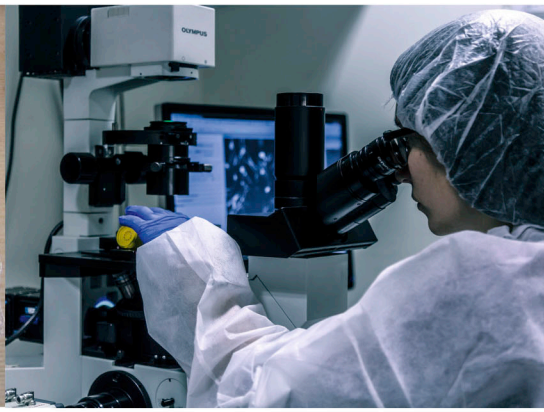
Research at the University of Barcelona





October 2019

UNIVERSITAT DE BARCELONA

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UB Office of Research Management (OGR); UB Office for International Research Projects (OPIR); UB faculties; UB research institutes; research institutes in which the UB participates; the Scientific and Technological Centres – UB (CCiT-UB); the UB Doctoral School; the Press Office; the Bosch i Gimpera Foundation, and the Barcelona Science Park (PCB).
Frontcover, pages 9, 37 and 45: lab photos courtesy of CREATIO.

Acronyms
SGRs: research groups recognized by the Generalitat de Catalunya (Catalan Government); **ICREA researchers:** those part of the Catalan Institution for Research and Advanced Studies (ICREA), a foundation supported by the Catalan Government; **RyC researchers:** those of the Ramón y Cajal programme (Spanish Government).

Contents

Foreword to the 2019 edition

It is my pleasure to present the 2019 edition of the report **Research at the University of Barcelona.** This multiannual report will hopefully give you a comprehensive account of our most significant figures in **research**, **innovation** and **technology transfer** during the period ending December 2018.

The University of Barcelona is a 569-year-old **research-intensive institution** that promotes activity in nearly all fields of knowledge: experimental, mathematical and engineering sciences, life and health sciences, social sciences and humanities, and the arts. International impact, cooperation in education and a commitment to innovation has been in the DNA of our institution for many years. The University of Barcelona is the **top-ranked university in Spain**, it is very well positioned in Europe, and it is the only Spanish institution ranked among the top 200 universities in the world according to the Academic Ranking of World Universities 2019. It is also included among the 50 best universities for scientific productivity in the world, being the only Spanish university to form part of this select group.

The University of Barcelona is a proud **member of LERU** (the League of European Research Universities), a group that comprises the 23 best research-intensive universities in Europe. The active participation of the University of Barcelona in LERU and other alliances greatly contributes to our **international dimension**, serves to strengthen our institutional policies on research, and bolsters our social, economic and academic impact. The UB is now **coordinating CHARM-EU**, a European University Network promoting European values and education in Europe and around the world.

In order to appreciate our research efforts a few figures will suffice: from 2014 to 2018, our 297 research groups from 60 departments and 17 institutes were granted more than **4,600 research projects**, produced **more than 22,300 ISI indexed publications** and generated **228 patents or intellectual property rights**. Our professionals are also part of 12 joint research institutes together with other universities or public administrations, mostly in the biomedical areas, including close associations with the most prestigious hospitals in the country.

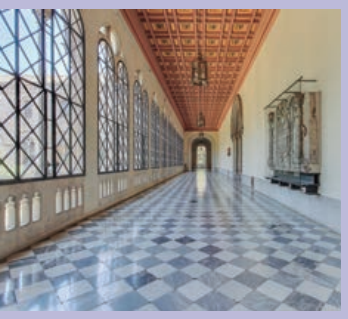
Knowledge transfer to society is one of our driving forces. We participate actively in initiatives like **EIT Health** and the **RIS3 initiative**. For more than 30 years our **Scientific and Technological Centres**, unique in Spain, have provided state-of-the-art facilities both to academia and technological firms, while our successful **Science Park** hosts around 85 hi-tech firms and institutes. Likewise, transfer in the areas of social sciences and humanities is also a priority for us, as we aim to make our knowledge available to society at large and fulfil the **Sustainable Development Goals** for 2030.

I encourage you to read this report, introducing you to the exciting research activity in which our University engages.

