



Centre for Innovation
and Advanced Technologies
of the University of Barcelona

EXCELLENT RESEARCH shoulder to shoulder with business

The Centre for Innovation and Advanced Technologies – University of Barcelona (CITA-UB) is a project of the University of Barcelona (UB) and the Fundació Bosch i Gimpera, which aims to become the meeting point between the research groups in the UB Group and companies interested in carrying out R & D & I projects.

The CITA-UB promotes and fosters interdisciplinary transfer activities in the various fields of knowledge, in order to transfer them to the society and to thereby contribute to improving business competitiveness.

The CITA-UB provides services in the following areas:

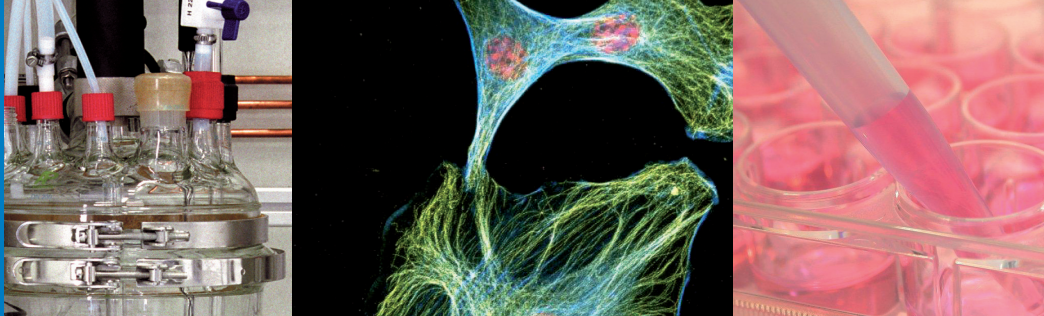
Food: technology, safety and quality.

Sustainable development: environment, energy and water.

Industrial processes: construction, automotive, plastics, coatings (paints, varnishes, etc.), development of new materials and chemical processes, among others.

Information, communication and knowledge technologies: development of electronic devices, circuits and systems for instrumentation and communications; software technologies; ICT technologies and computational linguistics, among others.

Health and quality of life: pharmacy, biochemistry, biotechnology and medical technology.



Figures:

More than **80** researchers

555 research projects and services (2005-2010)

83 competitive projects with public funding
(33 international and 50 Spanish)

More than **200** patents

Areas

FOOD: TECHNOLOGY, SAFETY AND QUALITY

FIGURES	61	researchers
	434	projects (2005-2010)
	52	competitive projects with public funding (23 international and 29 Spanish)
	66	patents

SUSTAINABLE DEVELOPMENT: THE ENVIRONMENT, ENERGY AND WATER

FIGURES	57	researchers
	422	projects (2005-2010)
	65	competitive projects with public funding (29 international and 36 Spanish)
	106	patents

INDUSTRIAL PROCESSES

FIGURES	62	researchers
	440	projects (2005-2010)
	72	competitive projects with public funding (31 international and 41 Spanish)
	194	patents

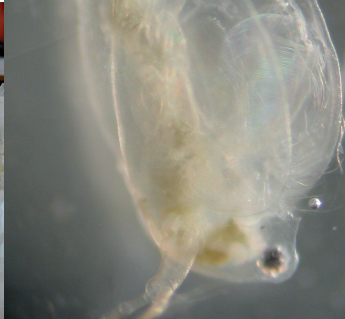
INFORMATION, COMMUNICATION AND KNOWLEDGE TECHNOLOGIES

FIGURES	54	researchers
	416	projects (2005-2010)
	60	competitive projects with public funding (26 international and 34 Spanish)
	106	patents

HEALTH AND QUALITY OF LIFE

FIGURES	75	researchers
	498	projects (2005-2010)
	74	competitive projects with public funding (29 international and 45 Spanish)
	184	patents

Figures updated in June 2011.



