parameter variations of devices and interconnect. Moreover, recent results point that the relative impact of within-die variations is of the same order than die-to-die variations. Within die variations have a significant impact on present design and test methods, since many of the physical-to-electrical relationships at the circuit level are not deterministic anymore. This poses important challenges in specific design steps (lime critical path determination) and impacts the development of efficient test methods based on non-logical parameters. This is motivated by two main reasons: the lack of appropriated models to describe variation, and the difficulty in settling pass-fail limit regions in a noisy environment. The lack of appropriated statistical models has an impact on the development of appropriated design and test methods that must rely on worst-case desing techniques. The objective of this project is the development of efficient statistical models fort he key circuit parameters (design, power, and temperature) where the pas/fail region limit is settled according to such statistical models. Another objective of the project is to include the impact of noise mechanisms and environmental fluctuations (temparature and supply voltage) in the models to describe their effect on variation. Once the models are obtained they will be applied to the development of the parametric-based test methods.

**Referència:** MAT2005-00093. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de materials.

**Títol:** *Nuevas aleaciones ferromagnéticas con memoria de forma: interacciones magneto-elásticas, efectos microestructurales, estabilidad y características funcionales.*

**Acrònim:** NAFMEF.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** PONS MORRO, Jaume.

**Categoria:** TU (àrea de coneixement: Física Aplicada).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Pons Morro, Jaume	TU	1
Cesari Aliberch, Eduard	CU	1
Seguí Palmer, M. Concepció	TU	1
Picornell Alou, Catalina	CEU	1
Santamarta Martínez, Rubén	Aj.	1
Kustov, Sergey	Inv.	1
Masdeu Mayans, Francesc	B	1

**Investigadors d'altres entitats**

Muntasell Pla, Joaquim	Universitat Politècnica de Catalunya
Font Ferrer, Joan	Universitat Politècnica de Catalunya
Chernenko, Volodymyr	Institute of Magnetism (Ucraïna)
Ochin, Patrick	Centre d'Etudes de Chimie Métallurgique (França)

**EDP del grup investigador de l'entitat sol·licitant: 7.**

### **Summary**

The proposed project involves the investigation of fundamental and functional properties of new ferromagnetic shape memory materials (FSMA). The fundamental part of research is concentrated on studying coupling between magnetic and elastic domain systems, using a new experimental approach based on simultaneous studies of non-linear mechanical and magnetic response of the FSMA to applied cyclic stress, and on the effects of a large variety of microstructural characteristics on the mobility of martensite boundaries. In parallel, the present project includes the development of new FSMA (mainly Ni-Fe-Ga and Co-Ni-Al) by an exhaustive study of microstructural modifications (generation of  $\gamma$ -phase precipitates, grain size and atomic ordering changes) introduced in these alloys after a variety of thermal treatments. The effect of these microstructures on the magnetic and martensitic transformations, and on the mechanical and functional properties (conventional and magnetic shape memory effects, superelasticity) will be also studied.

The fundamental part of the project will bring about a better understanding of the magnetic shape memory effect shown by these materials (which is directly related to the mobility of martensite variants). On its turn, thermal treatments suitable to generate microstructural features with positive effects on the magnetic or martensitic transitions and functional properties are expected to be found during the development of the new FSMA. Altogether brings about good expectations about transfer, at medium term, of the results of the project to the improvement of the commercial applications of these materials.

**Referència:** FIS2005-02796. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de física.

**Títol:** *Información cuántica y dinámica electrónica en nanoestructuras.*

**Acrònim:** INDINA.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** CASAS AMETLLER, Montserrat.

**Categoria:** CU (àrea de coneixement: Física Atòmica, Molecular i Nuclear).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Casas Ametller, Montserrat	CU	1
Garcias Gomila, Francesca	TU	1
Serra Crespí, Llorenç	TU	1
Puente Ferrà, Antoni	TU	1
Nazmitdinov, Rachid	Inv.	1
López Gonzalo, M. Rosa	Inv.	1
Sánchez Martín, David	Inv.	1
Batle Vallespir, Josep	B	1

**Investigadors d'altres entitats**

Plastino, Ángel Luis      Universitat Nacional de La Plata (Argentina)

**EDP del grup investigador de l'entitat sol·licitant: 8.**

### **Summary**

The main purpose of the present project is to perform a systematic analysis of the time evolution of entangled states in bipartite and multipartite systems with and without interaction by a systematic survey of pure and mixed states in the Hilbert space of two-qudits (dimension  $D \times D$ ) and  $N$ -qubits using several quantitative entanglement measures. The influence of the effect of different metrics on the Hilbert space in the state simulation will be analyzed, paying special attention to the case of indistinguishable particles (fermions and bosons). The effect of interaction with the environment will be analyzed a) for multipartite systems as a function of the qubit number, and b) in several quantum algorithms as they evolve with the number of iterations. The purity of entanglement will be used in spin particle systems as a measure of entanglement and we will consider as well their application to quantum phase transitions.

We shall investigate the use of coupled quantum dots acting as quantum gates by means of numerical simulations in coordinate space and real time. We shall study the coherence time of the entangled states obtained in these systems as well as the influence upon them of different items, namely a) the spin-orbit interaction, b) the magnetic field, and c) time dependent electric fields. In double quantum dots we shall analyze the collective modes and the corresponding symmetry restoring using the RPA theory and their extension to finite temperature. We will extend our study to the case where the Kondo correlations become important in the electronic transport. In double quantum dots we analyze the competition between the Kondo effect and the Ruderman-Kittel-Kasuya-Yoshida (RKKY) interaction in the presence of a magnetic field. We will compare our theoretical results with those experimentally obtained in, e.g., carbon nanotube quantum dots. We will also study the two-impurity Kondo problem when the contacts are superconductors and then a source of entangled states. We will propose a new setup composed by quantum dots to observe the

multi-channel Kondo effect. The spintronic transport will be addressed by attaching real ferromagnets to a quantum dot in the Kondo regime when the spin-orbit interaction is present. Our interest is not only focused on the linear and nonlinear conductance but also on the shot noise in hybrid (normal, ferromagnetic or superconducting contacts) multiterminal quantum dots in both Coulomb blockade and Kondo regimes. We will end up with the study of the influence of either vacuum fluctuations of collective bosonic excitations (magnons) in the Kondo effect (Fermi-Bose-Kondo model) and in two-level systems (qubits).

We hope that our results will shed some light on the applications of electronic nanostructures as quantum gates, which constitute a subject of great interest in the field of quantum computation and as elements of spintronic and low dimensional circuits.

**Referència:** TEC2006-04103/MIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies electrònica i de comunicacions.

**Títol:** *Técnicas de test predictivas para circuitos integrados CMOS análogos.*

**Acrònim:** PREDICT.

**Centre:** Departament de Física. Edifici Anselm Turmeda.

**Investigador responsable:** GARCIA MORENO, Eugeni.

**Categoria:** CU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Garcia Moreno, Eugeni	CU	1
Bota Ferragut, Sebastià	TU	0.5
Isern Riutort, Eugeni	TU	0.5
Rosselló Sanz, Josep Lluís	TEU	0.5
Font Rosselló, Joan	TEU	1
Picos Gayà, Rodrigo	P. col.	1
Suinaga Portugués, Kay	B	1

**EDP del grup investigador de l'entitat sol·licitant: 5.5.**

### **Summary**

Among the difficult challenges for the next years cited in the International Technology Roadmap for Semiconductors (ITRS) of 2004, within the test chapter it is explicitly said that "Analog DFT (design for test) and BIST (built in self test) techniques must mature to simplify test interface requirements and slow ever increasing instrument capability trends". Our project is addressed to this and other related issues, by exploring the so-called predictive test technique. In the predictive test technique, deciding if a circuit is good or not is done on the basis of its functional characteristics, though they are not directly measured. They are predicted from measurements on test mode through a set of correlation functions obtained by simulation and statistical analysis. Therefore the tolerance bands can be established in a more realistic way than in the structural test, and it is also possible to classify the circuit according to the degree of accomplishment of its ideal functionality. This technique has the advantage over the functional test of being less demanding on test effort and test equipment capabilities, if the test mode and the test measurements are appropriately selected. The goal of this project is to evaluate the potentiality of this technique to be used in analog circuits, checking it against both structural and functional test techniques. We wish to propose application solutions combined with current supply monitoring. To evaluate it, we will use standard CMOS circuits (because this is the choice technology for integrated circuits), at first for RF applications (mixers and low noise amplifiers) but we aim to explore other possibilities (amplifiers and filters of low power and low supply voltage).

**Referència:** TRA2006-13318. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de medis de transport.

**Títol:** *Inspección autónoma de oleoductos, gasoductos, emisarios y cables submarinos.*

**Acrònim:** IOGECS.

**Centre:** Departament de Física. Edifici Anselm Turmeda.

**Investigador responsable:** CALVO IBÁÑEZ, Óscar Alberto.

**Categoria:** TEU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2006.

**Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Calvo Ibáñez, Óscar Alberto	TEU	1
Acosta Lazo, Gerardo	B	1
Curti, Hugo	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Lane, Dave	Heriot-Watt University (Regne Unit)	
Evans, Jonathan	Heriot-Watt University (Regne Unit)	

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The purpose of this project is to develop reliable tracking and inspection systems for submarine pipelines and cables, employing autonomous underwater vehicles (AUVs). Also, the vehicle is expected to perform debris field identification and mapping of fishing nets, anchors, mines, and others debris that can affect the installation security. Once these objects are recognized from the seabed, the AUV will have to modify trajectory, go around it, video tape the object and register the position and then return to the normal survey (re-planning). The interest on submarine pipeline and cable tracking in a complete autonomous and reliable way, without the need of a support vessel, is driven by the increasing need of the offshore oil and telecommunication companies to have their wells, pipes and cables laid in ultra deep waters, where the current remote operated vehicles, ROV are hard to use. The autonomous navigation, practically without human intervention, is a complex task due to unforeseen situations and the minimum communication capabilities when diving. Then, considering the multiple possible scenarios in an underwater world, artificial intelligence (AI) techniques will be used to cope with these unknown situations, where the only information of the seabed object is obtained from sonar. The project includes the integration and enhancement of planning and re-planning strategies developed within the context of a previous European Union Funded Project (Autotracker) with new ones to be designed under this proposed work plan. To test the different scenarios both a simulator along with, a low-cost platform to be built will be used as a local test-bed. The technology as well as the platform to be built will be very useful in future projects addressing contamination prevention and security in the seabed.

**Referència:** AYA2006-07637. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional d'astronomia i astrofísica.

**Títol:** *Sismología local y global de la atmósfera solar: un enfoque numérico.*

**Acrònim:** SISAS.

**Centre:** Departament de Física. Edifici Anselm Turmeda.

**Investigador responsable:** BALLESTER MORTES, Josep Lluís.

**Categoria:** CU (àrea de coneixement: Astronomia i Astrofísica).

**Inici:** 2006. **Fi:** 2011.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Ballester Mortes, Josep Lluís	CU	1
Oliver Herrero, Ramon	TU	1
Carbonell Huguet, Marc	CEU	1
Terradas Calafell, Jaume	Inv.	1
Arregui Uribe-Etxeberria, Íñigo	Inv.	1
Forteza Ferrer, Josep	B	1
Luna Bennàssar, Manuel	B	1
Soler Juan, Roberto	Inv.	1

**EDP del grup investigador de l'entitat sol·licitant:** 8.

#### **Summary**

The main goal of the research proposal is to perform numerical simulations in order to study the time evolution of the oscillations of realistic magnetic structures of the solar atmosphere. We propose to develop two specific numerical codes, one devoted to local seismology and the second one to global seismology. These codes will be applied to different problems related with the oscillations of solar prominences and coronal loops, and from the obtained results we expect to extract useful information about the coronal heating and the values of different parameters of the solar corona such as magnetic field, magnetic Reynolds number, etc.

**Referència:** CGL2006-12474-C03-01. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Estudio de procesos en la capa límite atmosférica mediante simulación numérica explícita, de mesoscala y su verificación.*

**Acrònim:** TRANSCLA-SIM.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CUXART RODAMILANS, Joan.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cuxart Rodamilans, Joan	Inv.	1
Mira Navarro, Antonio J.	B	1
Jiménez Cortés, Maria A.	Aj.	1
Alonso Oroza, Sergio	CU	0.5
Luque Solheim, Ángel	Aj.	0.5
Martínez Villagrasa, Daniel	Tèc.	1
<b><u>Investigadors d'altres entitats</u></b>		
Conanglia Trivino, Laura	Universitat Politècnica de Catalunya	
Pino González, David	Universitat Politècnica de Catalunya	
Mahrt, Larry	Oregon State University	
Jonker, Harmen	Technical University of Delft	
Castellví Sentis, Francesc	Universitat de Lleida	

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

The majority of the key atmospheric compounds for climate change have their sources in the surface of the Earth. This is the case of water, the aerosols and the gases generated through biological and human activities, such as CO<sub>2</sub>, ozone, methane or others. The arrival of these species to the free atmosphere, where they act as global active elements of the climatic change, is modulated by the action, more spatially restricted, of the atmospheric boundary-layer (ABL). In this sense, the ABL can act enhancing the exchange –when the turbulence is strong and sustained- or inhibiting it –when the turbulence is weak or sporadic, and the vertical transport is small. The researchers joined for this action have been studying for long the different regimes of the ABL through direct observation, data analyses and numerical simulation. While continuing these studies, it is intended now to apply the available methodologies to the evaluation of the transport of greenhouse-effect gases, photochemical oxidants and aerosols. The main inhibitors to the vertical transport are the stably stratified layers, especially the thermal inversions, at the top of the diurnal convective ABL or of the large stratocumulus decks, or near the surface, as it happens in the nocturnal stable ABL. Concentrations of the components of interest will be measured, together with the usual atmospheric variables -with special emphasis on the pressure fluctuations, not well known to date- and their transport to the free atmosphere will be estimated through advanced data analysis methods. To establish hypotheses of the possible circulations high-resolution meteorological models will be used at the mesobeta scale, where emission and photochemical models will be included. To study the specific microscale physical phenomena. Large-Eddy



Simulations will be performed, focussing particularly on the thermal inversions. To proceed, good initial data are necessary, both for the correct interpretation of the observed conditions through the convenient data analyses as well as for the initialisation and verification of the models used.

**Referència:** FIT-330100-2006-92. Ministeri d'Indústria.  
**Modalitat:** Projecte PROFIT.  
**Títol:** *Contribución española al proyecto PARACHUTE.*  
**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.  
**Investigador responsable:** SEGURA FUSTER, Jaume A.  
**Categoria:** TU (àrea de coneixement: Tecnologia Electrònica).  
**Inici:** 2006.                   **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>
Segura Fuster, Jaume A.	TU
Bota Ferragut, Sebastià	TU
Rosselló Sanz, Josep L.	TEU
Alorda Ladària, Bartomeu	P. Con.
Verd Martorell, Jaume	Tèc.

**Referència:** Ministeri de Treball i Assumptes Socials.  
**Títol:** *Sistema autoguiado de alta fiabilidad basado en hardware específico para personas con limitación automotriz.*  
**Acrònim:** SAFHE.  
**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.  
**Investigador responsable:** SEGURA FUSTER, Jaume A.  
**Categoria:** TU (àrea de coneixement: Tecnologia Electrònica).  
**Inici:** 2006.                   **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>
Segura Fuster, Jaume A.	TU
Oliver Codina, Gabriel	TU
Bota Ferragut, Sebastià	TU
Rosselló Sanz, Josep L.	TEU
De Benito Crosetti, Carola	TEU
Ortíz Rodríguez, Alberto	TEU
González Cid, Yolanda	TEU
Burguera Burguera, Antoni	Aj.
Guerrero Sastre, José	P. Col.
Alorda Ladària, Bartomeu	P. Con.
De Paul Bernat, Iván	Tèc.
Canals Guinand, Vicenç J.	B

**Referència:** PRIB2004-10145. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Aplicación de nuevas tecnologías de computación numérica en paralelo a la resolución de problemas astrofísicos.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** OLIVER HERRERO, Ramón.

**Categoria:** TU (àrea de coneixement: Astronomia i Astrofísica).

**Inici:** 2004.                   **Fi:** 2006.

**Referència:** PRIB2004-9765. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Transportes y estados entrelazados en nanoestructuras.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SERRA CRESPI, Llorenç.

**Categoria:** TU (àrea de coneixement: Física Atòmica, Molecular i Nuclear).

**Inici:** 2004.                   **Fi:** 2007.

# **DEPARTAMENT D'INFERMERIA I FISIOTERÀPIA**

**Referència:** PI05-1503. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Trabajadoras latinoamericanas inmigrantes como cuidadoras: globalización, promoción y acceso a la salud.*

**Centre:** Departament d'Infermeria i Fisioteràpia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** BOVER BOVER, Andreu.

**Categoria:** TEU (àrea de coneixement: Infermeria).

**Inici:** 2005. **Fi:** 2008.

**Membres de l'equip**

**Categoria**

Bover Bover, Andreu

TEU

Gastaldo, Denise

Sáenz de Ormijana Hernández, Amaia

Juando Prats, Clara

Robledo Martín, Juana

Luengo González, Raquel

Izquierdo Mora, Dolores

Llabata Pérez, Paloma

**Summary**

In recent years the noticeable increase in immigration in Spain has been transforming our social reality, creating new challenges for the welfare and health care systems. It has also created new opportunities for the health promotion and protection of the population. Among the biggest groups and the less studied are how social determinants of health, prevention and health care of dependent individuals. In this study we will explore how social determinants of health, prevention and health care received influence the health status and well-being of Latin american immigrant women working like care givers in Spanish homes. This is a multi-site study, designed for 4 socio-linguistic zones in Spain: Balearic Islands and Catalonia, Basque Country, Madrid and Canary Islands. The methodology is both qualitative (96 semi-structured interviews) and quantitative (720 questionnaires SF-36) differentiating the following factors/variables: immigration status (resident or undocumented), visible minority or not, and presence or absence of family network. Participation in the study is voluntary and a consent form will be used with all participants. The appropriate ethics committee will review the project. For the analysis of qualitative data, discourse analysis will be used with the support of the software Atlas.ti 5.0. For the quantitative analysis, a descriptive analysis will be employed based on items of the SF-36 survey. The results will be shared with immigrant community groups, health care professionals, and academics.

**Referència:** PI06/90141. Avaluació de Tecnologies Sanitàries i Investigació de Serveis de Salut. Ministeri de Sanitat i Consum.

**Títol:** *Tabaquismo en enfermería comunitaria.*

**Centre:** Departament d'Infermeria i Fisioteràpia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** PERICÀS BELTRAN, Jordi.

**Categoria:** CEU (àrea de coneixement: Infermeria).

**Inici:** 2006. **Fi:** 2008.

**Membres de l'equip**

**Categoria**

Pericàs Beltran, Jordi

CEU

Bennàsar Veny, Miquel

As.

González Torrente, Susana

Infermera Ib-Salut

**Investigadors d'altres entitats**

González Torrente, Susana

Ib-Salut

**Summary**

Primary health nurses are suitable to promote health among smokers. Nurses are not different from women in their age interval: 40-50% of nurses are active smokers. Smoking habit determinants seem to be: increased advertising specifically addressed to women, body weight control through tobacco and growing stress level in women and nurses. Despite the programs implemented in Spain and Balearic Islands, prevalence in smoking habit is growing among women, nurses and teenage girls. In Spain there are not qualitative research that could address non-smoking policies for nurses.

We propose a qualitative research aimed to identify determinants influencing the smoker condition in primary health nurses, trying to study in depth health determinants (individual and social), perhaps related to nurses as professionals and women, not reached by quantitative studies.

The aim is to identify this mentioned determinants such as self-stem, gender or labour conditions influencing the smoking acquisition, maintenance and cessation among primary health nurses working for Ib-Salut (Balearic Islands, Spain). We think that this knowledge will address more effective campaigns for smoking cessation among this population.

The design is qualitative exploratory critically oriented. Participants are women nurses developing their professional activity in primary health. Data collection will be through digital recording during the focus groups. Sample will be stratified in age percentages. We will conduct focus groups until data saturation. Data will be transcribed and coded. Rigour will be reached by saturation and triangulation (sources and researchers).

## Participacions a altres projectes

**Referència:** PI040612. Xarxes Temàtiques d'Investigació Cooperativa. Ministeri de Sanitat i Consum.

**Títol:** *Identificación y valoración de los registros de enfermería para población igual o mayor de 65 años en Atención Primaria y Sociosanitaria, en relación con las caídas, incontinencia urinaria y lesiones por presión.*

**Investigador responsable:** FUENTELESAZ GALLEGO, Carmen.

**Centre:** Hospital Vall d'Hebron.

**Investigadores de la UIB:**

Gallego Caminero, Gloria.