Domènec Espriu
Professor of Theoretical Physics
Vice-Rector for Research
University of Barcelona

Barcelona, October 2019

The University of Barcelona as a leading research university



The University of Barcelona (UB) is a student-oriented research university with more than 560 years of history. The institution has in-depth, multidisciplinary experience accumulated over the decades in several research areas, a background that places the University of Barcelona in a prominent position on the international research scene. The main research areas at the University are Life and Medical Sciences, Experimental Sciences (physics, mathematics, geology and chemistry), Economics, Business, Law, Humanities (philology, philosophy, history and geography), and Educational and Behavioural Sciences. The staff of the institution comprises almost **5,700 academics and researchers** and around 2,300 administrative and technical support members who develop their daily activities within or in close relation with the **297 research groups** recognized by the Generalitat de Catalunya (Catalan Government).

The University of Barcelona is the only Spanish university represented in the League of European Research Universities **(LERU)**, which comprises the 23 best research-intensive universities in Europe. Research outcomes at the UB have great potential in terms of their contribution to the economy and social impact. Data gathered for the latest reports on the "Economic Contribution of the LERU Universities" and "**Economic Contribution of the University of Barcelona**" show that the UB has become a key agent in Catalan and Spanish business sectors. The University of Barcelona generates a collective economic impact of €6.42 in the European economy per every euro received to carry out research activities. The presence of the UB in Spain corresponds to figures of about €2,300 million GVA (gross value added). Regarding employability, the impact of the UB on the Spanish economy reached 39,300 job vacancies, which implies that it generates 5.23 jobs for each person directly hired by the University.*

The University of Barcelona occupies a **competitive position** at national, European and worldwide levels in the most important ranking tables designed on a range of variables within different geographical areas. The University of Barcelona is the top university in Spain and the top university in the Ibero-American educational area according to the most relevant rankings, in which the UB has showed a slight improvement of results during this year. We have a recognized and active role creating exciting crossroads where international students, academics and researchers alike are more than welcome to join us and to contribute to the **international impact of our research** projects.

Strategic Research Initiatives

The University of Barcelona encourages researchers to join efforts and forces with institutions around the world to create a synergy of expertise. With this objective, the University is an active core member of EIT Health, a Knowledge Innovation Community (KIC) in the field of health created by the European Institute of Innovation and Technology (EIT) in 2014. The EIT Health is a consortium that offers best-in-class research capabilities, higher education and business expertise at European level.

* https://www.ub.edu/web/ub/en/menu_eines/noticies/2017/12/007.html?

The Spanish association comprises 19 leading organizations plus 11 linked entities — universities, companies, research centres, public health organizations, hospitals and technological centres — committed to health innovation and its impact on the improvement of citizens' quality of life. This represents one of the most important successes of the University of Barcelona in the last five years, as it recognizes the international excellence and scientific competitiveness of its health-related research. In addition, EIT Health opens up access to European funds for education, business creation and innovation projects not only to researchers but also to other stakeholders, such as for spin-offs or institutes in which the UB participates. Since 2015, our university has been active both in campus and in innovation proposals, with an average success rate of 30% and nearly €4 million secured for the UB, over €8 million if we consider the entire UB group.

The University of Barcelona is an active member of international research networks. Among them: (i) **EuroMarine**, a European marine science network; (ii) **Eurolife**, a consortium of European institutions committed to research and higher education in the field of life and health sciences, and (iii) the **European Consortium for Political Research** (ECPR), an association for academic institutions concerned with the teaching and research of political science and international relations.

Good Research Practices

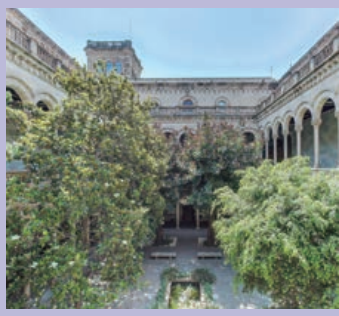
The University of Barcelona is highly committed to the improvement of the institution's policies and practices in terms of recruitment, hiring and guaranteeing the optimal working conditions for its researchers. The University obtained the **HR Excellence in Research** in 2015, an award conferred by the Directorate-General for Research and Innovation of the European Commission. This accreditation certifies that the University of Barcelona is a research-intensive university committed to the continuous improvement and implementation of its human resources policies, following the principles of the **European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers**. The UB is presently at the implementation phase of the HRS4R revised Action Plan. After this phase has been completed, **by April 2021**, the institution will have to follow the procedures leading to the HR Excellence in Research Award **renewal phase**.*