CITA-UB Technology Agents



CCiTUB - Scientific and Technological Centers of UB



CELLTEC-UB - Cellular and Molecular Technology Research Center



CEMIC - Micro&Nanosystems for Instrumentation and Communications Engineering Center



CEQAP - Center for Environmental and Product Chemical Engineering



CERETOX - Centre of Research in Toxicology



CPT - Thermal Spray Center



DIOPMA - Center for Design and Optimization of Processes and Materials



ELECTRODEP - Electrodeposition and Corrosion Laboratory



SDM - Service of Development of Medicines



SINTEFARMA - Research and Development Center of Organic Synthesis for Chemical and Pharmaceutical Industry



UQC PCB
Unitat de Química Combinatòria

UQC - Combinatory Chemistry Unit

Members of:



MORE INFORMATION:

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INDUSTRIAL PROCESSES:

CONSTRUCTION, AUTOMOTION,
PLASTICS, MATERIALS, COATINGS



Expertise:

- ▶ Development of new sensors and actuators
- ▶ Micro and nanosystems for instrumentation and control
- ▶ Development of intelligent image capturing, processing and transmission systems for industrial applications
- ▶ Classification of polymeric materials
- ▶ Ceramics and concrete
- ▶ Research on new materials, functional materials and fuel cells
- ▶ Nanomaterials. Biomaterials
- ▶ Development and implementation of advanced techniques in electronics technology and nanotechnology
- ▶ Description and kinetic modelling of new processes
- ▶ Development of new applications for thermal spray technologies
- ▶ Development and optimization of chemical processes
- ▶ New coatings: thermal, nanostructured, friction resistant, wear resistant, conductors...
- ▶ New advanced materials and components for industrial applications (construction, textiles, energy, packaging and transport)
- ▶ Corrosion studies
- ▶ Toxicity studies and ecotoxicological and human health risk assessment of nanoparticles and new materials
- ▶ High resolution transmission electron microscopy, X-ray diffraction, AFM / STM microscopy, interferometry

Figures:

- 62** researchers
- 440** research projects and services (2005-2010)
- 72** competitive projects with public funding for R & D & I projects (31 international and 41 Spanish)

Figures updated in June 2011.

Lead researchers:

- ▶ J. R. Seoane
- ▶ J. M. Villegas
- ▶ S. Esplugas
- ▶ M. Borràs and J. M. Llobet
- ▶ J. M. Guilemany and J. Fernández
- ▶ M. Segarra and A. I. Fernández
- ▶ C. Müller
- ▶ J. Bosch

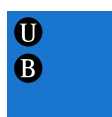
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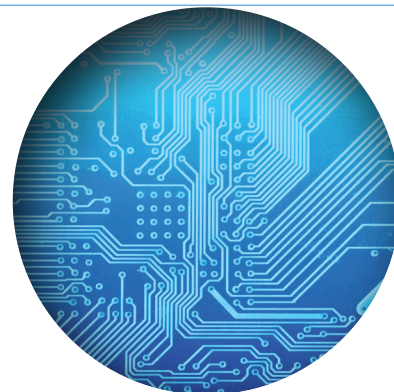


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TECHNOLOGIES OF INFORMATION, COMMUNICATION AND KNOWLEDGE



Expertise:

- ▶ Development of electronic devices and components
- ▶ Design, simulation and development of new sensors and actuators based on microelectronic technology
- ▶ Design of interface circuits for sensors and actuators (A/D converters, RF communications, optical communications, field bus communications, power integrated circuits) using new mixed design techniques and microsystems technologies
- ▶ Development of optoelectronic systems and telemeasurement and transmission radiofrequency
- ▶ Development of intelligent measurement and control systems using signal processing, with special emphasis on systems based on gas sensors (electronic noses)
- ▶ Development of intelligent image capturing, processing and transmission systems for industrial applications
- ▶ Development and implementation of advanced techniques in electronics technology and nanotechnology
- ▶ Development of surface analysis methods for microelectronics
- ▶ Design and classification of metallic materials, ceramics, polymers and composites
- ▶ Structural classification of materials and components phases
- ▶ Electrochemical preparation of coatings for technological applications
- ▶ Electrochemical preparation of films for application in microelectronics

Figures:

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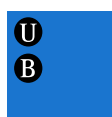
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SUSTAINABLE DEVELOPMENT: ENVIRONMENT, ENERGY AND WATER



Expertise:

- ▶ Advanced materials and devices: microsensors and microsystems chemical and physical functionality
- ▶ New energy storage systems: catalysts, fuel cells, hybrid systems
- ▶ Materials for thermal energy storage in the field of sustainable construction
- ▶ Application of signal processing and data algorithms for intelligent instrumentation: electronic noses
- ▶ Ecotoxicity studies *in vivo* and *in vitro*. Environmental impact assessment
- ▶ New recycling processes for metal content in all types of waste
- ▶ Classification and treatment of waste: reduction of environmental impact, inertization and stabilisation, design of new by-product recycling processes
- ▶ Revaluation, treatment and control of wastewater
- ▶ Wastewater treatment using membrane techniques
- ▶ Development and/or improvement of processes most compatible with the environment – replacement of polluting components or stages
- ▶ Energy assessment by means of anaerobic waste digestion
- ▶ Optimisation and improvement of processes

Figures:

57 researchers
422 research projects and services
(2005-2010)
65 competitive projects with public
funding for R & D + i projects
(29 international and 36 Spanish)

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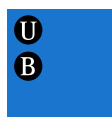
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FOOD: TECHNOLOGY, SAFETY AND QUALITY



Expertise:

- ▶ Food biotechnology
- ▶ Screening of active ingredients using cellular systems
- ▶ Study of rheological properties
- ▶ Reuse of by-products and production waste
- ▶ Applied experimental toxicology
- ▶ Food toxicity and assessment of contaminants in human food and their risks
- ▶ Determination of food contaminants
- ▶ Molecular traceability in food
- ▶ Stabilization of microorganisms with application in food
- ▶ Encapsulation of flavours
- ▶ Electronic systems for food cooking control
- ▶ Extraction and purification of compounds
- ▶ Development of smart metering systems for determining gases and volatile compounds
- ▶ Microbial monitoring and handling systems

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- ▶ J. M. Suñé and J. R. Tico

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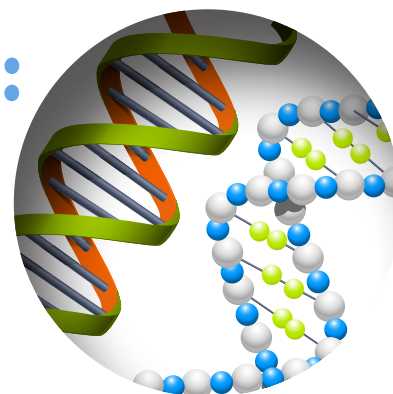


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HEALTH AND QUALITY OF LIFE: PHARMACY, BIOCHEMISTRY, BIOTECHNOLOGY AND MEDICAL TECHNOLOGY



Expertise:

- ▶ Development and validation of therapeutic targets
- ▶ Development of new cellular models such as screening tools
- ▶ Stem cell and tissue engineering research
- ▶ Toxicological trials *in vivo* and *in vitro*
- ▶ Genome, proteome and gene expression analysis techniques
- ▶ Preformulation, formulation and design studies, production technology
- ▶ Application studies of new processes for the pharmaceutical and related industries
- ▶ Fine tuning and validation of analytical methods for HPLC drugs
- ▶ Research and development of new pharmaceutical formats: microcapsules, osmotic bioadhesive, matrix tablets, colonic forms, etc.
- ▶ Synthesis of API (Active Pharmaceutical Ingredients), building blocks and metabolites
- ▶ Synthesis of new molecules with potential therapeutic interest
- ▶ Medical, heterocyclic and condensation chemistry
- ▶ Microfluidics and *lab-on-a-chip*
- ▶ Functionalization of biosensors and impedance sensors
- ▶ Nanotechnology applied to the study of bio/non-bio interfaces
- ▶ Microrobotics and nanomanipulation of biomedical samples
- ▶ Development of smart self-responding bioelectronic systems

Figures:

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- 498** research projects and services (2005-2010)
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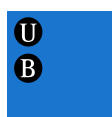
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