**Categoria:** TEU (àrea de coneixement: Infermeria).

Miró Bonet, Margalida.

**Categoria:** TEU (àrea de coneixement: Infermeria).

**Inici:** 2004.                   **Fi:** 2007.

**Referència:** PI040612. Xarxes Temàtiques d'Investigació Cooperativa. Ministeri de Sanitat i Consum.

**Títol:** *RIMARED. Red Temática de Investigación en Cuidados a Personas Mayores. Nodo subtemática de cuidados informales.*

**Investigador principal:** MORENO CABAS, María Teresa.

**Centre:** Investén. Instituto Carlos III.

**Investigador de la UIB:** BOVER BOVER, Andreu.

**Categoria:** TEU (àrea de coneixement: Infermeria).

**Inici:** 2003.                   **Fi:** 2006.

**Referència:** PI042160. Xarxes Temàtiques d'Investigació Cooperativa. Ministeri de Sanitat i Consum.

**Títol:** *Identificación y valoración de los registros de enfermería para población igual o mayor de 65 años en atención primaria y sociosanitaria, en relación con los cuidados informales.*

**Investigadora principal:** FUENTELESAZ GALLEGO, Carmen.

**Centre:** Hospital Vall d'Hebrón.

**Investigadors de la UIB:** BOVER BOVER, Andreu.

**Categoria:** TEU (àrea de coneixement: Infermeria).

**Inici:** 2005.                   **Fi:** 2007.

**DEPARTAMENT DE PEDAGOGIA APLICADA I  
PSICOLOGIA DE L'EDUCACIÓ**



**Referència:** SEJ2005-06467/EDUC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Estandares e indicadores para analizar la calidad de vida del alumnado con necesidades educativas especiales asociadas a discapacidad en su proceso educativo.*

**Acrònim:** ACVANEE.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** MUNTANER GUASP, Joan Jordi.

**Categoria:** CU (àrea de coneixement: Didáctica i Organització Escolar).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Muntaner Guasp, Joan Jordi	CU	1
Forteza Forteza, M. Dolors	TU	1
Rosselló Ramon, M. Rosa	TU	1
Verger Gelabert, Sebastià	TEU	1
de la Iglesia Mayol, Begoña	P. Col.	0.5
Ferrer Cerdà, Elena	As.	1

**Nombre total d'investigadors de la UIB:** 5.5.

### **Summary**

To apply the concept of quality of life introduces a new perspective to analyze and to deepen in an integral education throughout the regulated educative process of the students with special educational needs associated to disabilities, as well as improvement of the educative supply for all the students in the context of the inclusive school.

By creating an instrument to evaluate the educative attention to the students with special educational needs associated with disabilities, from different positions that take into account all those implied in this process - teaching staff, administration, families, students, and also in the different stages of this process - Primary education, Secondary and Post-Secondary- it will allow us to know, in depth, the characteristics of the proposed training and it also gives us the opportunity to raise proposals of action which they lead towards the improvement of the educative performance for all, without exclusions.

**Referència:** SEC2003-04206. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa nacional de socioeconomia.

**Títol:** *Modelos emergentes en entornos virtuales de educación superior. Estudio de elementos tecnológicos, organizativos, de enseñanza-aprendizaje en entornos virtuales universitarios.*

**Acrònim:** MEEVES.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** SALINAS IBÁÑEZ, Jesús M.

**Categoria:** TU (àrea de coneixement: Didàctica i Organització Escolar).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Salinas Ibáñez, Jesús M.	TU	0.5
Urbina Ramírez, Santos	TEU	0.5
Negre Bennàssar, Francesca	P. Col.	0.5
Pérez Garcias, Adolfina	TEU	0.5
Ordina Pons, Catalina	As.	0.5
de Benito Crosetti, Bárbara	As.	0.5
Bibiloni Coll, Antoni	TEU	0.5
Fernández Coca, Antonio	TEU	0.5
Rosselló Vaquer, Joan Josep	B	0.5
Pazos Arciniega, María	B	0.5
Martín González, Antonio	B	0.5
Gallardo Pérez, Antonio	B	0.5
Torres Estarellas, Aina Maria	B	0.5
Torrandell Serra, Isabel	Tèc.	0.5
Arrabal Cormenzana, Marina	Tèc.	0.5
Hidalgo Taltavull, Núria	Tèc.	0.5
Riera Forteza, Bartomeu	Tèc.	0.5
Palencia Martínez, Manuel	Tèc.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Cabero Almenara, Julio	Universitat de Sevilla	
Barroso Osuna, Julio	Universitat de Sevilla	

**EDP del grup investigador de l'entitat sol·licitant: 9.**

### **Summary**

The essential objectives of this project concern the adequate exploitation of on line learning environments in teaching-learning processes. In this framework, validity of new didactics strategies and pedagogic models that explain teaching ñ learning processes in these environments require the action and integration of teaching ñ learning models suitable for e-learning, the definition and formal description, and research regarding the processes involved. The aim is to modificate the instructional focus, but also paying adequate attention to technological elements and determining factors, to the organizational models, to diverse communicative models and teaching ñ learning process schedule. The study of all this elements interconnected all together and the revision of the connections will help us to understand and to apply emergent approaches to create effective learning environments in an every time more connected world.

**Referència:** SEJ2006-10413. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *El ciberplagio entre los estudiantes universitarios.*

**Acrònim:** CPEU.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** SUREDA NEGRE, Jaume.

**Categoria:** CU (àrea de coneixement: Didàctica i Organització Escolar).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Sureda Negre, Jaume	CU	1
Comas Forgas, Rubén L.	Tèc.	1
Oliver Trobat, Miquel	TEU	0.5
Urbina Ramírez, Santos	TEU	0.5
Cavanillas Múgica, Santiago	CU	0.5
Casero Martínez, Antonio	As.	0.5
Pastor Tous, Miquel	Tèc.	1
Serra Cifre, Bartomeu	CU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 5.5.

### **Summary**

Irruption of Information and Communication Technologies (ICT's) has provoked and eased important and substantial changes in the area of education and formative processes; some of these changes can not be considered as positive. It is the case of the Academic Cyber-plagiarism.

Adopt and present as own ideas, theories, hypothesis, texts, etc. from others it is not a new phenomenon; but the technologies associated to the society of information and communication –specially the internet- eases to an extent this morally questionable and academically incorrect practice. Research on this area –focused on the academic plagiarism amongst university students- it is the main aim of the present proposal, following some of the work developed so far in this field like:

Ercergovac, McCabe, Bowman, Roig, Anderson, Lathrop y otros (Ercegovac, 2005; McCabe, 2005, 2002, 2001; Bowman, 2004; Roig, 2001; Anderson, 1999; Lathrop, 2000, 2005). The projects aims to 2 main objectives: (1) analyze the characteristics, causes, extension and consequences of cyber-plagiarism amongst university students, (2) evaluate, design and test tools aimed to detect, prevent and correct this phenomenon. The second finality will be approached trough, on the one hand, a formative/educative perspective –based on the design and implementation of formative and awareness activities addressed to the university students and teachers staff-. On the other hand, we approach it trough the evaluation, development and test of anti-plagiarism software (prototype) that detects cases of plagiarism in academic works.

**Referència:** SEJ2006-12616/PSIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Desarrollo y cambio en las dificultades en la adquisición del lenguaje y su influencia en el aprendizaje de la lecto-escritura.*

**Acrònim:** DAL.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** AGUILAR MEDIAVILLA, Eva.

**Categoria:** AJ. DR. (àrea de coneixement: Psicologia Evolutiva i de l'Educació).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Aguilar Mediavilla, Eva	Aj. dr.	1
Rigo Carratalà, Eduard	CU	0.5
Pérez Castelló, Josep Antoni	TU	0.5
Sastre Vidal, Miquela	As.	0.5
<b>Investigadors d'altres entitats</b>		
Aguilar Alonso, Ángel	Universitat de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant:** 2.5.

### **Summary**

The aim of this project is the longitudinal studying of Specific Language Difficulties in bilingual Spanish-Catalan children. This wide aim is concreted in objectives. By one hand, we are interested in describe the linguistic (oral and writer) characteristics in these children, in addition to describe their development. By other hand we are also interested in found the possible causes of this difficulties taking into account a developmental and cognitive model. This way we hope find a deficit in cognitive variables, although we can not concrete if this difficulties will be specific of language abilities, as phonological memory or temporal processing, or general. Finally, we are interested in found predictors and signs that allow an early diagnosis, a specific intervention plan and a good prediction of the course of development.

The study will use mixed design with an ex-post-facto transversal dimension and a temporal one with three observational points. Data collected included a sample of language and the application of various test that measure cognitive and linguistic (oral and writer) abilities.

## Participacions a altres projectes

**Referència:** TIC2003-09288-C02-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa nacional de de tecnologia de la informació i comunicacions.

**Títol:** *PLANET: plataforma de colaboración aumentada para el acceso y distribución de contenidos educativos.*

**Investigador responsable:** GARCÍA LÓPEZ, Pedro Antonio.

**Centre:** Universitat Rovira i Virgili.

**Investigador de la UIB:** URBINA RAMÍREZ, Santos.

**Categoria:** TEU (àrea de coneixement: Didàctica i Organització Escolar).

**Inici:** 2003.                      **Fi:** 2006.

**DEPARTAMENT DE PEDAGOGIA I DIDÀCTIQUES  
ESPECÍFIQUES**

**Referència:** BSO2003-08717. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Prevención del consumo de drogas en la familia: programa de competencia parental para drogodependientes en tratamiento.*

**Acrònim:** PROCOPAD.

**Centre:** Departament de Pedagogia i Didàctiques Específiques. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** ORTE SOCIAS, M. del Carme.

**Categoria:** TU (àrea de coneixement: Teoria i Història de l'Educació).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Orte Socias, M. del Carme	TU	1
Ballester Brage, Lluís	TU	1
March Cerdà, Martí X.	CU	1
Fernández Bennàssar, M. Carme	CEU	1
Oliver Torelló, Josep L.	TEU	1
Touza Garma, M. del Carmen	TEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Mestre Moyà, M. Lluïsa	Hospital Universitari Son Dureta	
Fernández Coll, Cristina	Projecte Home	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

The aim of this project is to create a programme that can be used by professionals working in drug-abuse treatment centres, so that it can be used in the rehabilitation of drug addicts in matters concerning their family lives. More specifically, it will be used to reinforce their parental skills and, at the same time, to avoid the development of maladjusted forms of behaviour in their children.

**Referència:** PRIB2004-9956. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Prevenció del consum de drogues en la família: programa de competència parental per a drogodependents en tractament.*

**Centre:** Departament de Pedagogia i Didàctiques Específiques. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** ORTE SOCIAS, M. del Carme.

**Categoria:** TU (àrea de coneixement: Teoria i Història de l'Educació).

**Inici:** 2004.                   **Fi:** 2006.



## Participacions a altres projectes

**Referència:** BSO2003-04301. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa nacional de promoció general del coneixement.

**Títol:** *Motivación deportiva y deportividad: interacciones y efectos sobre el compromiso o el abandono en futbolistas jóvenes.*

**Acrònim:** MOT DEP Y FAIR.

**Classificació UNESCO:** 610608, 610799.

**Investigador responsable:** CRUZ FELIU, Jaume.

**Centre:** Universitat Autònoma de Barcelona.

**Investigadors de la UIB:**

Palou Sampol, Pere.

**Categoria:** TEU (àrea de coneixement: Educació Física i Esportiva).

**Dedicació (EPD):** 1.

Ponseti Verdaguer, F. Javier.

**Categoria:** TEU (àrea de coneixement: Educació Física i Esportiva).

**Dedicació (EPD):** 0,5.

Garcia Mas, Alexandre.

**Categoria:** TU (àrea de coneixement: Psicologia Bàsica).

**Dedicació (EPD):** 0,5.

Borràs Rotger, Pere Antoni.

**Categoria:** P. Col. (àrea de coneixement: Educació Física i Esportiva).

**Dedicació (EPD):** 1.

**Inici:** 2003.                      **Fi:** 2006.

**Referència:** DEP2005-00231-C03-02/ACTI. Ministeri d'Educació i Ciència.

**Títol:** *Factores determinantes para la práctica Fis.-Dep. y asociaciones probabilísticas entre variables Fis.-Dep. y de salud. Tipologías de estilos de vida de la población adulta y detección de poblaciones.*

**Investigador responsable:** RUÍZ JUAN, Francisco.

**Centre:** Universitat d'Almeria.

**Investigador de la UIB:** PALOU SAMPOL, Pere

**Categoria:** TEU (àrea de coneixement: Educació Física i Esportiva).

**Inici:** 2006.                      **Fi:** 2008.

**DEPARTAMENT DE PSICOLOGIA**

**Referència:** SEJ2004-01332/PSIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Evaluación del procesamiento de la información en el dolor crónico con resonancia magnética funcional.*

**Acrònim:** PAINBRAIN.

**Centre:** Departament de Psicologia. Edifici Beatriu de Pinós.

**Investigador responsable:** MONTOYA JIMÉNEZ, Pedro.

**Categoria:** TU (àrea de coneixement: Psicobiologia).

**Inici:** 2004. **Fi:** 2007.

<b>Membres de l'equip</b>	<b>Categoria</b>	<b>Dedicació (EDP)</b>
Montoya Jiménez, Pedro	TU	1
Sitges Quirós, Carol	B	1
<b><u>Investigadors d'altres entitats</u></b>		
García Herrera, Manuel	Ministeri de Treball i Afers Socials	
Izquierdo Rodríguez, Raúl	Ministeri de Treball i Afers Socials	
Colado Torres, Dolores	Ministeri de Treball i Afers Socials	
Campos Bueno, José J.	Universitat Complutense de Madrid	
Chialvo, Dante	Northwestern University Medical School	

**EDP del grup investigador de l'entitat sol·licitant:** 2.

### **Summary**

This research proposal is a continuation of our line of work initiated with the project BSO2001-0693. The major aim of this research is to analyze the brain activity in chronic pain patients using functional magnetic resonance imaging (fMRI). The underlying hypothesis is that chronic pain is characterized by plastic changes in the nervous system. Our experimental design pursues to demonstrate the existence of abnormal pattern in the brain processing of somatic information in chronic pain patients. In addition, we are interested on the influence of cognitive and affective factors on brain plastic changes. Three patients groups with similar sociodemographic, but different clinical characteristics will be examined: fibromyagia, complex regional pain syndrome and rheumatoid arthritis. Brain activity will be recorded during nociceptive and non-nociceptive stimulation using fMRI. In addition, psychological characteristics of pain, neuropsychological functioning and pain thresholds will be examined.

**Referència:** BFF2003-00129. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Cognición y representación en los enfoques alternativos al simbólico en ciencias cognitivas.*

**Acrònim:** CREASEC.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** GOMILA BENEJAM, Antoni.

**Categoria:** TU (àrea de coneixement: Psicologia Bàsica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Gomila Benejam, Antoni	TU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Calvo Garzón, Francisco	Universitat de Múrcia	
Blanco Trejo, Florentino	Universitat Autònoma de Madrid	
Travieso García, David	Universitat Autònoma de Madrid	
Villarroya Oliver, Òscar	Universitat Autònoma de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 0.5.**

### **Summary**

In opposition to the classical approach in Cognitive Science, the computational-symbolic one, several alternative programmes- ecological realism, situated cognition, artificial life, connectionism- are converging in the so-called dynamical hypothesis, whose central idea is that cognition is to be understood as the outcome of a complex interaction among brain, body and environment ('embedded, embodied cognition'). According to this approach, the mind is a dynamical system, amenable to modelization by means of the formal theory of dynamic systems (non-linear differential equations, theory of chaos). The goal of this project is to assess this line in Cognitive Science as regards a) whether or not it is committed to a representational view of mind, and in what sense of 'representation'; b) whether it opens fruitful explanatory avenues to address traditional problems about the mind, and new psychological phenomena recently uncovered; c) a general evaluatory framework, independent of any particular approach, useful in comparing and preferring different explanatory proposals, and to set their range and limits; and d) whether or not it makes sense, and how, to integrate some of these approaches in hybrid models.

**Referència:** BSO2003-06904-C03-03. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Identificación por MEG de patrones espaciales y temporales de activación de áreas cerebrales en la percepción visual compleja: hacia un modelo de la percepción estética. Aspectos clínicos.*

**Acrònim:** IMPACT.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** ROCA BENNÀSAR, Miquel A.

**Categoria:** TU (àrea de coneixement: Psiquiatria).

**Inici:** 2003. **Fi:** 2006.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Roca Bennàsar, Miquel A.	TU	0.5
Gili Planas, Margalida	TU	0.5
 <b><u>Investigadors d'altres entitats</u></b>		
Bernardo Arroyo, Miquel	Universitat de Barcelona	
López-Ibor Alcocer, María I.	Universitat Complutense de Madrid	

**EDP del grup investigador de l'entitat sol·licitant: 1.**

### **Summary**

Differences in the pattern of activation of brain areas when performing cognitive tasks of complex visual perception will be identified. Those tasks will be activated by stimuli qualified by participants as either aesthetic or not-aesthetic. The project is a continuation of a previous one that established what an 'aesthetic stimulus', grounding it on the preferences shown by participants. Several essays of localisation were carried out. A pilot-study in just one participant, by means of magnetoencephalography, pointed out that the main difference in activation patterns refers to the appearance of a mesocortical path. This path was present in the stimuli qualified as 'aesthetic', and it was absent in those qualified as 'non-aesthetic'. This project tries to confirm firstly the characteristics of such mesocortical path in a significant number of participants. After, the project implies to perform factorial analyses introducing variables such as gender and previous training in either Art or History of Art. Finally, a model of aesthetic perception and its brain correlates would be reached.

**Referència:** BSO2003-3885. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Madurez y envejecimiento en la flexibilidad cognitiva: parámetros electrofisiológicos y neuropsicológicos en la población normal.*

**Acrònim:** MENTFLEX.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** BARCELÓ GALINDO, Francesc.

**Categoria:** TU (àrea de coneixement: Psicobiologia).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Barceló Galindo, Francesc	TU	0.5
Periañez Morales, José Antonio	Aj. EU	1
<b><u>Investigadors d'altres entitats</u></b>		
Yagüez Hervás, Lidia	University of London	

**EDP del grup investigador de l'entitat sol·licitant:** 1.5.

### **Summary**

Human ability for responding to a changing environment requires a mechanism of executive control capable of distributing cognitive resources flexibly as behaviourally relevant circumstances vary constantly in time. This control mechanism is very fragile and becomes altered even after minor brain injury, as well as in various mental disorders. Currently, there is a substantial interest in the brain mechanisms responsible for the executive control of attention and, in particular, for a key process called 'attentional set shifting'. Our research team has pioneered the study of attention set shifting using event-related potentials (ERP) by means of a novel task protocol, the Madrid Card Sorting Task (MCST), that allows us to examine the interaction between bottom-up and top-down processes in the executive control of attention (NeuroReport, 2002, 15: 1887-1892). With a mid-term aim of applying the MCST protocol to neuropsychological assessment, first it is necessary to standardise it by exploring the variability of its electrophysiological (latency, amplitude and topography of event-related potentials), and neuropsychological indexes (reaction times and errors) in the normal population.

Hence, the main objective of this research proposal is to standardise the electrophysiological and neuropsychological measures derived from the MCST protocol for its future use in the assessment of attentional deficits. This general objective can be broken down into four sub-objectives: (1) to carry out a detailed analysis of the neurocognitive operations involved in MCST performance by comparing it with another three control tasks; (2) to compare the MCST with other neuropsychological tests of 'executive function' in order to isolate their cognitive structure using a multivariate statistical approach; (3) to explore age-related changes in the efficiency of attentional set shifting and other executive functions; (4) to pinpoint electrophysiological markers of age-related changes in set shifting ability in normal subjects as a first step towards the future use of the MCST protocol with clinical purposes.