The University of Barcelona stipulates that everyone involved in research, including investigators and trainees, must work to the highest standards to promote the assurance of **research integrity** in fulfilment of the mission and goals of the University. To achieve these principles, the University of Barcelona provides the academic community with several platforms and committees of reference. Among them:

- the **University of Barcelona Bioethics Commission** (CBUB), which evaluates the ethics of the research projects carried out by members of the University of Barcelona (academics and researchers);
- the **Animal Experimentation Ethics Committee** (CEEA), which is responsible for ensuring compliance with the legislation that regulates the use of animals for experimentation and other scientific purposes, and
- the **Biosafety Commission**, which ensures the fulfilment of the required obligations imposed by regulations in biosafety issues.

* https://www.euraxess.at/jobs/hrs4r/award-renewal

HR EXCELLENCE IN RESEARCH



World Reputation

The University of Barcelona is the top-ranked university in Spain according to the prestigious **QS World University Rankings** 2019 and, according to the new edition of the **Academic Ranking of World Universities** (ARWU), the UB is the only university in Spain listed among the top 200 universities worldwide according to the criteria set by this prestigious ranking. The great scientific performance of the UB, in indexed articles and high-level publications in *Nature* and *Science*, is a determining factor regarding the position the UB holds.

The University of Barcelona continues to be **the best positioned in Spain in the Web Ranking of Universities**, Webometrics. The UB occupies the 34th place in Europe and the 140th in the world. The University of Barcelona was included once again in the world's top 100 universities in two prestigious international rankings, sitting at number 96 in the **Best Global Universities** 2018 (BGU) and at position 87 in the **Center for World University Rankings** (CWUR) 2018.

On the other hand, **the UB is the Catalan institution with most frequently cited researchers worldwide**, with a total of 14 researchers appearing in the list of the most influential scientists, according to one of the most prestigious classifications in the international academic and scientific community, published by Clarivate Analytics, which identifies experts that lead studies with the highest international scientific impact in 21 fields of sciences and social sciences, ranging from clinical medicine and neurosciences to agriculture, economics and the environment.

Awards and Distinctions

In the last call of the Severo Ochoa and María de Maeztu distinctions conferred by the Spanish Ministry of Economy and Competitiveness, the Institute of Neurosciences and the Institute of Theoretical and Computational Chemistry, both part of the University of Barcelona, were recognized as **María de Maeztu Excellence Units**. These two institutes joined the Institute of Cosmos Sciences of the University of Barcelona (ICCUB) and the Barcelona Graduate School of Mathematics (BGSMath), a centre affiliated with the University of Barcelona, which had obtained this distinction previously. Moreover, the Institute for Bioengineering of Catalonia (IBEC), the Institute for Research in Biomedicine (IRB Barcelona) and the Centre for Research in Agricultural Genomics (CRAG), all three institutes in which the University of Barcelona participates, are recognized as **Centres of Excellence by the Severo Ochoa** programme.