**Referència:** SEJ2004-01363/PSIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Evaluación de la atención sostenida y el control atencional en el trastorno por déficit de atención con hiperactividad (TDAH): una aproximación conductual, neuropsicológica y electrofisiológica.*

**Acrònim:** EATDAH.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** SERVERA BARCELÓ, Mateu.

**Categoria:** TU (àrea de coneixement: Personalitat, avaluació i tractament psicològics).

**Inici:** 2004. **Fi:** 2007.

**Membres de l'equip**

**Categoria**

**Dedicació (EDP)**

Servera Barceló, Mateu

TU

1

Barceló Galindo, Francesc

TU

0.5

**Investigadors d'altres entitats**

Cardo Jalón, Maria Esther

Fundació Hospital Son Llàtzer

**EDP del grup investigador de l'entitat sol·licitant: 1.5.**

**Summary**

Our main objective is to determine the relationship between various tasks and measures of sustained and executive attention with various behavioral and clinical markers of the attention deficit hyperactivity disorder (ADHD), in order to better understand the type of attentional dysfunctions associated with this developmental disorder. A battery of attentional tasks will be administered to children diagnosed with different subtypes of ADHD in order to determine specific attentional deficits in relation to normal controls, as well as distinctive features across ADHD subtypes and in relation with other attentional disorders. Three Continuous Performance Tests (CPTs) and a modified version of the Wisconsin Card Sorting Test (WCST) will be used as measures of sustained attention and executive attention, respectively. The task battery will consist of a no-X CPT as a measure of inhibitory function; a AX-CPT as an index of vigilance; and two modified AX-CPT and WCST tasks to assess selective attention and executive control in a task switching paradigm. For each of these tasks we will obtain different types of indicators: behavioural (hits, omission/commission errors, and reaction times), neuropsychological (indicators of sensibility and response bias based on signal detection theory). The integration of evidence from this three-way interaction of factors (task x measure x deficit) is expected to provide solid grounds for theorising about the nature of the attentional dysfunctions observed in ADHD.

**Referència:** BSO2003-06904-C03-02. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Identificación por MEG de patrones espaciales y temporales de activación de áreas cerebrales en la percepción visual compleja: hacia un modelo de la percepción estética. Aspectos cognitivos.*

**Acrònim:** IMPACT.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** MARTY BROQUET, Gisèle.

**Categoria:** CU (àrea de coneixement: Psicologia Bàsica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Marty Broquet, Gisèle	CU	0.5
Rosselló Mir, Jaume	TEU	0.5
Munar Roca, Enric	TU	0.5
Gomila Benejam, Antoni	TU	0.5
Escudero López, Juan Tomás	TEU	0.5
Burges Cruz, Lucrecia	Aj. EU	0.5
Nadal Roberts, Marcos	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Amo Usanos, Carlos	Universitat Complutense de Madrid	
Sotillo Méndez, María	Universitat Autònoma de Madrid	
Revert Vidal, Xavier	Govern Balear	

**EDP del grup investigador de l'entitat sol·licitant: 3.5.**



**Referència:** SEJ2005-00899/PSIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Dinámica no lineal de la ansiedad: nueva perspectiva en la evaluación y el tratamiento de los trastornos fóbicos.*

**Acrònim:** DiNLA.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** LLABRÉS BORDOY, Jordi.

**Categoria:** TEU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Llabrés Bordoy, Jordi	TEU	1
Bornas Agustí, F. Xavier	TU	1
Tortella Feliu, Miquel Rafael	CEU	0.5
<b><u>Investigadors d'altres entitats</u></b>		
López Jiménez, Ana	Universitat de Sevilla	
Noguera Batlle, Miquel	Universitat Politècnica de Catalunya	
Fullana Rivas, Miquel À.	Universitat Autònoma de Barcelona	

**EDP del grup investigador de l'entitat sol·licitant: 2.5.**

### **Summary**

Following our previous research on this area, the aim of this project is to expand the knowledge on the treatment of phobic disorders, specifically flying phobia. The focus will be on what we consider its least known aspect: the course or evolution of patients along the treatment. For this purpose, and with the dynamic systems theory as a background, we will use an innovative and rigorous methodology in Psychology, which specifically addresses the study of the process of change, i.e., the analysis of the evolution of systems in time and its dynamic features. The knowledge attained this way should be useful to develop an assessment protocol focused on therapeutic change and to improve the efficacy of the treatment.

Furthermore, among our more applied goals, we include the development of a self-applied CAFFT- the exposure-assisted computer program, developed by our group, which improves the treatment in terms of cost- benefit without decreasing its efficacy.

**Referència:** SEJ2005-05331/PSIC. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Cortisol en saliva: comparaciones entre una condición estresante y una condición no estresante.*

**Acrònim:** CORSO.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** GARCÍA DE LA BANDA GARCÍA, Gloria.

**Categoria:** TEU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

**Inici:** 2005. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
García de la Banda, Gloria	TEU	1
Fornès Vives, Joana	CEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Riesco Prieto, María	IB-SALUT	
Pérez Esteban, Gerardo	IB-SALUT	
Pastor García, María	IB-SALUT	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

Glucocorticoide and Catecholomine secretion are part of the organism's response to environmental challenges. Cortisol, a glucocorticoide, is regularly secreted by the adrenal cortex with a marked circadian rhythm. On top of this basal activity it has been described as an increase in cortisol production in response to unpredictable and threatening events. More recent results, however, have challenged this view. It has been observed that not all individuals respond to a stressor by increasing cortisol levels; in some cases the level of circulating cortisol decreased instead. Our hypothesis is that the reduction in cortisol response to the stressor is linked to high basal cortisol secretion. Furthermore, we propose that this paradoxical reaction - high basal cortisol levels followed by cortisol reduction upon exposure to the stressor - is an indication of hypothalamic-pituitary-adrenal (HPA) malfunction, and a predictor of future physical and psychological failures. Finally, we also believe that personality plays a major role both in basal and reactive HPA activity. To test these hypotheses we propose the following specific aims:

- 1) To study the influence of basal cortisol levels over cortisol response under stress.
- 2) To determine the influence of personality on cortisol secretion
- 3) To explore the connection between cortisol levels and physical and psychological wellbeing. To assess the physiological response we will collect 12 different saliva samples from 60 university students in two different conditions: 6 stressful (public speaking) and 6 non-stressful (regular class). To evaluate the personality traits, we will use the NEO-FFI, EPQ-R and ECQ questionnaires. Anxiety will be measured by the ISRA test, Liebowitz's Social Phobia Scale and Paul's Fear of Public Speaking. In order to take into account other stressful events that may influence cortisol secretion, students will be asked about stressful life events, minor stressful events and general perceived stress. We will also take into account each student's expectations about his or her results before the oral presentation. Finally, physical symptoms will be measured by the MSCL, and psychological distress by the SCL90-R test.

**Referència:** SEJ2006-13291. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències socials, econòmiques i jurídiques.

**Títol:** *Construcción y validación de un programa estandarizado para el tratamiento del tabaquismo. Influencia de las emociones negativas, las expectativas y la historia personal de la adicción tabáquica..*

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** PÉREZ PAREJA, F. Javier.

**Categoria:** TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Pérez Pareja, F. Javier	TU	1
Palmer Pol, Alfonso Luis	TU	1
Cajal Blasco, Berta	TU	1
Sesé Abad, Albert	TEU	1
Montaño Moreno, Juan José	P. Col.	1
Jiménez López, Rafael	P. Col.	1
Terrassa Blázquez, Beatriu	As.	1
Gervilla García, Elena	As.	

**Investigadors d'altres entitats**

Romo Taranchel, Ana Filomena  
Tomás Barberán, Manuel Hospital Universitari Son Dureta  
Castro Iglesias, Maria del C. Hospital Universitari Son Dureta

**EDP del grup investigador de l'entitat sol·licitant: 7.**

### **Summary**

In the last years as much the scientific publications as the tobacco addiction researches have pointed out the effectiveness of the programs with psychological intervention based on the principles of the behavioral and cognitive therapy model. Equally, these findings highlight the predictive paper of some variable psicosociales for both the attainment of the ceasing or maintenance of the addictive behavior.

Based on this findings, the project that we present outlines the following objectives:

To build and validate a standardized for reduction of tobacco consumption based on behavioral and cognitive therapeutical techniques.

To determine the importance and the paper of the negative emotions (anxiety, depression/sadness and anger), the expectations and the personal history of the addictive behavior about the adherence to the treatment, the effectiveness of the treatment, their temporary generalization and the relapses.

To determine the differential profiles of the patients that more and better can benefit of the program and to elaborate alternatives for the patients that less benefit with it.

To use rigorous methodologies, innovators and appropriate to confront the analysis of behaviors so complex as the addictive behaviors and their relationship with other related human behaviors.

**Referència:** 57/05. Institut de la Dona. Ministeri de Treball i Assumptes Socials.  
**Modalitat:** Acció estratègica sobre foment d'igualtat d'oportunitats entre dones i homes.  
**Títol:** *Del mito del amor romántico a la violencia contra las mujeres en la pareja.*  
**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.  
**Investigadora responsable:** BOSCH FIOL, Esperança.  
**Categoria:** TU (àrea de coneixement: Psicologia Bàsica).  
**Inici:** 2006. **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>
Bosch Fiol, Esperança	TU
Ferrer Pérez, Victòria A.	TU
García Buades, Esther	TEU
Ramis Palmer, M. Carme	Col·laboradora
Mas Tous, Carme	Ajudant
Navarro Guzmán, Capilla	B
Torrens Espinosa, Gema	As.

**Referència:** PRIB2004-10136. Conselleria d'Economia, Hisenda i Innovació.  
**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.  
**Títol:** *Detección del deterioro cognitivo leve en el envejecimiento normal y patológico.*  
**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.  
**Investigador responsable:** BARCELÓ GALINDO, Francesc.  
**Categoria:** TU (àrea de coneixement: Psicobiologia).  
**Inici:** 2004. **Fi:** 2006.

# **DEPARTAMENT DE QUÍMICA**

**Referència:** CTQ2004-01201/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Desarrollo de métodos automáticos en flujo para la monitorización y control de biorreactores y depuradoras de aguas residuales.*

**Acrònim:** ANABIO.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CERDÀ MARTÍN, Víctor.

**Categoria:** CU (àrea de coneixement: Química Analítica).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Cerdà Martín, Víctor	CU	1
Forteza Coll, Rafael A.	TU	1
Leal Quezada, Luz Olivia	B	1
Horskotte, Burkhard	B	1
Pons Bonafé, Carme	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Bauzà de Mirabó Darder, Francesca	TIRME	
Elsholz, Olaf	Universitat de Ciències Aplicades d'Hamburg	

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

The goal of the project is to develop flow automatic system of analysis in order to monitor and control two different kind of bioreactors: one use in the production of pharmaceutical products, and the other a biological wastewater plant. The flow techniques which will be mainly applied sequential injection analysis (SIA), and the multisyringe flow injection analysis (MSFIA). Both have the advantages of being very robust without the need of a frequent calibration, and they need only very small amounts of sample and reagent, sometimes very expensive in this kind of applications (enzymes).

SIA is a true multiparametric flow technique very well adapted to the purpose of the project, and MSFIA has the advantage of a higher sample throughput. With both techniques we will develop expert (intelligent) systems which will be able to allow the monitoring of the main parameters necessary to control the right operation of both bioreactors through the measuring of both physical and chemical parameters (organic and inorganic).

**Referència:** CTQ2004-02375/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Lantánidos en catálisis enantioselectivas.*

**Acrònim:** LA CATENA.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SAÁ RODRÍGUEZ, José Manuel.

**Categoria:** CU (àrea de coneixement: Química Orgànica).

**Inici:** 2004. **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Saá Rodríguez, José Manuel	CU	1
Tur Espinosa, Fernando	B	1

**EDP del grup investigador de l'entitat sol·licitant: 2.**

### **Summary**

The LA CATENA project (lanthanide complexes for enantioselective catalysis) aims at designing and synthesizing chiral catalysts for enantioselective catalysis both in conventional and non-conventional solvents (water, in particular). The socio-economical interest pursued by this project stands as reaching the gradual replacement of the old synthetic processes employed by the pharmaceutical and fine-chemicals industry for others which comply with the most stringent environmental rules of the XXI century chemical industry. The fundamentals of the plan lie on the principles of self-assembly and self-organisation as we try to reach the thermodynamically stable octahedral complexes of lanthanide (III) salts of the type  $M(L^*L)_3 X_3$  (since  $L^*L$  is a chiral bidentate ligand, the central metal atom will also be chiral) which, by virtue of their kinetical lability can interchange its ligands with external ones of appropriate denticity (the Nu of ad hoc-selected reactions). Thus, as a consequence of the intrinsic kinetic lability of lanthanide complexes, their hard central atom should act as a chiral Lewis acid capable of coordinating both Nu and E and promote enantioselective catalysis upon aldol condensation, nitroaldol condensation (and closely related), as well as Michael, Mannich and related reactions (we expect that turnover will be fast for these reactions). In addition we will study the capacity of Sm or Eu II complexes  $M(L^*L)_3 X_2$  to promote the enantioselective reductive coupling of C=O and C=NR moieties. Given their lability, their capacity to work in water requires reaching a compromise between kinetic lability and their hidrolizability. For this reason it will be necessary either search for lanthanide complexes  $M(L^*L)_3 X_3$  which employ higher denticity ligands, or move over to complexes of different metals such as In(III), Pb(II), etc, in trying to reach the goals of enantioselective catalysis in water.

**Referència:** AGL2003-03889. Ministeri de Ciència i Tecnologia.

**Modalitat:** Recursos i tecnologies agroalimentàries.

**Títol:** *Influencia de las variables de proceso en la obtención de fibra alimentaria. Enriquecimiento en fibra de productos cárnicos crudos curados.*

**Acrònim:** SEFI.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** ROSSELLÓ MATAS, Carme.

**Categoria:** TU (àrea de coneixement: Enginyeria Química).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Rosselló Matas, Carme	TU	1
Simal Florindo, Susana	TU	1
Femenia Marroig, Antoni	TEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Frau Caldentey, Miquel		Govern Balear
Cañellas Mut, Jaume		Associació per el Foment dels Aliments de les Illes Balears

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

The 'sobrassada de Mallorca' is a traditional product made in the island of Mallorca and protected by a quality distinction (PGI) of European ambit. Actually, this product is in a clear expansion process. Sobrassada is a raw cured pork sausage, with a high fat content. Basically, the aim of this proposal is to find the appropriate methodology to elaborate a raw cured meat based product (sobrassada) enriched with high quality dietary fibre, maintaining the organoleptic properties as similar as possible to those from the original product.

To undertake this study is necessary to carry out an in depth analysis of the following aspects: Assessment of the optimal process conditions to obtain fibre supplements of high quality from different fruit and vegetable sources: influence of the raw material, pretreatments and the operation variables during the drying process. Selection of the more appropriate fibre supplements under objective quality parameters.

Study of the effects of the incorporation of fibre supplements on the physicochemical, microbiological and sensorial quality of the sobrassada: evaluation of the influence of the new formulation on the maturation process and, also, on the final characteristics of the product, evaluated under objective quality parameters.

The methodology, which is intended to develop on this project, could then be applied on the elaboration process of many other raw cured meat-based products typical of Spain.



**Referència:** BQU2003-02592. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Inactivación y modelado molecular de serin-enzimas. Beta-lactamasas de la clase D y elastasas.*

**Acrònim:** IMMELE.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** MUÑOZ IZQUIERDO, Francisco.

**Categoria:** CU (àrea de coneixement: Química Física).

**Inici:** 2003. **Fi:** 2006.

<b>Membres de l'equip</b>	<b>Categoria</b>	<b>Dedicació (EDP)</b>
Muñoz Izquierdo, Francisco	CU	0.5
Donoso Pardo, Josefa	TU	0.5
Frau Munar, Joan	TU	0.5
Vilanova Canet, Bartomeu	TU	0.5
Coll Parets, Miquel	As.	1
Garcias Llabrés, Rafael	Aj.	0.5
Fenollar Ferrer, Maria C.	Tèc.	1

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

In the present investigation project we will study the kinetic mechanism of enzyme inhibition of some serine enzymes. We will carry out kinetics studies on the class D  $\beta$ -lactamases and PPE (Porcine Pancreatic Elastase) inhibition. The therapeutic problem posed by class D  $\beta$ -lactamases, a family of serine enzymes that hydrolyse  $\beta$ -lactam antibiotics following an acylation-deacylation mechanism, are increased by the very low level of sensibility of these enzymes to  $\beta$ -lactamase inhibitors. The PPE usually is taken as a model of the HLE (Human Leukocyte Elastase), enzyme that plays an important role in destructive processes associated with chronic inflammatory diseases such as emphysema, rheumatoid arthritis...

In the first step, a kinetic study on the chemical reactivity of different potential inhibitors will be carried out. This study will be done by HPLC and UV-VIS and NMR spectroscopy. In a second step, by UV-VIS and Stopped Flow measurements, we will study the inhibition process. At the same time, theoretical calculations will be done in order to determine the chemical reactivity of the potential inhibitors and to model the oxyanion hole in class D  $\beta$ -lactamases, HLE and PPE. The hydrolysis, thiolysis and aminolysis of the potential inhibitors will be studied by semiempirical, ab initio and DFT calculations. The molecular modelling study will be done by molecular mechanics and molecular dynamics calculation. We will study the formation of Michaelis complex between the serine enzymes and the antibiotics in order to determine the interactions that stabilize it and the amino acids involved in this process.

**Referència:** BQU2003-01659. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Estudios sobre nucleación heterogénea en la litiasis renal oxalocálcica. Etiología y diagnóstico.*

**Acrònim:** NUHELIROC.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** GRASES FREIXEDAS, Felicià.

**Categoria:** CU (àrea de coneixement: Química Analítica).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Grases Freixedas, Felicià	CU	1
Costa Bauzà, Antònia	TEU	1
Prieto Almirall, Rafel M.	TEU	1
Perelló Bestard, Joan	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Pieras Ayala, Enrique C.	Hospital Universitari Son Dureta	
García González, Ramón	Gestió Sanitària de Mallorca	
Ramis Barceló, Margalida		
Muñoz Vélez, Daniel	Fundació Hospital de Manacor	

**EDP del grup investigador de l'entitat sol·licitant: 4.**

### **Summary**

During the last decade a clear increment of the renal lithiasis incidence has been evidenced in all the countries, bigger so much increase as much as higher is the socio-economical level of the country. In fact one of the factors fewer studied and that probably notably influences in the development of calcium oxalate renal calculi (they are the most abundant) is the presence of heterogeneous nucleants, since the urine of any individual is permanently supersaturated in calcium oxalate. In fact, a notable increase of the number of calcium oxalate renal calculi from cavities, which formation is clearly induced by the presence of heterogeneous nucleants in the urine, has been detected. Thus, the purpose of the Project that is presented is the one of making a study in depth of the heterogeneous nucleation in the oxalocalcic renal lithiasis.

For it is sought to establish a 'in vitro' study of substances that can act as heterogeneous nucleants of calcium oxalate in urine and of all those factors that affect to the process (inducing or inhibiting it). It will be also performed a study of calcium oxalate monohydrate renal calculi from cavity for the identification of heterogeneous nucleants in the core of them, and also the identification and quantification of the presence of heterogeneous nucleants in the urine of stone formers of this calculi type. This study will contribute to a knowledge in depth of one of the key stages in the formation of this calculi type, of the one that without a doubt will be derived more effective prevention and treatment protocols.

**Referència:** TRA2004-02460/TMAR. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de medis de transport.

**Títol:** *Caracterización de zonas de refugio para buques siniestrados que transportan hidrocarburos: aplicación a las Islas Baleares.*

**Acrònim:** PUERTOS.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** BERGUEIRO LÓPEZ, José Ramón.

**Categoria:** TU (àrea de coneixement: Enginyeria Química).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Bergueiro López, José Ramón	TU	0.5
Serra Socias, Francesca	B	1
Domínguez Laseca, Félix		1
Romero March, Romualdo	TU	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The aim of this project is to describe the characteristics of a shelter zone where a ship that transports hydrocarbons could be moved before an emergency. To know if a certain zone meets those characteristics there will be born in mind the type and the quantity of hydrocarbons transported and split to analyze the risks of fire and explosion and its influence on the surrounding environment. It will indicated the way of determining the possibility that the mixture of hydrocarbons burns if it is in the sinister tank or is spilt in the shelter zone, as well as the possibility that the hydrocarbons could spread, disperse or to be emulsified in the water. It will be indicated the procedures to follow for the confinement of the hydrocarbons spilt in the shelter zone, as well the possibility of recovery by means of skimmers shpis or by menas of adsorptive manterials. It will be equally indicated the characteristics that the shelter zonce must have in order to transfer the hydrocarbons to another ship or to deposits in land, as it was realized with the tanker Aegean Sea. It will be indicated the way od determining, by means of simulation models, the path that the spilt of hydrocarbons would follow and the possible coastal zones that it would affect, taking into account the meteorological situation at the moment of the spillage and in the posterior hours. The characteristics of vulnerability, resilience and induced recovery that the shelter zone should fulfill will be also indicated. Finally and provided that the antipollution actions will never be effective in its entirety, there will be shown the systems and the logistics that must be applied for the recovery of the shelter zonce that has been contaminated by the hydrocarbons. The system will be applied in the environment of the points of exhaust of hydrocarbons of the Balearic Islands, under different meteorological situations.

**Referència:** CTQ2004-03256/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Desarrollo de sistemas automáticos inteligentes para la determinación de analitos de interés medioambiental.*

**Acrònim:** INTAN.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ESTELA RIPOLL, Josep Manuel.

**Categoria:** TU (àrea de coneixement: Química Analítica).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Estela Ripoll, Josep Manuel	TU	1
Caro Fernández, Arturo	TEU	1
Mas Torres, Francesca	Aj. U	1
Miró Lladó, Manuel	Inv.	1
Ferrer, Laura	B	1
Fajardo González, Yamila	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Gómez Benito de Valle, Enrique	Govern Balear	
Rangel, Antonio	Universitat Catòlica Portuguesa	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

The development of new advanced automatic systems of flow analysis is proposed in this project, exploiting principally the novel technique multisyringe flow injection analysis (MSFIA) with the following aims:

- a). Radioactive isotopes analysis in soil, air and waters
- b). Determination of environmental indicators and chemistry elements (including speciation) in different kind of waters (wastewaters, drinking waters, sea water, etc.)

On one hand the elimination or minimization of the manual operations required in the methodologies used nowadays are proposed and in other one, to improve the applicability of the analytical methods, as well as to implement new methods directed to resolving specific problematics.

The projected solutions are based on the simplification of the different stages of chemical analysis using fundamentally system with optodes. In all cases the established systems will be provided with algorithms that allow taking decisions according to the sample characteristics. Thus, several aspects such as concentration levels, need of speciation, clean-up, changes of detection systems or combination with other flow analysis techniques will be taking into account. At the same time, we propose to improve the robustness of the established methodologies considering chemical and software aspects as well as the instrumental devices.

**Referència:** CTQ2005-00250/BQU. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de ciències i tecnologies químiques.  
**Títol:** *Inhibición selectiva de enzimas que presentan el PLP como cofactor.*  
**Acrònim:** ISE-PLP.  
**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.  
**Investigador responsable:** MUÑOZ IZQUIERDO, Francisco.  
**Categoria:** CU (àrea de coneixement: Química Física).  
**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Muñoz Izquierdo, Francisco	CU	1
Donoso Pardo, Josefa	CU	1
Frau Munar, Joan	TU	1
Vilanova Canet, Bartomeu	TU	1
Coll Parets, Miquel	As.	1
Garcias Llabrés, Rafael	Aj.	1
Salvà Salvà, Antoni	As.	1
Fenollar Ferrer, Cristina		1
Adrover Estelrich, Miquel		1

**EDP del grup investigador de l'entitat sol·licitant: 9.**

### **Summary**

In the present research project it is tried to study three PLP-dependent enzymes, aspartate aminotransferase (AAT), alanine racemase (ALR) and ornithine decarboxylase (ODC), in order to determine selective inhibitors of ALR and ODC. The specific inhibition of the ALR would allow the destruction of the bacteria without indirect effect, since the ALR is essential for the formation of the cellular wall of the bacteria and has not been detected in mammals. The inhibition of the ODC has demonstrated effective in the treatment of certain cancers and some parasite diseases. Some inhibitors of these enzymes have been described already, nevertheless all of them are general inhibitors, is to say cause the inhibition of most of the PLP-dependent enzymes, with the consequent not wished indirect effect. By means of MM and MD calculations it is tried to make the molecular modelling of the enzymatic active site and by means of calculations of quantum chemistry the theoretical mechanisms of inhibition will be studied, which will allow determining the structural characteristics of inhibitors. Finally the mechanisms of inhibition of the proposed molecules will be determined experimentally by stopped flow measurements.

**Referència:** MAT2005-05350. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de materials.

**Títol:** *Materiales porosos para la detección, adsorción y depósito de gases.*

**Acrònim:** MINAMAT.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** OTERO AREAN, Carlos.

**Categoria:** CU (àrea de coneixement: Química Inorgànica).

**Inici:** 2005.                    **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Otero Areán, Carlos	CU	1
Turnes Palomino, Gemma	TU	1
Rumori, Paolo	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

The study and development of materials having outstanding gas adsorption properties is a forefront issue of present-day research; triggered by strategic industrial and environmental applications, such as gas sensing, separation and storage. This research project aims at a detailed analysis of the adsorption of gas molecules (CO, CO<sub>2</sub>, NO<sub>x</sub>, H<sub>2</sub> and amines) on microporous (zeolites and active carbons) and nanostructured periodic porous materials (MCMs, SBAs and carbon replicas). Both, gas-solid interaction mechanism and thermodynamics of the adsorption of harmful gases, as well as for reversible hydrogen storage; a subject of current interest for the development of a sustainable (and clean) energy future.

**Referència:** CTQ2005-08989-C02-01/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Diseño, síntesis y evaluación de estructuras supramoleculares funcionales: sensores, receptores y dispositivos moleculares.*

**Acrònim:** supramol2005.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** DEYÀ SERRA, Pere M.

**Categoria:** CU (àrea de coneixement: Química Orgànica).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Deyà Serra, Pere M.	CU	1
Costa Torres, Antoni	CU	1
Morey Salvà, Jeroni	TU	1
Frontera Beccarà, Antoni	Inv.	1
Rotger Pons, M. del Carme	Inv.	1
Quiñonero Santiago, David	Inv.	1
Vega Reynés, Manuel	Tèc.	1
Capó Cañellas, Magdalena	As.	1
Garau Rosselló, Carolina	B	1
Castilla Manjón, Ana María	B	1

**EDP del grup investigador de l'entitat sol·licitant: 10.**

### **Summary**

The evolution of supramolecular chemistry allows, nowadays, the access to well-defined complex structures from simple molecules, taking advantage of the intelligent mixing of covalent and noncovalent bonds. The present project is the result of the natural evolution of the preceding ones, insists in this line of research and pays special attention to the application of the new materials to diverse chemical processes. Three main objectives will be endeavored in a multidisciplinary way. The first objective focuses on the development of squaramide-based molecular sensors with application to molecular recognition and determination of oxoanions in aqueous media. The main challenges are both to achieve the solubility in water and the selectivity. The latter will allow the efficient incorporation of transducer elements which can convert a chemical phenomenon into a spectroscopical signal.

The second is the design and synthesis of self-assembled nanometric systems capable to perform technological application functions like molecular devices. The efficient use of metal-ligand interactions will allow the access to supramolecules with diverse topology with application as functional devices in different processes. The coordination of amines to metalloporphyrins and their application in charge-transfer processes, photo-induced energy and catalysis will be used to achieve this objective.

Finally, the knowledge learned by means of ab initio calculations regarding interaction between ions and  $\pi$ -systems should allow us to successfully study the additivity of the anion- $\pi$  interaction using theoretical methods with the purpose of designing a new family of anion receptors. The theoretical results will be verified experimentally by synthesizing and testing the receptors in solution. In addition, the study of the interaction between cations and interesting structural materials (carbon, nanotubes, cyclophanes, etc) is another challenge in our way to the technologic application of such supramolecular structures (i.e. rechargeable batteries).

**Referència:** AGL2006-14146-C02-02/ALI. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de recursos i tecnologies agroalimentàries.

**Títol:** *Secado intermitente de productos alimentarios: influencia de las variables de proceso en la calidad del producto final.*

**Acrònim:** SECINT.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** ROSSELLÓ MATAS, Carme.

**Categoria:** TU (àrea de coneixement: Enginyeria Química).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Rosselló Matas, Carme	TU	1
Simal Florindo, Susana	TU	1
Femenia Marroig, Antoni	TEU	1
<b><u>Investigadors d'altres entitats</u></b>		
Frau Caldentey, Miquel Cañellas Mut, Jaume	Govern Balear AFAIB	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

Intermittent drying technology represents a new way to obtain high quality products. Thermal processing might ensure safety and extend the shelf life of food products, however, in the case of foods such as fruits and vegetables, it often leads to detrimental changes in their chemical composition, textural properties and organoleptic characteristics.

The main objective of this proposal is the design and application of optimisation tools (product quality) to the drying procedure of agri-food products (grapes, carrot and apple) by using intermittent drying technology.

The effects of applying intermittent drying on the food products will be compared with those obtained by means of conventional heat air-drying. This will be performed at the laboratory scale and, also, at the pilot plant level. The effects of using heat cycles on the final quality of the products will be assessed, both on the dehydrated and rehydrated materials. Techniques such as Nuclear Magnetic Resonance (NMR) will be used to determine the evolution of moisture profiles within the food product during drying and, from all these data, the diffusion coefficients will be calculated

With the obtained data the mass transfer process will be modelled and the operational conditions will be optimised as a function of different quality parameters related to the physico-chemical properties of the different products; for instance: water sorption capacity, textural properties of the dried and rehydrated products and observation of effects at microscopic level and the solid moisture profile during dehydration/rehydration.



**Referència:** CTQ2006-09339/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Diseño de nuevas moléculas derivadas de purinas y pirimidinas N-Sustituidas y estudio de su química de coordinación con iones metálicos: búsqueda de nuevas estructuras bioactivas.*

**Acrònim:** DNMDPPNEQCIMBNEB.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** TERRON HOMAR, Àngel.

**Categoria:** TU (àrea de coneixement: Química Inorgànica).

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Terron Homar, Àngel	TU	1
García Raso, Àngel	TU	1
Fiol Arbós, Joan Jesús	TU	1
Cabot Bibiloni, Catalina	TU	0.5
Barceló Oliver, Miquel	B	1
Albertí Aguiló, Francesca M.	B	1

**EDP del grup investigador de l'entitat sol·licitant:** 5.5.

#### **Summary**

Puric and pyrimidinic bases are present in a great amount of biological processes fundamental for cellular metabolism that content from energetic questions to the cellular duplication. By these reasons, the main aim of this research is the obtention of i) purine-  $(CH_2)_x$ -purine, pyrimidine-  $(CH_2)_x$ -pyrimidine and mixed systems because are non polar analogous of dinucleotides, ii)  $N^6$ -alquiladenines, that are analogous of cytoquinines, iii) 5'-halouracils N-substituted, detected, a couple of them, as natural products present in sponges and other marine organisms and the study of their coordination derivatives with 3d metal ions (such as Cu(II), Zn (II),...) and 4d, 5d (Ru(III), Ir(III), Pt(II), Ag(I), among others) to explore the possibility to create new bioactive molecules.

**Referència:** CTQ2006-01851/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Diseño y validación de nuevos sistemas de tratamiento de muestra directamente acoplados a espectrómetros de masas.*

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** MARCH ISERN, Joan Gabriel.

**Categoria:** TU (àrea de coneixement: Química Analítica).

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
March Isern, Joan Gabriel	TU	1
Genestar Julià, Catalina	TU	1
Palou Franco, Josefina	TU	1
Simonet Suau, Bartomeu Miquel	Aj. dr.	0.5
 <u>Investigadors d'altres entitats</u>		
Mas Torres, Francesca	Govern Balear	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

This project involves the development of a new research topic which will allow important contributions in tools for sample treatment and in strategies for expanding the analytical potential and use of gas-mass spectrometer detectors.

Concretely, it is proposed the design of a modular chamber which integrates several units that can be directly coupled to mass spectrometer detectors. The chamber will allow the sample treatment, including dissolution, and analyte purification to be carried out in the same device. This will permit an important improving of the analytical procedure as most of required steps for analysis, both automatic or batch, will be simplified. The reagent consumption and residues generation will be also reduced. As a main novelty, the chamber will permit all the treatment process to be assisted by a difference of voltage which will allow an additional simplification.

The designed chambers can be coupled to a wide variety of detection systems. However, in order to obtained results of high quality, it is proposed the use of mass spectrometer detectors. The coupling of the chamber to liquid-mass spectrometer detector is expected to be simple as the solution coming from the chamber and containing the purified analytes can be directly introduced in the detector by using commercial interfaces (ESI and/or APCI). However, the chamber-gas-mass spectrometer coupling need a new and special interface, aspect which it is considerate an important contribution of this project. The proposed interface will allow the direct introduction of liquid solutions to gas-MS detectors. This will increase the analytical potential and use of gas-MS detectors which are widely used and implemented in routine laboratories.

Finally, after the validation of chambers and interface, several analytical applications involving samples and analytes of interest will be developed with the view to demonstrate the analytical potential and usefulness of these new tools. The proposed methodologies will have important advantages as they will be faster, simples to implement, will involve the use of low amounts of reagents and they will be robust. In this way, answers to the present demands of Analytical Chemistry will be satisfied.

**Referència:** CTQ2006-05640/BQU. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies químiques.

**Títol:** *Estudio de los mecanismos de calcificación de los tejidos blandos. Cálculos renales papilares. Calcificaciones cardiovasculares.*

**Acrònim:** EMCTB.

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** GRASES FREIXEDAS, Felicià.

**Categoria:** CU (àrea de coneixement: Química Analítica).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Grases Freixedas, Felicià	CU	1
Costa Bauzà, Antònia	TEU	1
Prieto Almirall, Rafel M.	TEU	1
Hierro Riu, Ferran	Tèc.	1
Isern Amengual, Bernat	B	1
Sanchis Cortés, Maria del P.	B	1
<b><u>Investigadors d'altres entitats</u></b>		
García González, Ramón	IBSALUT	
Ramis Barceló, Margalida	Govern Balear	
Pieras Ayala, Enrique C.	IBSALUT	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

Calcium oxalate monohydrate papillary renal calculi, in spite of their important incidence (12,9% of all renal calculi), are a calculi type still with an unknown ethiology, and consequently, their treatment is not clear. The formation of this renal calculi type is initiated by calcification processes of the papillary urothelium, beginning in occasions through hydroxyapatite deposits. In this project we plan to study in depth all the factors and mechanisms that induce the formation of papillary renal calculi, as well as the role that the inhibitors of the crystallization exert in each situation.

Cardiovascular calcifications constitute an alteration with serious consequences, affect to a very wide population's sector and they are also associated to aging processes. Their development implies hydroxyapatite formation through a mechanism that in some aspects resembles the beginnings of the formation of papillary renal calculi. In this project it is planned to study the formation and development mechanisms of cardiovascular calcifications, especially referring to the role of inhibitors.

**Referència:** 1A/2005R. Conselleria d'Agricultura i Pesca.

**Modalitat:** Ajudes a la investigació aplicada en matèria d'agricultura i pesca en l'àmbit de les Illes Balears.

**Títol:** *Caracterització química, física i sensorial del formatge mallorquí.*

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** ROSSELLÓ MATAS, Carme.

**Categoria:** TU (àrea de coneixement: Enginyeria Química).

**Inici:** 2005.

**Fi:** 2006.

**INSTITUT MEDITERRANI D'ESTUDIS AVANÇATS  
(IMEDEA)  
INSTITUT MIXT CSIC-UIB**

**Referència:** FIS2004-00953. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de física.

**Títol:** *Cooperación y fenómenos no lineales en sistemas complejos extendidos 2.*

**Acrònim:** CONOCE-2.

**Centre:** Institut Mediterrani d'Estudis Avançats.

**Investigador responsable:** SAN MIGUEL RUIBAL, Maximino.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2004. **Fi:** 2007.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
San Miguel Ruibal, Maximino	CU	0.5
Toral Garcés, Raúl	CU	0.5
Hernández García, Emilio	Prof. Inv.	1
Piro Perusín, Oreste	TU	0.5
Mirasso Santos, Claudio	TU	0.5
Colet Rafecas, Pere	Cient. Tit.	1
Matías Muriel, Manuel	Cient. Tit.	0.5
Sintes Olives, Tomàs Miquel	TEU	0.5
Martínez Eguíluz, Víctor	Inv.	0.5
López Sánchez, Cristóbal	Inv.	1
Mulet Pol, Josep	Aj.	0.5
Amengual Marí, Pau	B	1
Chembo Kouomou, Yanne	B	1
Ciszak, Marzena	B	1
Gomes da Silva, Iacyel	B	1
Suchecki, Krzysztof	B	1
Tufal Guefen, Idan	B	1
Vicente Zafra, Raúl	B	1
Scirè, Alessandro	B	1
Matas Riera, Sebastià	Tèc.	1
<b><u>Investigadors d'altres entitats</u></b>		
Hoyelos, Miguel	Universitat de Mar del Plata	
Klemm, Konstantin	Universitat de Leipzig	
Kurths, Juergen	Universitat de Postdam	
Oppo, Gian Luca	Universitat d'Strathclyde	
Vulpiani, Angelo	Universitat de Roma La Sapienza	
Zimmerman, Martín	Universitat de Buenos Aires	

**EDP del grup investigador de l'entitat sol·licitant: 16.**

#### **Summary**

CONOCE-2 is the continuation of a long standing cooperative research effort in the general interdisciplinary context of the new directions of Statistical and Nonlinear Physics, with special reference to the behavior of spatially extended systems and a new emphasis on the effects of interaction through complex networks. On the one hand the project includes fundamental studies (exploration) with contributions to the development of methods, concepts and description of generic behavior in 6 aspects: Dynamics of complex networks,

Synchronization phenomena, Dynamical systems of moderate dimensionality, Fluctuations and stochastic phenomena, Computational methods in Statistical Physics: Study of biomolecules, and Semianalytical methods in the study of extended systems. On the other hand, it addresses the use (exploitation) of these methods and concepts in specific aspects of 5 lines of strategic research: Transport and mixing in fluids: Active flows and Microfluidics, Patterns and image processing in nonlinear optical cavities, Nonlinear dynamics of semiconductor lasers: Mode locking and synchronization, Nonlinear Phenomena in Ecology and Physiology, and Dynamics of social systems: Agent based models. Some general phenomena considered in the different research lines of the project include: Interaction network formation, Chaotic phenomena, Synchronization, Domain formation, and Stochastic phenomena.

**Referència:** FIS2004-05073-C04-03. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de física.

**Títol:** *Fenómenos emergentes en redes biológicas con interacciones complejas.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TORAL GARCÉS, Raúl.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2004. **Fi:** 2007.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Toral Garcés, Raúl	CU	0.5
Matias Muriel, Manuel A.	Científic titular	0.5
Martínez Eguíluz, Víctor	Inv.	0.5
Cerdà Pino, Juan J.	Aj.	1
D'Ovidio, Francesco	B	1
Tessone, Claudio Juan	B	1
 <u>Investigadors d'altres entitats</u>		
Gunton, James D.	Lehigh University	
Chialvo, Dante Renato	Northwestern University of Chicago	

**EDP del grup investigador de l'entitat sol·licitant:** 4.5.

### **Summary**

Cooperative phenomena characterize the behaviour of many different complex systems, from low dimensional systems to complex graphs, from disordered systems to biological macromolecules; this has important theoretical implications, and a variety of possible practical applications, ranging from the domain of biomolecular engineering to that of traffic management. This project will be focused on four very related, and complementary, research lines:

- thermodynamics, kinetics and dynamics of protein folding, and its modification during evolution: a striking example of how macroscopic cooperativity can be encoded in an extremely complex system, to ensure its biological function;
- characterization and modelling of dynamics on complex networks, with applications ranging from transport processes in communication, technological, social and biological networks, to the study of models of the evolution of biological networks;
- equilibrium and off-equilibrium Physics for disordered condensed matter systems (structural and spin glasses, diluted systems and colossal magnetoresistance oxides). This is the context where most of the statistical, analytical and numerical Techniques for the study of complex behaviour are developed;
- dynamical processes on low-dimensional complex systems and stochastic systems, which are ideal playgrounds to devise and test new indicators of complex behaviour, and are paradigmatic for many different real dynamical processes.



**Referència:** BSO2003-01960. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Modelos matemáticos aplicados al estudio de la demografía y dinámica de poblaciones de organismos amenazados: una aproximación poblacional y metapoblacional.*

**Acrònim:** POPMODEL.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** ORO DE RIVAS, Daniel.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Oro de Rivas, Daniel	Científic titular	1
Igual Gómez, José Manuel	Tèc.	0.5
Louzao Arsuaga, Maite	B	0.5
Genovart Millet, Meritxell	B	0.5
Martínez Abraín, Alejandro	B	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Minguez Díaz, Eduardo	Universitat Miguel Hernández	
de León Martí, Ana	University of Glasgow	
Arcos Pros, José Manuel	University of Glasgow	

**EDP del grup investigador de l'entitat sol·licitant: 3.**

### **Summary**

This project deals with the development of mathematical and statistical models to account of a precise diagnosis on the conservation status and threats affecting three threatened marine birds of the Mediterranean: the Balearic shearwater, Audouin's gull and European storm petrel. The Balearic shearwater is one of the few endemic species of the Iberian vertebrate fauna and has been recently classified as critically endangered in the up-to-date edition of the Red Book of the Birds of Spain. Audouin's gull concentrates on Spain more than 90% of total world population, while the storm petrel is one of the most unknown species in the whole region. Action Plans proposed by the Ministry of the Environment point out the need of monitoring field data to model several demographic parameters that are crucial to elaborate a reliable diagnose on the conservation status of such species. The study will analyse several topics such as demography, feeding and breeding ecology, effects of pollutants and modelling of extinction probabilities. Demographic parameters (adult and immature survival, recruitment, dispersal) will be analyzed by capture-recapture models, while ultrastructural models will allow us to estimate dispersal among local populations at metapopulation level. Probabilities of extinction will be assessed through Monte Carlo simulation of population trajectories, taking into account stochasticity both demographic and environmental. The study of foraging areas, diet and pollutants will allow us to model these probabilities of extinction under different theoretical scenarios of management carried out by Conservation Agencies.