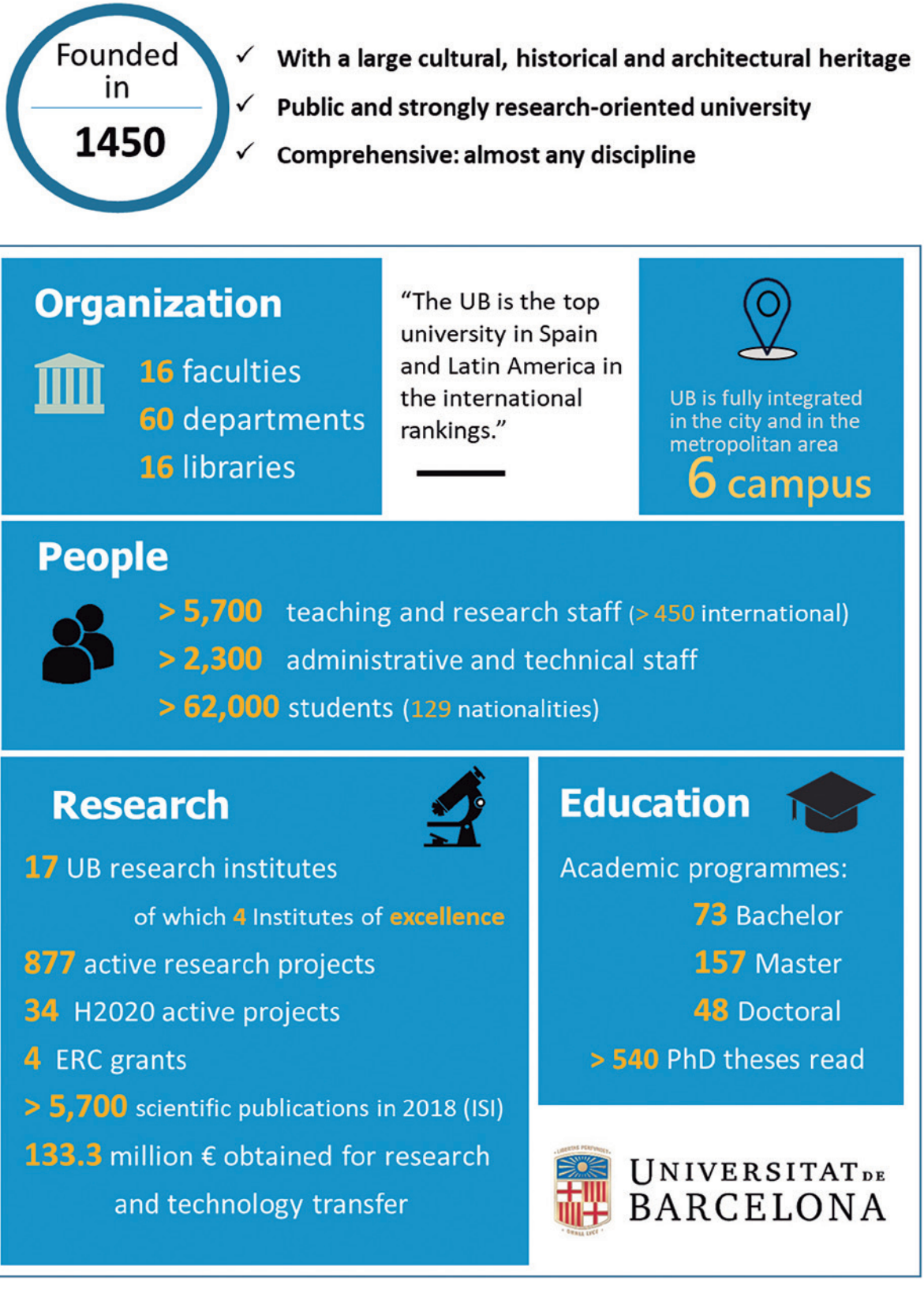
Furthermore, **19 researchers** from the University of Barcelona received awards at the 10th edition of the **ICREA Academia** programme. This programme contributes to the intensification of research carried out by university professors who are in a fully active and expansive phase of their research careers. **ICREA** (Catalan Institution for Research and Advanced Studies) is a foundation supported by the Catalan Government and currently employs **40 researchers** that perform their work **with the University of Barcelona**.

Facts and Figures

- 16 faculties, 60 departments, 73 bachelor's degrees, 157 university master's degrees and 48 doctoral programmes
- More than 5,700 researchers, technicians and research assistants
- Over 62,000 students. More than 10,000 students awarded bachelor's and master's degrees. More than 500 doctoral theses submitted every year
- 17 University of Barcelona research institutes, 12 Catalan research institutes in which the University of Barcelona participates, 5 research centres, 10 observatories and 3 documentation centres
- 297 research groups recognized by the Generalitat de Catalunya (Catalan Government), which included some 40 ICREA researchers, 34 Ramón y Cajal researchers, 28 Juan de la Cierva and 17 Beatriu de Pinós researchers
- 877 active research projects and more than 133 million euros obtained from active national and international research projects and contracts with companies
- More than 5,700 scientific publications in 2018 (WoS)
- The Learning and Research Resources Centre (CRAI) offers general library services and a range of specialized teaching support and research support services
- The Scientific and Technological Centres (CCiT-UB): a comprehensive and state-of-the-art research support facility with 36 technical units
- The Bosch i Gimpera Foundation (FBG): promoting and managing the transfer of knowledge and technology generated at the University of Barcelona.

Source: *The University of Barcelona* in figures (October 2019) and UB Office of Research Management – OGR (UB-GREC Database, December 2018)

UB in Figures



Source: *The University of Barcelona in figures* (published in October 2019, all data referred to 2018)

1. Overview of research at the UB

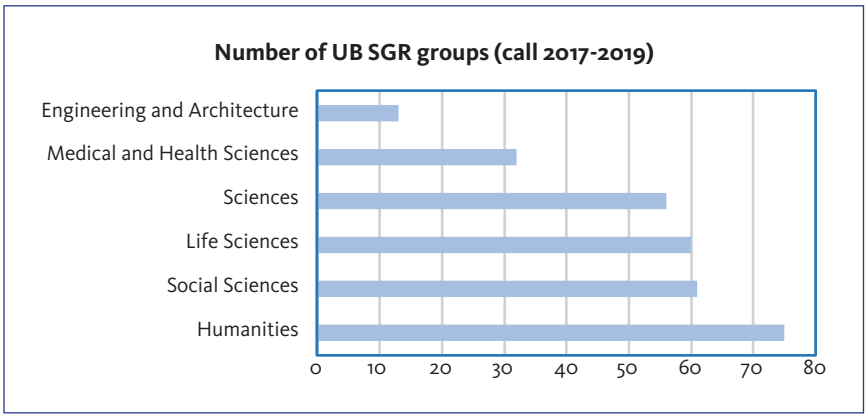
The most significant research at the UB is conducted by the **UB's 297 research groups** that have been recognized and supported by the Generalitat de Catalunya (Catalan Government) by the **SGR call 2017-2019**, which aims to give support to the research activities conducted by the best teams. Within these 297 SGR groups, 27 of them are interuniversity SGR research groups with multiple affiliations (that is, with the UB and other Catalan institutions). If considered according to their category, there are:

- **276 UB consolidated research groups** (GRC), research groups formed by research personnel with a stable and consolidated path with a common strategy that has allowed it to advance knowledge in its area, with recognized and impacted research results;

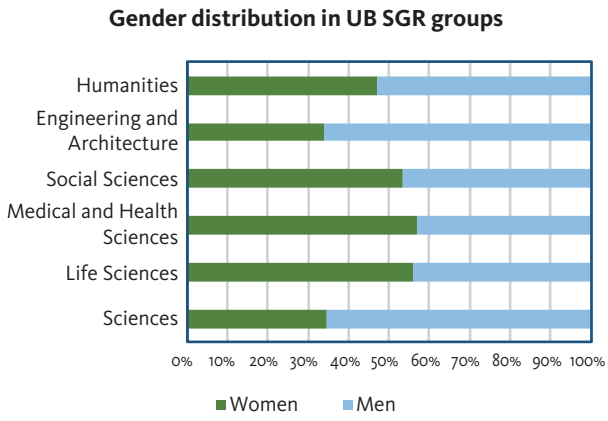
- **10 UB pre-consolidated research groups** (GRPRE), research groups that obtained recognition as emerging in the previous call, SGR 2014, and which, given the duration of the latter, cannot meet the requirements to appear in the modality of a consolidated group;

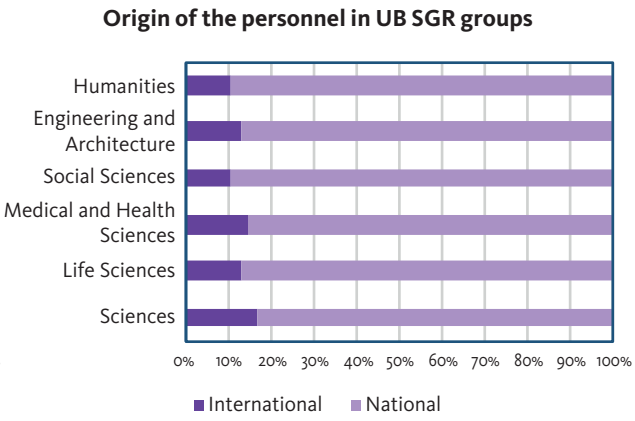
- **11 UB emerging research groups** (GRE), research groups with a brief trajectory of joint work but with the potential to become consolidated research groups in their field in the period in question.

According to their main field of knowledge, established by the Catalan Government, these 297 UB SGR groups are distributed in **six categories,** which include social sciences (economics, business, law, sociology, education); humanities (geography and history, philology, philosophy and fine arts); sciences (chemistry, geology, physics and mathematics); life sciences; medical and health sciences, and engineering and architecture.