**Referència:** BOS2003-05198-C02-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Análisis intraespecífico de la diversidad génica de Salinibacter ruber.*

**Acrònim:** GASA-ANIS.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** ROSSELLÓ MORA, Ramon.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003.

**Fi:** 2006.

**Membres de l'equip**

**Categoria**

Roselló Mora, Ramon

Científic titular

**Summary**

The goal of this project is to characterize the genome of *Salinibacter ruber*, an extremely halophilic prokaryote belonging to the *Bacteria* Domain. We will focus on three different aspects: (i) study of the genome sequence of the type strain, with special emphasis on the ecological and/or evolutionarily relevant genes, whose expression will be studied; (ii) study of the intra-specific diversity of these genes in isolates of *S. ruber* of different origin; and (iii) analysis of the expression of these genes in environmental samples in which the presence of *S. ruber* has been described. To ensure the feasibility of the project we have currently around 80% of the genome sequence for the type strain, as well as a collection of 44 *S. ruber* strains isolated worldwide and detailed knowledge about the ecology of this bacterium.

This project is organized in two subprojects, tightly related to each other. The first subproject will focus on the type strain genome, using the available sequence for the characterization of genes that could have been transferred from *Archaea* (present in *Salinibacter* habitats) and/or genes relevant in hypersaline environments. Once found, these genes will be phylogenetically characterized (in collaboration with the researchers in the second subproject) and their expression studied in different growth conditions. Besides, we will complete and analyse the sequence for the genome zones containing these genes (by cloning *S. ruber* genome in BACs, picking of the clones containing these genes and sequencing of the selected BACs). In the second subproject all this information will be used to study the intra-specific diversity of the newly characterized genes in the strain collection analysing both their presence/absence and their expression in order to correlate these aspects with the origin of isolation. Finally, in this subproject frame, the expression of these genes in environmental samples will be studied in order to ascertain their role in the ecology of the system.

**Referència:** VEM2003-20565. Ministeri de Ciència i Tecnologia.

**Modalitat:** Acció estratègica contra vessaments marins.

**Títol:** *Caracterización de la microbiota autóctona degradadora del fuel del Prestige y de su potencial de biorremediación.*

**Acrònim:** DEFUEL.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** LALUCAT JO, Jordi.

**Categoria:** CU (àrea de coneixement: Microbiologia).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Lalucat Jo, Jordi	CU	1
García-Valdés Pukkits, Elena	TU	1
Bosch Zaragoza, Rafael	TEU	1
Bennàsar Figueras, Antoni	As.	1
Nogales Fernández, Balbina		1
Bergueiro López, José Ramón	TU	1
<b><u>Investigadors d'altres entitats</u></b>		
Timmis, Kenneth Nigel	University of Essex	
McGenity, Terence John	University of Essex	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

Bacteria play a predominant role in the degradation and mineralisation of hydrocarbon spills in marine ecosystems. The indigenous microbiota responds to an oil spill by increasing its biodegradation capacity and favouring the development of those populations able to metabolise hydrocarbons. The composition of microbial communities varies with relation to the hydrocarbon characteristics and the physico-chemical conditions of the environment. The succession of bacterial populations involved in hydrocarbon degradation is not well known due to methodological problems. Currently, the use of molecular techniques allows for the precise characterisation of the relevant microbial communities in marine ecosystems, as well as to characterise the genetic and metabolic potential of the populations degrading hydrocarbons in the recovery of contaminated areas. The main objectives of the proposed project are:

- Analysis using cultivation and molecular methods of the bacterial communities in contaminated and non contaminated zones in an area affected by the Prestige oil spill at the Galician coast: tidal zone, sediment and surface water. Identification of those populations which actively degrade hydrocarbons by using stable isotope probing (SIP).
- Study of the diversity of the key genes in the degradation of the crude oil constituents, both from the isolated microorganisms and directly from environmental samples after generation of metagenomic libraries.
- Bioremediation studies in micro- and macrocosms by stimulation of the indigenous microorganisms identified.

This project will allow us to determine which are the microorganisms present in polluted marine environments, which of them are involved in biodegradation, which metabolic genes are implicated and which biodegradation strategy might be the most appropriate for these environments.

**Referència:** 050/2002. Ministeri de Medi Ambient.

**Modalitat:** Ajudes a projectes d'investigació a la Xarxa de Parcs Nacionals.

**Títol:** *Impacto de los herbívoros exóticos en las comunidades vegetales del Parque Nacional de Cabrera: umbrales de degradación, análisis de riesgos y plan de gestión integrada.*

**Acrònim:** HERBIMPACT.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigadora responsable:** TRAVESET VILAGINÉS, Anna.

**Categoria:** Investigadora científica del CSIC.

**Inici:** 2003. **Fi:** 2006.

**Membres de l'equip**

**Categoria**

Traveset Vilaginés, Anna

Inv.

Santamaría Galdón, Luis E.

Inv.

Palmer Vidal, Miquel

Inv.

**Summary**

Biological invasions caused by exotic species often have devastating effects on island flora and fauna. Island endemics are particularly sensitive to the effects of such invasions, since they seem to be more extinction prone. Invasions by rodents such as rats and rabbits are often mentioned among those showing the most devastating effects. Both species show high fecundities, are herbivores and (in the case of rats) seed predators. They also have indirect effects on the vegetation and fauna, through increased soil erosion, decreased soil fertility and increased risk of invasion by other exotic species.

The characteristics of small rodent populations make extremely difficult their complete eradication from islands other than isolated and very small islets. For this reason, optimal strategies for the mitigation of impacts caused by these species combine an evaluation of their impact on island ecosystems with an analysis of the efficacy and costs of eradication programs. HERBIMPACT will contribute to this objective providing the analysis of the impact of exotic rodent herbivores (rat and rabbit) on the vegetation dynamics in the Cabrera National Park. The results will be used to undertake a risk analysis under various management scenarios, focusing mainly on the risk of (1) erosion, soil degradation and seed-bank loss, (2) extinction of endemic and/or endangered species, and (3) establishment of invasive species. The results of the risk analysis will be used to generate adaptive management guidelines for the impact of exotic herbivores on the vegetation and to elaborate an early warning system for the degradation of vegetation and soil by said herbivores.

For this purpose, we will study the direct and indirect effects of local rat and rabbit populations on the vegetative biomass (cycle production-grazing-regrowth) and sexual reproduction (seed production, dispersal and seedling predation) of (a) dominant species in the various vegetation types and (b) a taxon of high conservation interest (*Medicago citrina*), endemic of eastern Spain and the Balearic islands with a total of 10 populations situated in small islands and islets (of which 3 are placed in Cabrera National Park).

We will pay special attention to establishing the relationships between both herbivore species and quantifying accurately the relationship between their population densities and their impact on the vegetations. For this purpose, we will combine field experiments (exclosures linked to experimental manipulations to measure seed predation and seedling predation), field observations (vegetation structure and plant survival at sites with various herbivore densities) and laboratory experiments with animals (diet choice and plants (regrowth potential, impact of grazing on reproductive output). Field experiments will make

use of the existing variability in rat and rabbit density among the various islands and islets of the Cabrera archipelago.

Field observations and experimental results will be integrated by means of two types of vegetation models: (1) dynamic succession models and (2) state-transition models. Risk analysis will be based in the simulations with both types of models. Finally, the subsequent generation of indicators linked to adaptive management strategies will be based on DPSIR (driving force–pressure–state-impact-response) models.

**Referència:** REN2003-06962/GLO. Ministeri de Medi Ambient.

**Modalitat:** Recursos naturals.

**Títol:** *Efecto de las especies invasoras en las redes de polinización: ¿favorece la abundancia de especies súper-generalistas la invasión de los ecosistemas insulares?*

**Acrònim:** INVASRED.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** SANTAMARÍA GALDÓN, Luis E.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003.

**Fi:** 2006.

### **Summary**

INVASRED focuses on the impact of invasive species on the pollination networks of native communities. We aim specifically at testing the following hypothesis: increased abundance of super-generalist pollinators in island ecosystems (as compared to continental ones) enhances the probability of establishment of invasive species, which in turn results in reduced establishment of native species. Detailed aspects of this hypothesis are: (1) decreased species richness of island ecosystems results in an increased abundance of super-generalists pollinator species, with broad feeding niches; (2) super-generalist pollinator species facilitate the establishment of invasive species; (3) presence of invasive plants results in lower pollination and establishment of native species, due to competition for pollinators.

In order to test these hypotheses, we will analyse pollinator networks in insular and continental, coastal communities that differ in their species richness (between island and continent) and in the presence of invasive species (nested within each locality, whether island or continent). We will also evaluate the efficiency of the pollinator communities studied in each pollinator network, on a selected subset of invasive (e.g. *Carpobrotus edulis*, *C. acinaciformis* and *Opuntia* spp.) and native species (e.g. those belonging to the genera *Anthyllis*, *Asphodelus*, *Asteriscus*, *Cistus*, *Lotus* and *Sonchus*) chosen to represent those most abundant and/or most important in each pollination network. This empirical work will be complemented by a theoretical analysis of the conditions under which range expansions can take place in a system with four actors (native plant, introduced plant, native pollinator and invasive pollinator), aimed at generating both improved screening methods for the identification of potentially invasive species and improved management methods for those which are already established.

**Referència:** 55/2002. Ministeri de Medi Ambient.

**Modalitat:** Ajudes a projectes d'investigació a la Xarxa de Parcs Nacionals.

**Títol:** *Regresión de praderas de Posidonia oceánica y calidad ambiental en el Parque Nacional del Archipiélago de Cabrera: causas, magnitud, distribución y posibles estrategias de remediación.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigadora responsable:** MARBÀ BORDALBA, Núria.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003. **Fi:** 2006.

**Membres de l'equip**

**Categoria**

Marbà Bordalba, Núria

Cient. Tit.

Agustí Requena, Susana

Inv.

Duarte Quesada, Carlos

Prof. Inv.

Terrados Muñoz, Jorge

Cient. Tit.

**Summary**

*Posidonia oceanica* develops extensive meadows on the carbonate sediments of the Cabrera Archipelago National Park coast, forming a key ecosystem for biologic production and littoral biogeochemical processes. Recent studies demonstrate that *P. oceanica* meadows at Cabrera NP are declining, evidencing in turn some degree of environmental quality deterioration. The origin and magnitude (i.e. loss rate, spatio-temporal scale) of the decline detected, however, are unknown, preventing to define and implement efficient management policies to preserve *P. oceanica* meadows as its coastal functions. Meadow decline, moreover, is a non-linear process, accelerating, through cascade effects, after reaching a certain level of disturbance. There is the need, therefore, to detect seagrass decline at early stages of the process to be able to revert the decline process when seagrass loss is still not evident as loss of seagrass cover. Meadow recovery, in addition to depend on the growth and reproduction rate of the species, depends on on the recovery time scale of environmental quality. Whereas water quality recovers within days/weeks, sediment quality requires decades to recover. Therefore, the time scale for meadow recovery might substantially decrease through strategies towards accelerating the recovery of sediment quality. Hence, the aim of the project submitted is to identify the origin(s), quantify the magnitude and characterize the distribution of meadow decline of *Posidonia oceanica* at the Cabrera Archipelago NP, to develop new approaches based on early warning indicators of decline, and to investigate possible amelioration strategies to stop the seagrass decline observed.

**Referència:** REN2003-07787-C02-01. Ministeri de Ciència i Tecnologia.  
**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.  
**Títol:** *Desarrollo de una plataforma de observación oceánica móvil y autónoma.*  
**Acrònim:** CORMORÁN.  
**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).  
**Investigador responsable:** ÁLVAREZ DÍAZ, Alberto.  
**Categoria:** Investigador científic del CSIC.  
**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Álvarez Díaz, Alberto	Inv.	1
Tintoré Subirana, Joaquim	Prof. Inv.	0.5
Orfila Förster, Alejandro	Inv.	0.5
Basterretxea Oyarzábal, Gotzon	Inv.	0.5
Antich Tobaruela, Javier	Aj. EU	0.5
Burguera Burguera, Antoni	Aj. EU	0.5
González Cid, Yolanda	TEU	0.5
Guerrero Sastre, José	P. Col.	0.5
Ortiz Rodríguez, Alberto	TEU	0.5
Vidal Rodríguez, Damià	TEU	0.5
Mochnacs, José Luis	B	0.5

**EDP del grup investigador de l'entitat sol·licitant: 6.**

*Keywords:* autonomous vehicle, data assimilation, numerical models, marine observations.

### **Summary**

Marine coastal environment is an extremely complex system, which is characterized by strong interrelationships between its physics-chemical process and its biological population. Therefore, the coastal marine environment requires interdisciplinary studies, which implies the simultaneous physical-chemical and biological variables sampling. Traditionally, oceanographic ships have been the most important observation platforms where to carry out oceanographic-interdisciplinary studies. Because they are economically expensive, the methodology is unable to provide information with the space-temporary resolution required. The anchorages, which are the alternatives to the oceanographic ships in coastal areas, provide a temporary high resolution, but their spatial resolution is very limited. The Autonomous Underwater Vehicles (AUV's) and the Autonomous Surface Vehicles (ASV's) are recent alternatives to these platforms, which would provide a higher spatial and temporary resolution. Among these kind of platforms, only the first of them, AUV's, are able to be considered as a working ones. However, its use is not very widespread due to its high cost. This project proposes the development of a low cost oceanic observation platform, an hybrid between AUV's and ASV's, that is to say, a one which is able to be moved by sea surface and execute vertical immersion in order to get water column profiles according to a previously established plan.



**Referència:** REN2002-00450. Ministeri de Ciència i Tecnologia.

**Modalitat:** Programa nacional de recursos naturals.

**Títol:** *Estructuración, demografía y conservación de la comunidad de aves marinas en el mediterráneo occidental: comparación con otras comunidades.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigadora responsable:** GONZÁLEZ FORERO, Manuela.

**Categoria:** INVESTIGADORA CONTRACTADA.

**Inici:** 2003.

**Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
González Forero, Manuela	Inv.	1
Afán Asencio, Isabel		1
<b><u>Investigadors d'altres entitats</u></b>		
Hobson, Keith	Canadian Wildlife Service	

**EDP del grup investigador de l'entitat sol·licitant: 2.**

*Keywords:* trophic ecology, stable isotopes, seabirds, population dynamics, conservation, mediterranean sea.

### **Summary**

The general aim of this project is to establish the factors that help to explain the distribution and abundance of sea birds in the western Mediterranean area, emphasizing the intra and interspecific competition for food, such as the fishing activities. In order to evaluate these effects, we will apply the stable isotope of nitrogen and carbon measuring technique. Secondly, we will study how these factors have influenced the demographic parameters of these populations.

**Referència:** CTM2005-05694-C03-01/MAR. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies mediambientals.

**Títol:** *Vanimedat (I): caracterización de la variabilidad del nivel del mar.*

**Acrònim:** VANIMEDAT-I.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** GOMIS BOSCH, Damià.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2005. **Fi:** 2008.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Gomis Bosch, Damià	TU	1
Monserrat Tomàs, Sebastià	TU	0.5
Marcos Moreno, Marta	Aj.	0.5
Pascual Ascaso, Ananda	Tèc.	0.5
Mir Calafat, Francesc	B	1
<b><u>Investigadors d'altres entitats</u></b>		
Ruiz Valero, Simón	Collecte Localisation Satellites	
Larnicol, Gilles	Collecte Localisation Satellites	

**EDP del grup investigador de l'entitat sol·licitant:** 3.5.

### **Summary**

Sea-level variability has a significant environmental and socio-economic impact on coastal regions. Presently, most important risks come from two phenomena: the slow but continuous sea level rise derived from global warming, and eventual modifications in the nature and distribution of extreme events, derived from the expected increased storminess of climate. Further knowledge on both phenomena is required in order to predict their impacts and, if necessary, to set up mitigation strategies.

It is widely accepted that sea level has been rising during the past century at an average global rate of around 1-2 mm/yr, and climate models forecast that this ratio will accelerate during this century. It is also expected that sea level rise will not be uniform over the globe, but will depend on changes in the regional atmospheric forcing and the oceanic circulation. One of the priorities of present research is the quantification of the different processes underlying sea level rise: the ocean mass increase derived from the melting of ice sheets (a global scale phenomena), the volume increment derived from the warming of the oceans, referred to as the steric component, and the meteorological contribution (the two latter processes have a significant regional component). It is also important to determine the extent to which open ocean estimates (given by satellite altimetry or models) are representative of coastal sea level (measured by tide gauges). While this is still uncertain, it has clear practical implications on the extrapolations of open sea results towards the shores. Another topic under debate is whether the trends observed in the occurrence of extreme events is an indirect consequence of sea level rise or, instead, there are other climate processes yielding larger amplitudes extreme events with an increased frequency.

The general objective of this project is to study the decadal and interdecadal sea-level variability, with particular attention to sea level trends and extreme events. All it in the geographical context of the ocean and seas surrounding the Iberian peninsula. The project will make use of long tide gauge records, improved altimetric data sets and 44 years (1958-2001)

of data derived from the HIPOCAS project (a downscaled re-analysis of meteorological and oceanographic fields). Of particular interest are the results of a barotropic sea-level model (HAMSOM) driven by wind and atmospheric pressure. The contribution of temperature and salinity changes in the water column will be assessed from the air-sea heat fluxes provided by the limited-area atmospheric model (REMO) used in HIPOCAS. Finally, the evaporation-precipitation budget of REMO will be useful to close the water budget in the Mediterranean.

The project has several specific objectives. The first one is to determine the spatial and temporal sea-level variability, devoting special attention to the consistency between coastal and open sea observations. To do this, we will take advantage of the complementariness of the data sets: while the altimetry reports the open sea variability with a convenient spatial resolution, tide gauge records mainly correspond to coastal sites and provide the time length requested to study the variability at decadal and interdecadal scales.

The second objective is to quantify the contribution, at a regional level, of the different mechanisms that drive sea-level variability. This will be achieved basing mainly on the results of numerical modelling. Namely, we aim at: i) quantifying the effect of atmospheric pressure and wind forcing on sea level from the analysis of sea-level residuals produced by the model HAMSOM. ii) Quantifying the contribution of the steric component (and the associated circulation patterns) from the results produced by a 3D baroclinic model (POLCOMS) forced by HIPOCAS heat fluxes; the numerical simulations will be compared with previous studies based on the analysis of historical hydrographic data and satellite sea surface temperature.

The third objective will be to estimate the ocean mass increase as the difference between total sea level and the two contributions previously determined. For the Mediterranean Sea, results will be compared with the precipitation-evaporation budget of HIPOCAS, with observations of mass fluxes across the Strait of Gibraltar and with data from the recent gravimetric mission GRACE, with the aim of determining the mass balance in the region.

Finally, the fourth objective will focus on the study of extreme events. Tide-gauge observations and models allow to examine sea-level extremes from a double standpoint: first, by comparing observations and numerical hindcasts, in order to assess the prediction capabilities of the numerical model; second, by investigating trends in the frequency and amplitude of extremes occurrence (which can take place simultaneously to the other trends referred above, in order to assess future coastal risks.

**Referència:** FIS2006-09966. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de física.

**Títol:** *Sistemas complejos entre la Física y la Biología.*

**Acrònim:** SICOFIB.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** MATIAS MURIEL, Manuel A.

**Categoria:** Científic Titular.

**Inici:** 2006. **Fi:** 2009.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació (EDP)</u>
Matias Muriel, Manuel A.	Científic Titular	0.5
Toral Garcés, Raúl	CU	0.5
Sintes Olives, Tomàs Miquel	TEU	0.5
Martínez Eguíluz, Víctor	Inv.	0.5
Zambrini, Roberta	Inv.	1
Cerdà Pino, Joan J.	Aj.	1
Duarte Quesada, Carlos M.	Prof. Inv.	0.5
Rozenfeld, Alejandro F.	B	1
Tessone, Claudio J.	B	1
Komin, Niko	B	1
Herrada Mederer, Evaristo A.	B	1

**EDP del grup investigador de l'entitat sol·licitant:** 8.5.

### **Summary**

The characterization and study of the dynamics of Complex Systems, that exhibit appearance of order and emerging behaviours at different scales, represents a fascinating problem that is in the borders of present knowledge. We have divided the problems that we will be tackling in this project in three research lines:

-Synchronization: appearance of coherence in many component systems with excitable behaviour. Anticipated synchronization in spatially extended systems.