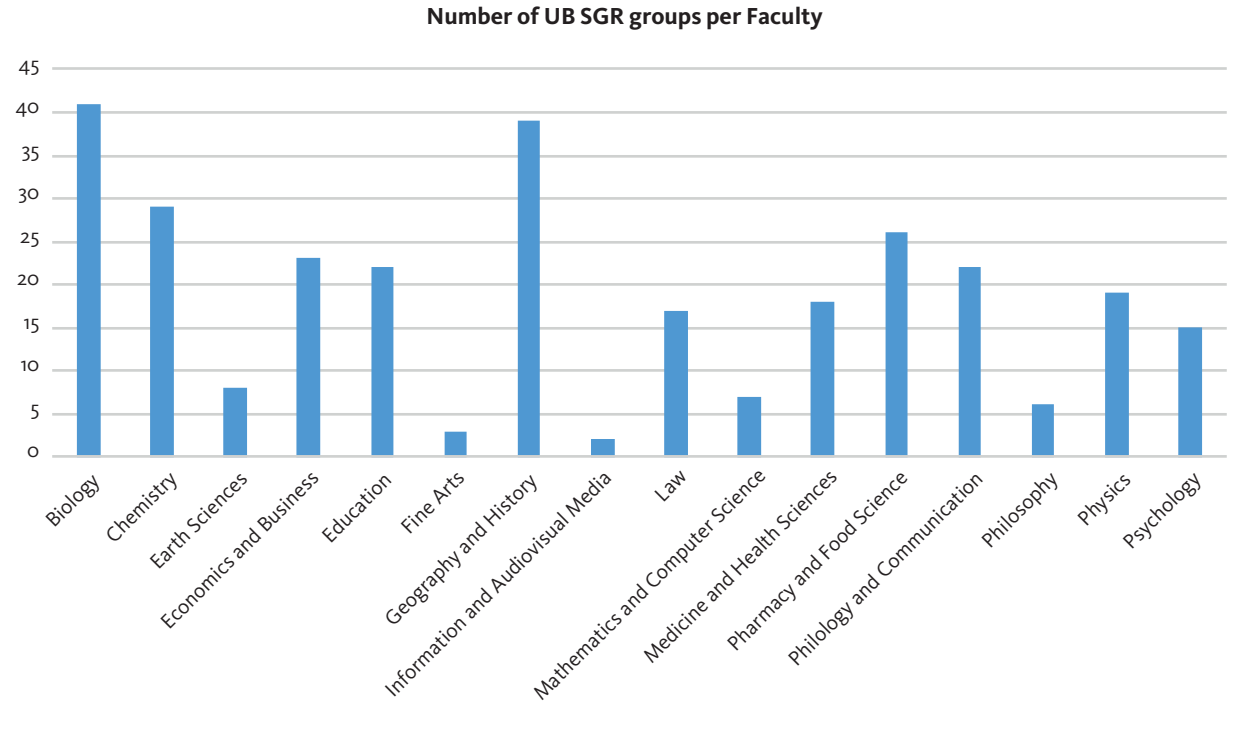


Considered globally, there is a fair **gender distribution** within the SGR groups, with 48.47% of active members being women, although there is a significant deviation in sciences (maths, physics, chemistry) and engineering and architecture. As for the origin of UB researchers in terms of their nationality, 12.85% of staff come from other countries.