Resonance and coherence induced by diversity. Creation of high-dimensional structures in desynchronizing transitions.

-Genetic networks: the filogenetic networks, based upon relation amongst genotypes constitute a very interesting class of networks that we aim to study within the context of the present project using the modern techniques of complex networks. On the other hand, we would like to generalize the concept of "tree of life", eliminating restrictions, to obtain a "network of life", including interactions more complicated from the topological point of view, such as loops.

-Spatial genetic structure: being able to infer by means of simulation techniques genetic spatial patterns is a fascinating possibility not yet explored. The combination of simulation and data should yield important advances in our understanding of the problem.

**Referència:** POL2006-11139-C02-01/CGL. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Contribución española al proyecto internacional 'synoptic antarctic shelf slope interactions study'. Caracterización espacial.*

**Acrònim:** ESASSI.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** GOMIS BOSCH, Damià.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Gomis Bosch, Damià	TU	1
Flexas Sbert, Maria del Mar	Inv.	0.5
Pascual Ascaso, Ananda	Tèc.	0.5
Montserrat Tomàs, Sebastià	TU	0.5
Arrieta López de Uralde, Jesús M.	Tèc.	0.5
Tovar Sánchez, Antonio	Inv.	0.5
Jordà Sánchez, Gabriel	Tèc.	0.5
Ruiz Valero, Simón	Tèc.	0.5
Orfila Forster, Alejandro	Inv.	0.5
Agawin, Nona Sheila	Inv.	0.5
<b>Investigadors d'altres entitats</b>		
Marcos Moreno, Marta	Université de La Rochelle	
Orsi, Alejandro H.	Texas A&M University	

**EDP del grup investigador de l'entitat sol·licitant:** 5.5.

### **Summary**

This project is the Spanish contribution to the international initiative SASSI (*Synoptic Antarctic Shelf Slope Interactions study*), one of the core projects endorsed by the International Polar Year (IPY). This initiative was previously endorsed by the Spanish committee of the IPY, and therefore it fulfils the requirements and specific regulations of the call for proposals to be carried out in the framework of the International Polar Year.

SASSI proposes a joint strategy for the study of the shelf-slope interactions in the Southern Ocean. A major milestone is to obtain the first simultaneous sampling of the most relevant regions of the Antarctic continental shelf. The project has a dominant physical component, since it focuses on the spatial and temporal variability of coastal dynamics. However, it has also an interdisciplinary component which is actually bidirectional: on one hand, there are some biochemical parameters which provide a key indications on very relevant physical processes (e.g., CFSs on the ocean ventilation); on the other hand, there are physical processes that affect in a crucial way the coastal Antarctic ecosystems. Therefore, the interaction between physical and biochemical processes will underlay most of the objectives of the project.

The project can be summarized in a general objective: the characterization of the southern boundary of the Antarctic Circumpolar Current (ACCb) and the latitudinal variability of the Antarctic Slope Front (ASF). In particular, the project will focus on the exchange of heat,

fresh water and nutrients taking place between the oceanic regime of the ACC and the continental shelves of the South Scotia Ridge (SSR). This objective will be achieved through four specific objectives: 1) to study the ACCb and the associated nutrient and heat fluxes from the open ocean to the north shelf of the SSR; 2) to establish the limits and the variability of the ASF in the SSR region and to study its relationship with the ACCb; 3) to determine the transport of deep and intermediate waters across the SSR, evaluating the associated nutrient and heat fluxes across the Ridge; and 4) to quantify the abundance of bacteria and chlorophyll concentrations, as well as the CO<sub>2</sub> sequestration related to the regional hydrodynamics.

The methodology will base on an oceanographic survey to be carried out during the austral summer 2007-2008 on the Weddell-Scotia confluence zone. The sampling strategy will consist of the deployment of five moorings through the continental shelf of the SSR (to be recovered one year later) and of several transects of CTD/ADCP aimed to obtain hydrographic measurements and biological samples. The mooring component (the most difficult and costly part of the sampling) intends to investigate the temporal variability of the main processes, a crucial aspect that cannot be inferred from the extended in space but single in time view inferred from an oceanographic survey.

The project is presented as a coordinated project between two institutions: IMEDEA contributes with its long experience in the interpretation of physical and biochemical data retrieved from oceanographic surveys; the University of Málaga (which includes staff from ICM-Barcelona), contributes with its experience in the deployment of moorings and the interpretation of the derived data sets. The two groups will jointly participate in the study of most processes, producing the complementary view (spatial or temporal) derived from the respective applied methodologies.

**Referència:** CGL2006-04325/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Hacia una integración de parámetros demográficos y genéticos en el análisis de viabilidad de poblaciones (PVA) en ecología y conservación.*

**Acrònim:** DIAGNOS.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** ORO DE RIVAS, Daniel.

**Categoria:** Investigador.

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Oro de Rivas, Daniel	Inv.	1
Tavecchia, Giacomo	Inv.	1
Igual Gómez, José M.	Tèc.	1
Martínez Abraín, Alejandro	Inv.	1
Louzao Arsuaga, Maite	B	1
Sanz Aguilar, Ana	B	1
<b>Investigadors d'altres entitats</b>		
Genovart Millet, Meritxell	Universita di Ferrara	
Laneri, Karina	Universitat Nacional de La Plata	
Mínguez Díaz, Eduardo	Universitat Miguel Hernández	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

### **Summary**

The challenges raised by the current loss of biodiversity due to human activities (including the effects of the global change) have lead ecologists to develop and test new appropriate tools to study population dynamics in space and time and predict future population trajectories. These predictions must provide estimates of population extinction probability, usually through model projections. The reliability of these estimates depends on the accuracy of the model parameters (demographic and genetics) for a specific population. From here, the importance of precise demographic estimates and supplementary information on genetic quality for a given population. These outputs will provide wildlife managers a population diagnosis and a solid base for conservation plans.

Matrix models including environmental and demographic stochasticity will be used to obtain a mathematical description of the population and as base for population viability analyses (PVA). Parameters will be obtained by capture-recapture analyses of individual-based data as well through molecular techniques. Bayesian methods for statistical inference and Monte Carlo simulation will also be examined for complex models to achieve a greater precision in estimates. We will consider species of vertebrates (birds and reptiles) that have been already followed by the research group with different conservation problems: critically endangered species, recently reintroduced populations, 'pest'-species, for which control programs have started, and species under threat because of hunting activity. The species considered are also at the top of the food chain of different ecosystems (terrestrial, marine and costal) and, as consequence, can be regarded as bio-indicator of habitat quality at larger scale.

**Referència:** CGL2006-09719/BOS. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de biodiversitat, ciències de la terra i canvi global.

**Títol:** *Pseudomonas stutzeri* como organismo modelo en especiación bacteriana.

**Acrònim:** PSTUTZERI.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** LALUCAT JO, Jordi.

**Categoria:** CU (àrea de coneixement: Microbiologia).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Lalucat Jo, Jordi	CU	0.5
Bennàsar Figueras, Antoni	Contr. dr.	0.5
Gomila Ribas, Margalida	B	1
Amat Masanet, Margalida	As.	1

**EDP del grup investigador de l'entitat sol·licitant:** 3.

### **Summary**

*Pseudomonas stutzeri* is a relevant bacterial species in Microbial Ecology, due to their relevant physiological and biochemical properties. Strains of the species participate actively in the C cycle (as biodegrader), in the N cycle (as denitrifier and dinitrogen fixer), others are able to obtain energy in the S metabolism, and others might be able to use unusual P sources. The species is phylogenetically well defined, but at the same time, it is the species with the highest genetic diversity described so far.

Main objective of the study is the characterization of the possible mechanisms in leading *P. stutzeri* to its diversification in genomic groups (called genomovars), to their colonization potential of new ecological niches, and to the speciation process in this phylogenetic coherent branch, due to the selection of these new ecotypes.



**Referència:** TEC2006-10009/MIC. Ministeri d'Educació i Ciència.  
**Modalitat:** Programa nacional de tecnologies electròniques i de comunicacions.  
**Títol:** *Dispositivos fotónicos para comunicaciones basadas en caos.*  
**Acrònim:** PhoDeCC.  
**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).  
**Investigador responsable:** COLET RAFECAS, Pere.  
**Categoria:** Científic titular.  
**Inici:** 2006.                    **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Colet Rafecas, Pere	Científic titular	0.5
Mirasso Santos, Claudio	TU	0.5
Gomila Villalonga, Damià	Aj. dr.	1
Sciré, Alessandro	Inv.	1
Jacobo, Adrián	B	1
Pérez López, Antonio	B	1
<b>Investigadors d'altres entitats</b>		
Fisher, Ingo	Vrije Universiteit Brussel	
Dankaert, Jan	Vrije Universiteit Brussel	
Larger, Laurent	University of Franche-Comté	

**EDP del grup investigador de l'entitat sol·licitant: 6.**

**Referència:** CTM2005-01434. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de ciències i tecnologies mediambientals.

**Títol:** Macroalgas marinas invasoras en las islas Baleares: evaluación de riesgos y efectos en comunidades bentónicas.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TERRADOS MUÑOZ, Jorge.

**Categoria:** Científic titular del CSIC.

**Inici:** 2005. **Fi:** 2008.

<u>Membres de l'equip</u>	<u>Categoria</u>	<u>Dedicació</u>
Terrados Muñoz, Jorge	Científic titular	1
Marbà Bordalba, Núria	Científic titular	0.5
Ballesteros Segarra, Enric	Inv.	0.5
Deudero Company, Salud	Aj. U	0.5

**EDP del grup investigador de l'entitat sol·licitant:** 2.5.

### **Summary**

The introduction of alien species is a main process driving biodiversity loss in the Mediterranean. The presence of six of the eight marine macroalgae known to behave as invasive species in mediterranean benthic communities has been recorded in the Balearic Islands during the last fifteen years. The project aims (1) to evaluate the progress of the invasion of exotic marine macroalgae in the coasts of the Balearic islands, (2) to estimate the relative contribution of sexual reproduction and vegetative fragmentation to the maintenance of *Caulerpa* spp populations, and elucidate the relationship between genetic diversity and clonal structure of *Caulerpa* spp, to evaluate the effects of the colonization by invasive macroalgae (3) on the species composition, richness, and diversity of the invaded macroalgae and seagrass communities, (4) on the growth and demographic balance of seagrasses, and on the physico-chemical properties of the sediment of the invaded seagrass beds, (5) to estimate the transfer of matter from *Caulerpa* spp. to benthic invertebrates using caulerpenine as tracer, and (6) to test if lack of herbivores, physical stability of the substratum, and the presence of turf-forming filamentous macroalgae facilitate the invasion by exotic macroalgae.

**Referència:** CTM2004-06842-CO3-02. Ministeri de Ciència i Tecnologia.

**Títol:** *Remolinos oceánicos y deposición atmosférica: efectos biológicos y biogeoquímicos en aguas superficiales del océano Atlántico Este.*

**Investigadora responsable:** AGUSTÍ REQUENA, Susana.

**Categoria:** Científica titular del CSIC.

**Inici:** 2004.                      **Fi:** 2007.

**Referència:** VEM2003-20052. Ministeri de Ciència i Tecnologia.

**Modalitat:** Acció estratègica vessaments marins accidentals.

**Títol:** *Las aves marinas como bioindicadoras espacio-temporales de contaminación por el vertido del buque Prestige en el litoral gallego.*

**Investigador responsable:** ORO DE RIVAS, Daniel.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003.                      **Fi:** 2006.

**Referència:** VEM2003-20075-C02-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Acció estratègica vessaments marins accidentals.

**Títol:** *Biodegradación anaerobia de residuos de petróleo por bacterias sulfatorreductoras y biodiversidad en la eliminación microbiana de crudo en sedimentos marinos.*

**Investigador responsable:** ROSSELLÓ MORA, Ramon.

**Categoria:** Científic titular del CSIC.

**Inici:** 2003.                      **Fi:** 2006.

**Referència:** VEM2003-20577-C14-08. Ministeri de Ciència i Tecnologia.

**Modalitat:** Acció estratègica vessaments marins accidentals.

**Títol:** *OPSDAS. Sistema de predicción oceánica con asimilación de datos en tiempo real.*

**Investigador responsable:** TINTORÉ SUBIRANA, Joaquim.

**Categoria:** Professor d'investigació del CSIC.

**Inici:** 2003.                      **Fi:** 2006.

**Referència:** CGL2004-04612/BTE. Ministeri de Ciència i Tecnologia.

**Títol:** *Cronología y causas de las extinciones de vertebrados autóctonos en Canarias y Baleares: un análisis comparativo.*

**Investigador responsable:** ALCOVER TOMÀS, Josep A.

**Categoria:** Investigador científic del CSIC.

**Inici:** 2004.                      **Fi:** 2007.

**Referència:** CGL2004-04884-C02-01. Ministeri de Ciència i Tecnologia.

**Modalitat:** Plan Nacional de I+D.

**Títol:** *Determinantes de la invasibilidad de los ecosistemas. Papel de los mutualismos planta-animal.*

**Investigadora responsable:** TRAVESET VILAGINÉS, Anna.

**Categoria:** Investigadora científica del CSIC.

**Inici:** 2004.                      **Fi:** 2007.

## Participacions a altres projectes

**Referència:** TEC2006-13887-C05-03/TCM. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de tecnologies electrònica i de comunicacions.

**Títol:** *Desarrollo de técnicas de Banda-Ultra-Ancha mediante pulsos generados por diodos láser: aplicación a las comunicaciones ópticas inalámbricas.*

**Investigador responsable:** LÓPEZ HERNÁNDEZ, Francisco José.

**Centre:** Universitat Politècnica de Madrid.

**Investigador de la UIB:** BALLE MONJO, Salvador.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2006.                   **Fi:** 2009.

**INSTITUT UNIVERSITARI D'INVESTIGACIONS EN  
CIÈNCIES DE LA SALUT (IUNICS)**

**Referència:** BFM2003-00771. Ministeri de Ciència i Tecnologia.

**Modalitat:** Promoció general del coneixement.

**Títol:** *Modelos algebraicos, gráficos y borrosos en biología molecular.*

**Acrònim:** ALBIOM.

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** ROSSELLÓ LLOMPART, Francesc A.

**Categoria:** CEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2003. **Fi:** 2006.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Roselló Llompart, Francesc A.	CEU	1
Alberich Martí, Ricard	TEU	1
Casasnovas Casasnovas, Jaume	CEU	1
Llabrés Segura, Mercè	TEU	1
Miró Julià, Josep J. A.	TU	1

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

This project is within the field of computational biology, and its intention is to contribute to the development and application of new mathematical models in molecular biology in the three following areas:

- The development of new algebraic and discrete models of the three-dimensional structures of the molecules of RNA and proteins, and its application to the study of new notions of distances and similarities among them.
- The study of weighted graphs as models of biological systems; in particular, the development of new notions of clustering in weighted graphs and new realistic models of the dynamics of these graphs and their application to the modeling of biological systems.
- The development of a theory of fuzzy genomes as a simultaneous model of the incomplete knowledge and the homology of nucleic acid molecules and proteins.

**Referència:** PI04-0196. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Neuroquímica, farmacología y genética de la depresión. Regulación molecular y farmacológica de los alfa2A-adrenoceptores y receptores 5-HT2A en plaquetas de pacientes con depresión mayor.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** GARCÍA SEVILLA, Jesús Andrés.

**Categoria:** CU (àrea de coneixement: Farmacologia).

**Inici:** 2004.

**Fi:** 2007.

**Membres de l'equip**

**Categoria**

García Sevilla, Jesús A.

CU

Miralles Socias, Antoni

TU

Esteban Valdés, Susana

TU

**Summary**

Major depression is associated with up-regulation of alpha2A-adrenoceptors and 5-HT receptors (coupled receptors to trimetic Galpha, beta, gamma proteins) in brain and blood platelets. Activation of these receptors induces receptor phosphorylation by specific G protein-coupled receptor kinases and other proteins (GRKs/beta-arrestins), which results in receptor desensitization and down-regulation. A defect in GRK could be an important mechanism in the regulation and expression of receptors (e.g. decreased receptor phosphorylation by a specific GRK in depression could induce functional receptor up-regulation). Therefore, abnormalities in GRKs could represent a specific defect contributing to the pathophysiology of major depression. In this project, it is hypothesized that major depression is associated with down-regulation of specific platelet GRKs. The aims are to assess the status of platelet GRKs (mainly GRK2/3 regulated by Gbeta, gamma-subunits and GRK5/6 insensitive to Gbeta, gamma), associated regulatory proteins (b-arrestins 2/3, phosphatase PP-2A) and target receptors (alpha2A-adrenoceptors and 5-HT2A receptors) in patients with major depression. Also, to unravel whether the abnormalities in GRKs are related to the severity of major depression, to the densities of alpha2A-adrenoceptors and/or 5-HT2A receptors, and to investigate the effects of antidepressant drugs on GRKs, associated proteins and receptors in platelets. The methods to be used involve quantitative immunoblot analyses of the target proteins with specific antibodies. An important aim is to ascertain whether a defect of a specific platelet GRK is a marker of major depression.

**Referència:** PI04-1507. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Efectos de citoquinas proinflamatorias sobre células musculares y motoneuronas: implicaciones en la etiopatología de la pérdida de masa muscular en pacientes con EPOC.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** OLMOS BONAFÈ, Gabriel.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2004.

**Fi:** 2007.

**Membres de l'equip**

**Categoria**

Olmos Bonafè, Gabriel

TU

Lladó Vich, Jerònia

Inv.

Miralles Morell, Francesc Xavier

Mir Mas, Margalida

B

**Summary**

Muscle wasting (cachexia) is a disease associated with several chronic disorders such as chronic obstructive pulmonary disease (COPD). Cachexia is clinically relevant as it negatively influences prognosis and quality of life of patients and increases the utilization of health care resources. Most of the molecular basis of cachexia are currently unknown, thus precluding the development of new therapeutic approaches. Cachexia is associated with increased plasma levels of tumor necrosis factor alpha (TNF- $\alpha$ , cachexine). This cytokine affects myoblasts and myotubes to induce loss of striated muscle tissue homeostasis, characterized by the atrophy/hypoplasia of myotubes. However, the effects of TNF- $\alpha$  on motoneurons are poorly studied. On the other hand, it has been reported that some cytokines have anti-cachexic effects reverting the effects of TNF- $\alpha$ , this suggests that the cytokine anti-cytokine approach might be a new therapeutic tool.

This project involves both basic and clinical research. Basic research is focused on the *in vitro* study of the molecular mechanisms of TNF- $\alpha$  on the viability of myotubes and spinal motoneurons, especially those related to apoptosis induction. The cytokine anti-cytokine approach will be explored using interferon gamma (IFN- $\gamma$ ), a cytokine with clinical applications, to revert the effects of TNF- $\alpha$ . Clinical research will explore in COPD patients the possible impairment of spinal neurons. Electromyography techniques will be performed on these COPD patients to assess the number of motor units as an estimation of the functional spinal motoneurons; results will be related to the body mass index and plasma levels of TNF- $\alpha$ .



**Referència:** PI04-1829. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.  
**Títol:** *Papel de las proteínas surfactantes en las infecciones respiratorias agudas y crónicas por Pseudomonas aeruginosa.*  
**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).  
**Investigador responsable:** ALBERTÍ SERRANO, Sebastià.  
**Categoria:** TEU (àrea de coneixement: Microbiologia).  
**Inici:** 2004. **Fi:** 2007.

**Membres de l'equip**

**Categoria**

Albertí Serrano, Sebastià	TEU
Oliver Palomo, Antonio	
Bosch Zaragoza, Rafael	TEU
Oliver Bernat, Maria Antònia	

**Summary**

Surfactant proteins play a critical role in the defence and inflammatory response of the lung. However, the molecular mechanisms that allow to these proteins to achieve these functions are complex and remain partially unknown. To better understand these mechanisms, we propose a systematic and detailed study of the interactions between surfactant proteins, *P. Aeruginosa* clinical isolates and human alveolar type II epithelial cells. We will use *P. Aeruginosa* as model due to its prevalence as respiratory pathogen in immunocompromised patients, causing either acute and chronic infections. We will combine immunology, biochemistry, microbiology and cell biology techniques in order to study i) the interactions between this microorganisms (clinical isolates and laboratory type strains) and the surfactant proteins (purified proteins and from clinical samples), and ii) their biological effects in the opsonization and immunomodulation carried out by human alveolar type II epithelial cells. We believe that an extensive knowledge of the molecular and cell biology bases of these interactions, together with the functional analysis of their relevance as defence mechanisms, immunomodulators, and its plausible role in pathogenesis of acute and chronic respiratory infections caused by *P. Aeruginosa* should allow scientific community to develop more efficient treatments for the infections caused by this and other related pathogens.

**Referència:** PI03-0632. Fons d'Investigacion Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Mecanismos celulares y moleculares implicados en la degeneración de motoneuronas. Modulación por oxígeno.*

**Investigadora responsable:** LLADÓ VICH, Jerònia.

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS)-Hospital Universitari Son Dureta.

**Investigador de la UIB:** Olmos Bonafé, Gabriel.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2003. **Fi:** 2006.

**Membres de l'equip**

**Categoria**

Lladó Vich, Jerònia

Inv.

Olmos Bonafé, Gabriel

TU

Asensio Landa, Víctor J.

B

**Summary**

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease in which there is a selective loss of motoneurons in the motor cortex and spinal cord. Several mechanisms have been proposed for the selective degeneration of motoneurons, but no drugs are available to efficiently treat the disease. Recently, the inability of vascular endothelial growth factor (VEGF) to respond to hypoxia has been shown to induce degeneration of motoneurons reminiscent to the one that occurs in ALS. Motoneurons are the cells in the nervous system with the highest metabolic demands. This makes them especially vulnerable to conditions in which there is a limited energetic supply such as hypoxia. Since VEGF mediates vascular permeability, it has a special role in hypoxic conditions. VEGF also has a direct neurotrophic/neuroprotective role on motoneuron survival. In this project, we will determine the role of VEGF on motoneuron survival in neurodegeneration models that mimic the events that are believed to occur in ALS. The experimental model will be the rat spinal cord organotypic culture, which allows for manipulation of the cultures, pharmacologic treatments and the study of VEGF-regulated intracellular pathways in spinal cord motoneurons.

**Referència:** PI05-0353. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Modulación por cocaína y opiáceos del complejo apoptótico Fas/FADD/caspasas en la corteza prefrontal de adictos humanos.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** GARCIA SEVILLA, Jesús A.

**Categoria:** CU (àrea de coneixement: Farmacologia).

**Inici:** 2005. **Fi:** 2006.

**Membres de l'equip**

**Categoria**

Garcia Sevilla, Jesús A.

CU

Garcia Fuster, Maria J.

B

Miralles Socias, Antoni

TU

Esteban Valdés, Susana

TU

**Summary**

It is postulated that cocaine addiction in humans modulates certain signaling pathways in the brain (Fas-Fadd and Mapk-Erk kinases), which are involved in neurotoxicity/apoptosis and/or plastic changes in neurons, and that these long-term changes induced by cocaine are relevant in the context of its neurotoxicity. The aim of this project (1 year duration) is to investigate in the postmortem human brain the chronic effects of cocaine addiction, in comparison with the chronic effects induced by opiate drugs, on the components of the apoptic pathway activated by the Fas death receptor (coupling protein Fadd, effector caspases 8 and 3) as well as on the components of the Mapk-Erk signaling (Ras, Raf-1, Med1/2, Erk1/2), which are activated by the involved receptors (dopamine receptors and opioid receptors), in order to establish a comparison between these two drugs of abuse. Three groups of addicts will be studied: (1) Pure cocaine addicts (death by cocaine overdose; detection of cocaine and metabolites in blood and hair; no detection of opiates in blood and hair; documented clinical history of cocaine addiction). (2) Mixed cocaine/opiate addicts (death by cocaine overdose mainly; detection of cocaine and opiates in blood and hair; documented clinical history of a mixed addiction). (3) Pure opiate addicts (death by heroin or methadone overdose; detection of opiates and metabolites in blood and hair; no detection of cocaine in blood and hair; documented clinical history of opiate addiction). The density of target proteins will be quantitated by immunodetection with specific antibodies.

**Referència:** PI05-1189. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.  
**Títol:** *Estudio de vías funcionales en enfermedades psiquiátricas. Subproyecto Mallorca. Transtornos bipolares.*  
**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).  
**Investigador responsable:** ROCA BENNÀSAR, Miquel Àngel.  
**Categoria:** TU (àrea de coneixement: Psiquiatria).  
**Inici:** 2005.                   **Fi:** 2006.

**Membres de l'equip**

**Categoria**

Roca Bennàsar, Miquel Àngel	TU
Cañellas Dols, Francesca	
Gili Planas, Margalida	TU
Ramon Juanpere, Misericòrdia	TU
Castro Ocón, José Aurelio	TU
Picornell Rigo, Antònia	TEU
Giner Jiménez, Daniel	

**Summary**

Identifying the genetic variables implicated in the susceptibility to suffer bipolar disorder. Identifying the genetic variants implicated in the susceptibility to suffer common disorders to some psychiatric pathologies. Recognizing and modelling possible interactions between different genetic variants of susceptibility to suffer psychiatric disorders. Identifying genetic variants in bipolar patients good or bad responders for lithium treatment how more homogeneous phenotype of bipolar disorder.

**Referència:** PI05-1886. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Tratamiento cognitivo conductual de pacientes con transtorno de somatización abreviado (SSI, 4,6) en atención primaria.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigadora responsable:** GILI PLANAS, Margalida.

**Categoria:** TU (àrea de coneixement: Psicologia Social).

**Inici:** 2005. **Fi:** 2008.

**Membres de l'equip**

**Categoria**

Gili Planas, Margalida	TU
Roca Bennàsar, Miquel Àngel	TU
Robles González, Rosa M.	
Giner Jiménez, Daniel	
Vicens Caldentey, Catalina	
Bestard Reus, Francesca	
Quintana Torres, Lourdes J.	
Arenas Abad, Arturo J.	
Llull Serrandel, Maria M.	
Mateu Sabater, Catalina	

**Summary**

To evaluate the effectiveness and feasibility of a treatment programme for patients who are diagnosed of abridged somatization disorder in primary care and their consequences in different levels: clinical aspects (decrease of symptomatology, improve of quality of life) and economic aspects (decrease of number of visits to specialist doctors and medication consume, decrease of costs). To analyse the efficacy of an intervention programme applied in two ways: individual and group therapy. To compare this study with a study carried out previously in New Jersey, USA by prof. Escobar and his staff.

**Referència:** MTM2006-07773. Ministeri d'Educació i Ciència.

**Modalitat:** Programa nacional de matemàtiques.

**Títol:** *Comparación de grafos en biología molecular y celular.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** ROSSELLÓ LLOMPART, Francesc A.

**Categoria:** CEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2006. **Fi:** 2009.

<b><u>Membres de l'equip</u></b>	<b><u>Categoria</u></b>	<b><u>Dedicació (EDP)</u></b>
Roselló Llompart, Francesc A.	CEU	1
Alberich Martí, Ricardo	TEU	1
Llabrés Segura, Mercè	TEU	1
Mir Torres, Arnau	TU	0.5
Miró Julià, Josep J. A.	CEU	1
Rocha Cárdenas, Jairo	Contr. dr.	0.5
<b><u>Investigadors d'altres entitats</u></b>		
Valiente Feruglio, Gabriel    Universitat Politècnica de Catalunya		

**EDP del grup investigador de l'entitat sol·licitant: 5.**

### **Summary**

This is a project in the field of computational biology and bioinformatics. Its main goals are:  
To develop methods to compare graph models of three-dimensional structures of RNA molecules and proteins; metabolic pathways; and phylogenetic trees and networks.

To assess and analyze these methods both mathematically and by their biological significance.

To implement these methods as computer tools that will be available to the scientific community through the Web.

**Referència:** PI060371. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

**Títol:** *Papel de FoxO3a en el desarrollo de linfomas no-Hodkin y su potencial como diana de nuevos fármacos antitumorales.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigadora responsable:** FERNÁNDEZ DE MATTOS, Sílvia.

**Categoria:** INVESTIGADORA CONTRACTADA.

**Inici:** 2006.

**Fi:** 2009.

**Membres de l'equip**

**Categoria**

Fernández de Mattos, Sílvia

Inv.

Rodríguez Díaz-Pavón, José

Villalonga Smith, Priam

Inv.

Mut Sanchis, Pilar

**Summary**

FoxO transcription factors participate in the control of cell cycle progression and apoptosis, and are negatively regulated by the PI3K/AKT pathway. Their role in the IKK/NFkB pathway has also been recently described. When active, FoxOs induce cell cycle arrest and apoptosis, acting as potent tumour suppressors.

The PI3K/AKT pathway is essential for proliferation of hematopoietic cells and for immune homeostasis, and is involved in the development of hematological neoplasia. Indirect evidence points to a central role of FoxO3a in lymphomagenesis, although this has not been fully investigated yet. Signals emanating from oncoproteins altered in non-Hodgkin lymphomas (NHL) converge on FoxO3a, and at the same time FoxO3a targets are frequently involved in the pathogenesis of these tumours. We thus aim to investigate the potential role of FoxO3a as a relevant target in NHL using a double strategy:

- Investigating the role of FoxO3a inactivation in transformation and survival of NHL cells. We will analyse the activation state of FoxO3a and its regulators and targets, correlating the results with cell proliferation and survival.
- Analysing the effects of active drugs in different subtypes of NHL on FoxO3a activity, in order to validate the hypothesis that restoring FoxO3a activity could be essential for the antitumour effects of these drugs. We will also use novel active drugs targeted to key molecular lesions of several types of lymphomas, such as HDIs, proteasome inhibitors and Hsp90 inhibitors, as recent data strongly suggest that these drugs may modulate FoxO3a activity.

**Referència:** PI060680. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.  
**Títol:** *Interrelaciones entre excitotoxicidad y neuroinflamación en la esclerosis lateral amiotrófica.*  
**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).  
**Investigadora responsable:** LLADÓ VICH, Jerònia.  
**Categoria:** INVESTIGADORA CONTRACTADA.  
**Inici:** 2006. **Fi:** 2009.

**Membres de l'equip**

**Categoria**

Lladó Vich, Jerònia  
Olmos Bonafé, Gabriel  
Tur Campos, Silvia  
Tolosa Pardo, Eulalia

Inv.  
TU

**Summary**

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease characterized by the selective death of motoneurons. Many of the pathogenetic mechanisms are still unknown and this is a limiting factor in the development of new therapies that could ameliorate the course of the disease.

Besides glutamate excitotoxicity, the neuroinflammatory response is emerging as a relevant contributor to the motoneuron loss in ALS. High levels of circulating proinflammatory cytokines such as tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) have been described both in human patients and in animal models of ALS.

We hypothesize that TNF- $\alpha$ , acting on different CNS cells, would have a facilitatory role on glutamate-mediated excitotoxicity, directly potentiating glutamate transmission and promoting motoneuron death. This would be very relevant in ALS pathophysiology. We aim to study the relationship between excitotoxicity and the neuroinflammatory response because the latter would be responsible for the activation of additional pathways for motoneuron degeneration.

We will use rat spinal cord *in vitro* cultures, which maintain the interactions between neurons and glia in order to address the following main objectives: 1) The direct effects of proinflammatory cytokines on motoneurons, and 2) The possible exacerbation of glutamate-excitotoxicity associated to alterations in the function of glutamate receptors and/ or transporters induced by high levels of proinflammatory cytokines.



**Referència:** PI060266. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.  
**Títol:** *Papel del estrés oxidativo en la respuesta de la célula cancerosa al tratamiento antitumoral y su modulación por hormonas sexuales y elementos pro-/antioxidantes.*  
**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).  
**Investigadora responsable:** ROCA SALOM, Maria Pilar.  
**Categoria:** TU (àrea de coneixement: Bioquímica i Biologia Molecular).  
**Inici:** 2006. **Fi:** 2009.

**Membres de l'equip**

**Categoria**

Roca Salom, Maria Pilar	TU
Oliver Oliver, Jordi	TEU
Lladó Sampol, Isabel	TEU
Fernández de Mattos, Sílvia	Inv.
Villalonga Smith, Priam	Inv.
Guevara de Bonis, Rocío	B

**Summary**

The present research proposal aims to better understand the mechanisms regulating the role of oxidative stress in cell proliferation and apoptosis induction in different cancer cell types. Furthermore, we also want to determine the impact of sexual hormones (17 $\beta$ -estradiol and testosterone) and pro-oxidant and antioxidant agents (usually present in the diet) on the response to anticancer chemotherapeutic agents. The specific objectives of this proposal are the following:

1. Characterize the redox state of different hormone-sensitive cancer cell lines covering both early and late stages of the disease progression.
2. Determine the effect of different chemotherapeutic agents on cell viability, mitochondrial function and oxidative stress-sensitive signaling pathways in different hormone-sensitive cancer cell lines covering both early and late stages of the disease progression.
3. Analyze the impact of sexual hormones and pro-/antioxidants on ROS production and activation of ROS-sensitive signaling pathways, and its consequences on the responsiveness to chemotherapeutic agents in cancer cells.

In order to develop this research proposal both normal and transformed cell lines will be used. These cell lines are derived from sexual hormone-sensitive tumors (breast and prostate cancer), and from a diet-sensitive cancer, the colorectal carcinoma. For breast and prostate cancer, cell lines with and without estrogen or androgen receptors will be compared. For the colorectal carcinoma, cell lines in different stages of cancer process development will be compared.

**Referència:** PRIB 2004-10152. Conselleria d'Economia, Hisenda i Innovació.

**Modalitat:** Projectes de Recerca, Desenvolupament Tecnològic i Innovació.

**Títol:** *Identificación y caracterización de nuevos mecanismos de resistencia bacteriana a los antimicrobianos.*

**Centre:** Institut Universitari d'Investigacions en Ciències de la Salut (IUNICS).

**Investigador responsable:** ALBERTÍ SERRANO, Sebastià.

**Categoria:** TEU (àrea de coneixement: Microbiologia).

**Inici:** 2004.

**Fi:** 2007.

## **ACCIONS INTEGRADES**

**Referència:** HU2004-0010.

**Acció:** Hispanoaustríaca.

**Títol:** *Plasma dynamics and wave phenomena in solar prominences.*

**Investigador responsable:** OLIVER HERRERO, Ramon.

**Departament:** Física.

**Període:** 2005-2006.

**Acció:** Hispanoportuguesa.

**Títol:** *Estructura clonal de poblaciones de macrófitos marinos.*

**Investigador responsable:** DUARTE QUESADA, Carlos M.

**Departament:** IMEDEA.

**Període:** 2004-2006.

**Acció:** Hispanoitaliana.

**Títol:** *Chemical or biologically interacting substances transported by chaotic flows.*

**Investigador responsable:** LÓPEZ SÁNCHEZ, Cristóbal.

**Departament:** IMEDEA.

**Període:** 2005-2006.

**Referència:** HA2003-0146.

**Acció:** Hispanoalemanya.

**Títol:** *Dynamical systems approach to ocean transport.*

**Investigador responsable:** HERNÁNDEZ GARCIA, Emilio.

**Departament:** IMEDEA.

**Període:** 2004-2006.

**Referència:** HA2003-0077.

**Acció:** Hispanoalemanya.

**Títol:** *Modelling complex systems as dynamical networks with non-linear units.*

**Investigador responsable:** MARTÍNEZ EGUÍLUZ, Víctor.

**Departament:** IMEDEA.

**Període:** 2004-2006.

## **ACCIONS ESPECIALS I COMPLEMENTÀRIES**

**Referència:** SAF2002-11011-E.

**Títol:** *Red de excelencia europea en nutrigenómica.*

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.

**Investigador responsable:** PALOU OLIVER, Andreu.

**Categoria:** CU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2003.                   **Fi:** 2006.

**Referència:** TIC2002-10743-E.

**Títol:** *An automatic human model animation environment for augmented reality interaction.*

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** PERALES LÓPEZ, Francisco José.

**Categoria:** TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2003.                   **Fi:** 2006.

**Referència:** TIN2004-20295-E.

**Títol:** *Third International Workshop on Articulated Motion and Deformable Objects (AMDO'2004).*

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** GONZÁLEZ HIDALGO, Manuel.

**Categoria:** TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** TIN2005-24057-E.

**Títol:** *Wosp 2005.*

**Centre:** Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

**Investigador responsable:** PUIGJANER TREPAT, Ramon.

**Categoria:** CU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** SEJ2004-20080-E.

**Títol:** *XII Encuentro de Economía Pública.*

**Centre:** Departament d'Economia Aplicada. Edifici Gaspar M. de Jovellanos.

**Investigador responsable:** SPADARO, Amedeo.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** SEJ2004-21574-E.

**Títol:** *VI International Workshop on Corporate Governance and Investment.*

**Centre:** Departament d'Economia de l'Empresa. Edifici Gaspar M. de Jovellanos.

**Investigador responsable:** CRESPI CLADERA, Rafel.

**Categoria:** CU (àrea de coneixement: Organització d'Empreses).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** REN2001-5431-E.

**Títol:** *Towards sustainable water use on mediterranean islands: adressing conflicting demands and varyng hidrological, social and economic conditions (MEDIS).*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ALONSO OROZA, Sergio.

**Categoria:** CU (àrea de coneixement: Física de la Terra).

**Inici:** 2002.                      **Fi:** 2006.

**Referència:** REN2002-12052-E/CLI.

**Títol:** *Red ibérica para la investigación y desarrollo de aplicaciones en base al modelo atmosférico MM5 (fase 2).*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** ROMERO MARCH, Romualdo.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2004.                      **Fi:** 2006.

**Referència:** FIS2004-23022-E.

**Títol:** *International workshop on correlations in quantum systems: quantum dots, quantum gases.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** CASAS AMETLLER, Montserrat.

**Categoria:** CU (àrea de coneixement: Física Atòmica, Molecular i Nuclear).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** SEJ2004-22002-E.

**Títol:** *Niños y niñas rechazados en el contexto escolar.*

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** SUREDA GARCIA, Immaculada.

**Categoria:** TU (àrea de coneixement: Psicologia Evolutiva i de l'Educació).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** SEJ2004-21664-E.

**Títol:** *Red temàtica: avances en la investigación sobre el TDAH.*

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** SERVERA BARCELÓ, Mateu.

**Categoria:** TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** OTR2003-0098-B-C02.

**Títol:** *Plan de acción coordinado de las OTRIS de Baleares.*

**Centre:** Oficina de Suport a la Recerca.

**Investigadora responsable:** TURNES PALOMINO, Gemma.

**Categoria:** TU (àrea de coneixement: Química Inorgànica).

**Inici:** 2004.                      **Fi:** 2006.

**Referència:** DEP2006-26307-E.

**Títol:** *II Simposium Internacional de Actividad Física: Motivación y Dinàmica de Equipos.*

**Centre:** Departament de Pedagogia i Didàctiques Específiques.

**Investigador responsable:** PALOU SAMPOL, Pere.

**Categoria:** TEU (àrea de coneixement: Educació Física i Esportiva).

**Inici:** 2006.                      **Fi:** 2007.

**Referència:** FIS2005-25317-E.

**Títol:** *Red temàtica de relatividad y gravitación.*

**Centre:** Departament de Física.

**Investigador responsable:** SINTES OLIVES, Alícia M.

**Categoria:** TEU (àrea de coneixement: Física Teòrica Relativitat).

**Inici:** 2006.                      **Fi:** 2007.

**Referència:** REN2002-12249-E.

**Títol:** *Mediterranean ocean forecasting system: toward environmental predictions (MFSTEP).*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TINTORÉ SUBIRANA, Joaquim.

**Categoria:** Professor d'investigació del CSIC.

**Inici:** 2003.                      **Fi:** 2006.



**Referència:** REN2002-11198-E.

**Títol:** *Apoyo al programa de intervención científica en I+D para la acción estratégica contra vertidos marinos.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigadora responsable:** MORALES NIN, Beatriz.

**Categoria:** Científica titular del CSIC.

**Inici:** 2003.           **Fi:** 2006.

**Referència:** BFM2002-12792-E.

**Títol:** *Leyes de escala y topología de redes funcionales cerebrales.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** MARTÍNEZ EGUÍLUZ, Víctor.

**Categoria:** Investigador.

**Inici:** 2004.           **Fi:** 2006.

**Referència:** CTM2005-23775-E.

**Títol:** Técnicas moleculares para la cuantificación de la biodiversidad total de eucariotas que integran los ecosistemas marinos.

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** TERRADOS MUÑOZ, Jorge.

**Categoria:** Científic titular del CSIC.

**Inici:** 2005.           **Fi:** 2006.

**Referència:** CTQ2006-26298-E/BQU.

**Títol:** *Red Casi.*

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** SAÁ RODRÍGUEZ, José M.

**Categoria:** CU (àrea de coneixement: Química Orgànica).

**Inici:** 2006.           **Fi:** 2007.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Desarrollo farmacológico y transferencia industrial del ácido 2-hidroxioléico.*

**Investigador responsable:** ESCRIBÁ RUÍZ, Pablo Vicente.

**Centre:** Departament de Biologia.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Valoración económica de los valores de no-uso: aspectos metodológicos y empíricos.*

**Investigador responsable:** RIERA FONT, Antoni.

**Centre:** Departament d'Economia Aplicada.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Manteniment de la xarxa de recerca sobre modelització de dades turístiques d'alta freqüència.*

**Investigador responsable:** SANSÓ ROSSELLÓ, Andreu.

**Centre:** Departament d'Economia Aplicada.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Estudi de la reactivitat química i enzimàtica de la vitamina B6 i de les seves aplicacions biològiques (VITB6).*

**Investigador responsable:** VILANOVA CANET, Bartomeu.

**Centre:** Departament de Química.

**Categoria:** TU (àrea de coneixement: Química Física).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *La rellevància de l'educació científica.*

**Investigador responsable:** VÁZQUEZ ALONSO, Ángel.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació.

**Categoria:** As. (àrea de coneixement: Didàctica i Organització Escolar).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Red temàtica de procesos alimentarios.*

**Investigadora responsable:** ROSSELLÓ MATAS, Carme.

**Centre:** Departament de Química.

**Categoria:** TU (àrea de coneixement: Enginyeria Química).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Técnicas moleculares para la cuantificación de la biodiversidad total de eucariotas que integran los ecosistemas marinos.*

**Investigador responsable:** TERRADOS MUÑOZ, Jorge.

**Centre:** IMEDEA.

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Suport al projecte de localització dels orígens de la cultura material en el Miocè Superior africà.*

**Investigador responsable:** CELA CONDE, Camilo José.

**Centre:** Departament de Filosofia i Treball Social.

**Categoria:** CU (àrea de coneixement: Filosofia Moral).

**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Estudi de la reactivitat química i enzimàtica de la vitamina B6 i de les seves aplicacions biològiques.*  
**Investigador responsable:** VILANOVA CANET, Bartomeu.  
**Centre:** Departament de Química.  
**Categoria:** TU (àrea de coneixement: Química Física).  
**Inici:** 2005.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Consolidació del projecte d'herbari virtual del mediterrani.*  
**Investigador responsable:** RITA LARRUCEA, Joan.  
**Centre:** Departament de Biologia.  
**Categoria:** TU (àrea de coneixement: Botànica).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Organització de la I Jornada de Proliferació Cel·lular i Càncer.*  
**Investigadora responsable:** FERNÁNDEZ DE MATTOS, Sílvia.  
**Centre:** Departament de Biologia Fonamental i Ciències de la Salut.  
**Categoria:** Investigadora contractada.  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Simposi Partits Polítics, Organitzacions Patronals i Sindicats en el Segle XX.*  
**Investigador responsable:** SERRA BUSQUETS, Sebastià.  
**Centre:** Departament de Ciències Històriques i Teoria de les Arts.  
**Categoria:** CU (àrea de coneixement: Història Contemporània).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Seminari de Presentació de Projectes de Tesi del Doctorat en Economia del Turisme i del Medi Ambient.*  
**Investigadora responsable:** JUANEDA SAMPOL, C. Nativitat.  
**Centre:** Departament d'Economia Aplicada.  
**Categoria:** CU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Second International Conference Tourism Economics.*  
**Investigador responsable:** AGUILÓ PÉREZ, Eugeni.  
**Centre:** Departament d'Economia Aplicada.  
**Categoria:** CU (àrea de coneixement: Economia Aplicada).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Seminario Iberoamericano sobre Gestión Medioambiental de la Actividad Turística.*

**Investigador responsable:** LLULL GILET, Antoni.

**Centre:** Departament d'Economia de l'Empresa.

**Categoria:** TEU (àrea de coneixement: Economia Financera i Comptabilitat).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *AEDEM 2006, XX Congreso Anual. XVI Congreso Hispano Francés de la Asociación Europea de Dirección y Economía de la Empresa.*

**Investigador responsable:** MARTORELL CUNILL, Onofre.

**Centre:** Departament d'Economia de l'Empresa.

**Categoria:** TEU (àrea de coneixement: Economia Financera i Comptabilitat).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *XII Congreso Internacional de la Asociación Española de Semiótica.*

**Investigadora responsable:** TRAPERO LLOBERA, Ana Patricia.

**Centre:** Departament de Filologia Espanyola, Moderna i Llatina.

**Categoria:** TU (àrea de coneixement: Literatura Espanyola).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *43 Congrés de Filòsofs Joves: Filosofia i Tecnologia.*

**Investigador responsable:** VALDIVIELSO NAVARRO, Joaquín.

**Centre:** Departament de Filosofia i Treball Social.

**Categoria:** Aj. Dr. (àrea de coneixement: Filosofia Moral).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Spanish Relativity Meeting - ERE2006.*

**Investigador responsable:** CAROT GINER, Jaume Jesús.

**Centre:** Departament de Física.

**Categoria:** TU (àrea de coneixement: Física Teòrica).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Jornades de Col·laboració Internacional de Doctorats en Infermeria.*

**Investigador responsable:** BOVER BOVER, Andreu.

**Centre:** Departament d'Infermeria i Fisioteràpia.

**Categoria:** TEU (àrea de coneixement: Infermeria).

**Inici:** 2006. **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Mejora de la calidad de vida de pacientes de la Unidad Pediátrica de Semicríticos de Son Dureta.*  
**Investigador responsable:** VERGER GELABERT, Sebastià.  
**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació.  
**Categoria:** TEU (àrea de coneixement: Didàctica i Organització Escolar).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Jornadas de Estudio y Debate: El título de Grado en Educación Social.*  
**Investigador responsable:** MARCH CERDÀ, Martí Xavier.  
**Centre:** Departament de Pedagogia i Didàctiques Específiques.  
**Categoria:** CU (àrea de coneixement: Teoria i Història de l'Educació).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *II Simposium Internacional d'Activitat Física.*  
**Investigador responsable:** PALOU SAMPOL, Pere.  
**Centre:** Departament de Pedagogia i Didàctiques Específiques.  
**Categoria:** TEU (àrea de coneixement: Educació Física i Esportiva).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Red Temática: Neurociencia Cognitiva y Envejecimiento.*  
**Investigador responsable:** BARCELÓ GALINDO, Francisco.  
**Centre:** Departament de Psicologia.  
**Categoria:** TU (àrea de coneixement: Psicobiologia).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Grupo Interdisciplinar para el Estudio del Estrés y la Salud.*  
**Investigadora responsable:** GARCÍA DE LA BANDA GARCÍA, Gloria.  
**Centre:** Departament de Psicologia.  
**Categoria:** TEU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.  
**Títol:** *Proyecto de xarxa web per a la revista de Psicologia del Deporte on line.*  
**Investigador responsable:** GARCIA MAS, Alexandre.  
**Centre:** Departament de Psicologia.  
**Categoria:** TU (àrea de coneixement: Psicologia Bàsica).  
**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Constitución y consolidación del grupo iberoamericano de investigación en evaluación de actitudes relacionadas con la ciencia, la tecnología y la sociedad.*

**Investigadora responsable:** MANASSERO MAS, Maria Antònia.

**Centre:** Departament de Psicologia.

**Categoria:** CU (àrea de coneixement: Psicologia Social).

**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Consolidación de un grupo interdisciplinario en investigación neurobiológica del dolor.*

**Investigador responsable:** MONTOYA JIMÉNEZ, Pedro.

**Centre:** Departament de Psicologia.

**Categoria:** TU (àrea de coneixement: Psicobiologia).

**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Constitución y primera jornada de la Red Temática de Catàlisi Asimètrica (Red CASI).*

**Investigador responsable:** SAÁ RODRÍGUEZ, José Manuel.

**Centre:** Departament de Química.

**Categoria:** CU (àrea de coneixement: Química Orgànica).

**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Mobilitat i estades per la consolidació i manteniment del programa de doctorat amb menció de qualitat.*

**Investigadora responsable:** GAMBÚS SAIZ, Mercè.

**Centre:** Departament de Ciències Històriques i Teoria de les Arts.

**Categoria:** TU (àrea de coneixement: Història de l'Art).

**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Quality of service engineering in ambient intelligent spaces (QUOSA).*

**Investigador responsable:** JUIZ GARCÍA, Carlos.

**Centre:** Departament de Ciències Matemàtiques i Informàtica.

**Categoria:** TEU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

**Inici:** 2006.           **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Poliformismos de genes candidatos como factores de riesgo cardiovascular. Papel de la dieta mediterránea.*

**Investigadora responsable:** PROENZA ARENAS, Ana María.

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut.

**Categoria:** TEU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Inici:** 2006.                      **Fi:** 2006.

**Referència:** Accions especials del Govern Balear.

**Títol:** *Estudio mediante resonancia magnética funcional de la activación cerebral visual en sujetos esquizofrénicos ante estímulos estéticos.*

**Investigador responsable:** ROCA BENNÀSSAR, Miquel.

**Centre:** Departament de Psicologia.

**Categoria:** TU (àrea de coneixement: Psiquiatria).

**Inici:** 2005.                      **Fi:** 2007.

**Títol:** *Red Temática CLIVAR: Climate Variability.*

**Investigador responsable:** TINTORÉ SUBIRANA, Joaquim.

**Categoria:** Professor d'investigació del CSIC.

**Inici:** 2004.                      **Fi:** 2006.

**Referència:** REN2002-12659-E.

**Títol:** *Estudio piloto de marcado individual de Merluza (Merluccius Merluccius) en el Mar Balear.*

**Investigadora responsable:** MORALES NIN, Beatriz.

**Categoria:** Científica titular del CSIC.

**Inici:** 2004.                      **Fi:** 2006.

**Referència:** AGL2004-22480-E.

**Títol:** *Native perennial forage plants for sustainability of farming systems in the western mediterranean.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** CIFRE LLOMPART, Josep.

**Categoria:** P. col. (àrea de coneixement: Producció Vegetal).

**Inici:** 2005.                   **Fi:** 2008.

**Referència:** SAF2004-22971-E.

**Títol:** *Reunión para la preparación de un proyecto para el VI Programa Marco 'Terapia Lipídica'.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** ESCRIBÁ RUIZ, Pablo Vicente.

**Categoria:** TU (àrea de coneixement: Biologia Cel·lular).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** SEJ2004-22042-E.

**Títol:** *L'influence des sources sur l'unité et la fragmentation du droit international.*

**Centre:** Departament de Dret Públic. Edifici Anselm Turmeda.

**Investigadora responsable:** HUESA VINAIXA, M. Rosario.

**Categoria:** CU (àrea de coneixement: Dret Internacional Públic i R. Internacionals).

**Inici:** 2005.                   **Fi:** 2006.

**Referència:** SEJ2004-20080-E.

**Títol:** *XII Encuentro de Economía Pública.*

**Centre:** Departament d'Economia Aplicada. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** SPADARO, Amedeo.

**Categoria:** TU (àrea de coneixement: Economia Aplicada).

**Inici:** 2005.                   **Fi:** 2006.



**Referència:** FIS2004-23022-E.

**Títol:** *VI International Workshop on Corporate Governance and Investment.*

**Centre:** Departament d'Economia de l'Empresa. Edifici Gaspar Melchor de Jovellanos.

**Investigador responsable:** CRESPI CLADERA, Rafel.

**Categoria:** CU (àrea de coneixement: Organització d'Empreses).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** SEJ2004-22002-E.

**Títol:** *Niños y niñas rechazados en el contexto escolar.*

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació. Edifici Guillem Cifre de Colonya.

**Investigadora responsable:** SUREDA GARCIA, Immaculada.

**Categoria:** TU (àrea de coneixement: Psicologia Evolutiva i de l'Educació).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** SEJ2004-22002-E.

**Títol:** *Red temàtica: avances en la investigación sobre el TDAH.*

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Investigador responsable:** SERVERA BARCELÓ, Mateu.

**Categoria:** TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** CTM2004-21423-E.

**Títol:** *XXI Jornadas Científicas del Mediterráneo: El Papel de los Océanos en el Clima.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** GOMIS BOSCH, Damià.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2005.                      **Fi:** 2006.

**Referència:** CGL2004-20995-E.

**Títol:** *Preparación de la contribución española al proyecto Ianzone.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** GOMIS BOSCH, Damià.

**Categoria:** TU (àrea de coneixement: Física de la Terra).

**Inici:** 2005.                      **Fi:** 2006.

## **ALTRES ACCIONS**

**Projecte:** Acció COST 267.

**Títol:** *Semiconductor devices for signal processing.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** BALLE MONJO, Salvador.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Projecte:** Acció COST 722.

**Títol:** *Short-range forecasting methods of fog, visibility and low clouds.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CUXART RODAMILANS, Joan.

**Categoria:** INVESTIGADOR CONTRACTAT.

**Inici:** 2001.

**Fi:** 2006.

**Projecte:** Acció COST 858.

**Títol:** *Biotic and abiotic stress: grapevine defense mechanism and grape development.*

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Investigador responsable:** MEDRANO GIL, Hipólito.

**Categoria:** CU (àrea de coneixement: Fisiologia Vegetal).

**Inici:** 2003.

**Fi:** 2009.

**Referència:** Acció COST P10.

**Títol:** *Physics of risk.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** SAN MIGUEL RUIBAL, Maximino.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Inici:** 2003.

**Fi:** 2007.

**Referència:** RII3-CT-2003-506222.

**Modalitat:** Structuring the European Research Area Specific Programme.

**Títol:** *Integrated large infrastructures for astroparticle science (ILIAS).*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Investigadora responsable:** SINTES OLIVES, Alícia Magdalena.

**Categoria:** TEU (àrea de coneixement: Física Teòrica).

**Inici:** 2004.

**Fi:** 2009.

**Títol:** *STOCHDYN: Stochastic Dynamics. Fundamentals and Applications.*

**Centre:** Institut Mediterrani d'Estudis Avançats (IMEDEA).

**Investigador responsable:** SAN MIGUEL RUIBAL, Maximino.

**Categoria:** CU (àrea de coneixement: Física de la Matèria Condensada).

**Organisme:** European Science Foundation.

**Inici:** 2002.

**Fi:** 2007.

**Referència:** Projecte AECL.

**Títol:** *Desarrollo de métodos automáticos para la especiación de compuestos nitrogenados y fosforados. Aplicación al análisis de aguas residuales.*

**Centre:** Departament de Química. Edifici Mateu Orfila i Rotger.

**Investigador responsable:** CERDÀ MARTÍN, Víctor.

**Categoria:** CU (àrea de coneixement: Química Analítica).

**Centre d'aplicació:** Laboratorio de Espectroscopia Molecular. Departament de Química. Facultad de Ciencias. Universidad de Los Andes. Núcleo de la Hechicera. Mérida. Venezuela.

**Referència:** SSP/STREP/01/0181.

**Títol:** *Risk analysis for Phytophthora ramorum, a recently recognised pathogen threat to Europe and the cause of Sudden Oak Death in the USA.*

**Acrònim:** RAPRA.

**Investigador responsable:** DESCALS CALLISEN, Enrique.

**Centre:** IMEDEA.

**Inici:** 2004.                    **Fi:** 2007.

**Projecte:** Projecte Intramural núm. 200430E014.

**Títol:** *Desarrollo de nuevas técnicas de detección temprana de estrés de angiospermas marinas: actividad meristemática.*

**Investigador responsable:** DUARTE QUESADA, Carlos M.

**Centre:** IMEDEA.

**Inici:** 2004.                    **Fi:** 2006.

**Projecte:** Projectes d'I+D. Ministeri de Salut del Canadà.

**Títol:** *International double blind study for the identification of Pseudomonas species.*

**Investigador responsable:** LALUCAT JO, Jordi.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Inici:** 2003.                    **Fi:** 2006.

**Projecte:** PTR1995-0810-OP. Projecte PETRI.

**Títol:** *Aplicación de nuevas metodologías de análisis de imagen en el desarrollo de un programa comercial de la plataforma IPP para el estudio de otolitos: age and shape.*

**Investigadora responsable:** MORALES NIN, Beatriz.

**Centre:** IMEDEA.

**Categoria:** Científica titular del CSIC.

**Inici:** 2004.                    **Fi:** 2006.

**Projecte:** Fundación Biodiversidad.

**Títol:** *Herbario virtual del mediterráneo occidental.*

**Investigador responsable:** RITA LARRUCEA, Joan.

**Centre:** Departament de Biologia. Edifici Guillem Colom Casanovas.

**Inici:** 2005.                    **Fi:** 2006.

**Projecte:** CBP.EAP.CLG 982075. Projecte NATO.

**Títol:** Advanced analysis techniques tools for optimization of micro/nano electromagnetics systems (MEMS/NEMS).

**Investigador responsable:** GARCIA MORENO, Eugeni.

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Categoria:** CU (àrea de coneixement: Tecnologia Electrònica).

**Inici:** 2005. **Fi:** 2006.

**Títol:** *Eivissa-CREA.*

**Investigadora responsable:** FERRER PÉREZ, Victòria.

**Centre:** Departament de Psicologia. Edifici Guillem Cifre de Colonya.

**Categoria:** TU (àrea de coneixement: Psicologia Social).

**Inici:** 2005. **Fi:** 2007.

**Títol:** *Equilibrio.*

**Investigador responsable:** SALINAS IBÁÑEZ, Jesús M.

**Centre:** Departament de Pedagogia Aplicada i Psicologia de l'Educació.

**Categoria:** TU (àrea de coneixement: Didàctica i Organització Escolar).

**Inici:** 2005. **Fi:** 2007.

**Projecte:** Projecte bilateral amb Argentina CSIC-CONICET. 2005AR004.

**Títol:** *Estados entrelazados y puertas cuánticas.*

**Centre:** Departament de Física. Edifici Mateu Orfila i Rotger.

**Categoria:** CU (àrea de coneixement: Física Atòmica Molecular i Nuclear).

**Inici:** 2005. **Fi:** 2006.

**Referència:** II-05-051 EC.

**Títol:** *X-ray diffraction study of membrane structure-modifying lipids: interest in the modulation of blood pressure by lipid therapy.*

**Centre:** Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

**Investigadora responsable:** BARCELÓ MAIRATA, Francesca M.

**Categoria:** TU (àrea de coneixement: Bioquímica i Biologia Molecular).

**Organisme:** Deutches Electronen-Synchrotron.

**Inici:** 2005. **Fi:** 2008.

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## **ÍNDIX D'ABREVIACIONS**



Aj.: Ajudant/a  
Aj. EU: Ajudant/a d'Escola Universitària  
Aj. U: Ajudant/a d'Universitat  
AGR: Programa nacional d'investigació i desenvolupament agrari  
ALI: Programa nacional de tecnologia d'aliments  
AMB: Programa nacional d'I+D en medi ambient  
ANT: Programa nacional d'investigació a l'Antàrtida.  
As.: Associat/associada  
B: Becari/becària  
B (reinc.): Becari/becària postdoctoral de reincorporació  
BIO: Programa nacional de biotecnologia  
C: Col·laborador/a  
CEU: Catedràtic/a d'Escola Universitària  
CIENT. TIT.: Científic Titular  
CLI: Programa nacional d'I+D sobre el clima  
Contr. dr.: Contractat doctor  
CSIC: Consell Superior d'Investigacions Científiques  
CU: Catedràtic/a d'Universitat  
EDP: Equivalent de dedicació plena  
EDP=1: dedicació única  
EDP=0.5: compartida a dos projectes  
EDP=0.33: compartida a tres projectes  
EJC: Equivalent de jornada completa  
FD: Fons FEDER  
FIS: Fons d'Investigació Sanitària  
HID: Programa nacional de recursos hídrics  
IMPIVA: Institut per a la Modernització dels Processos Industrials de València  
INV.: Investigador / Investidora.  
MAR: Programa nacional de ciència i tecnologia marines  
MAST: Marine Sciences and Technologies  
MAT: Programa nacional de materials  
MEC: Ministeri d'Educació i Ciència  
PB: Programa bàsic (Programa sectorial de promoció general del coneixement)  
PETRI: Projecte d'Estímul a la Transferència de Resultats d'Investigació  
P. Col.: Professor/a col·laborador/a  
PM: Programa de medicina  
PROF. INV.: Professor d'Investigació  
PS: Programa sectorial  
P1: Projectes d'investigació bàsica no orientada  
P2: Projectes d'investigació bàsica orientada  
P3: Projectes d'investigació aplicada  
P4: Projectes d'I+D en cooperació  
RACE: Research and Technology Development in Advanced Communications Technologies  
SC: Programa sectorial d'I+D agrari i alimentari del MAPA  
SM: Projecte simplificat d'investigació en biomedicina  
Tèc.: Tècnic  
TEL: Programa nacional d'aplicacions i serveis telemàtics  
TEU: Titular d'Escola Universitària  
TIC: Programa nacional de tecnologies de la informació i de les comunicacions

TU: Titular d'Universitat

UE: Unió Europea

UNESCO: United Nations Educational Scientific and Cultural Organization

Visitant: Professor/a visitant