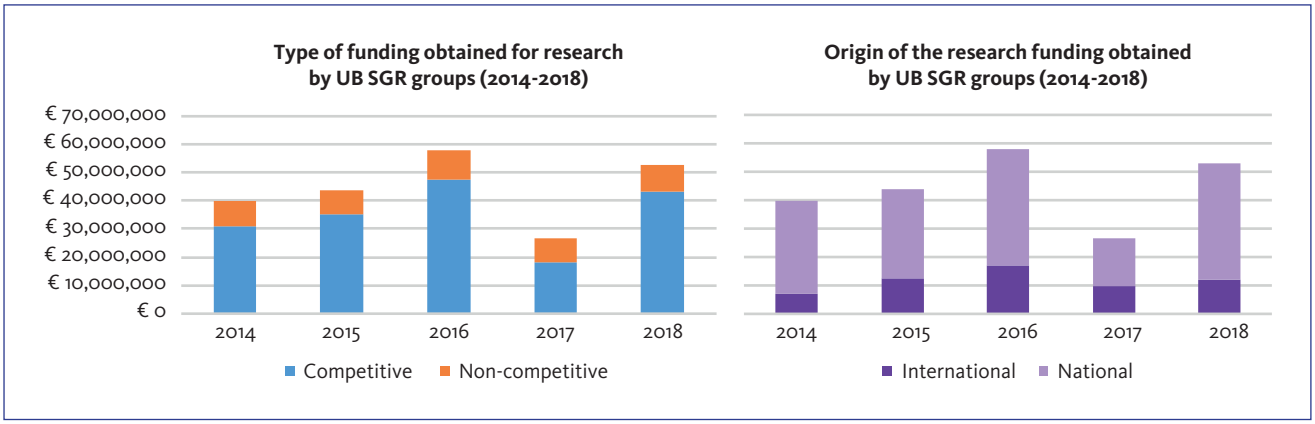




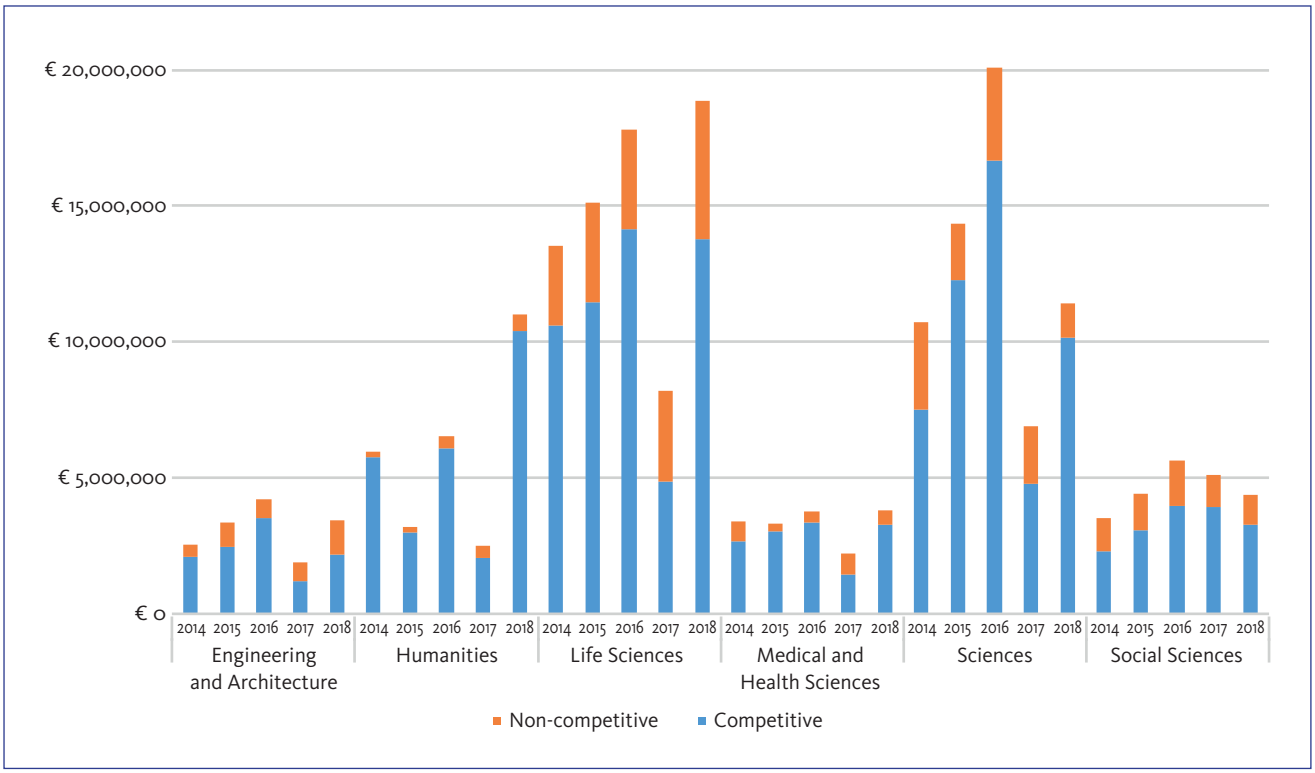
The personnel of these 297 recognized research groups are integrated within the 16 faculties that comprise the academic structure of the UB. The size of each faculty varies significantly and so does the distribution of these research groups, as shown in the graph below.

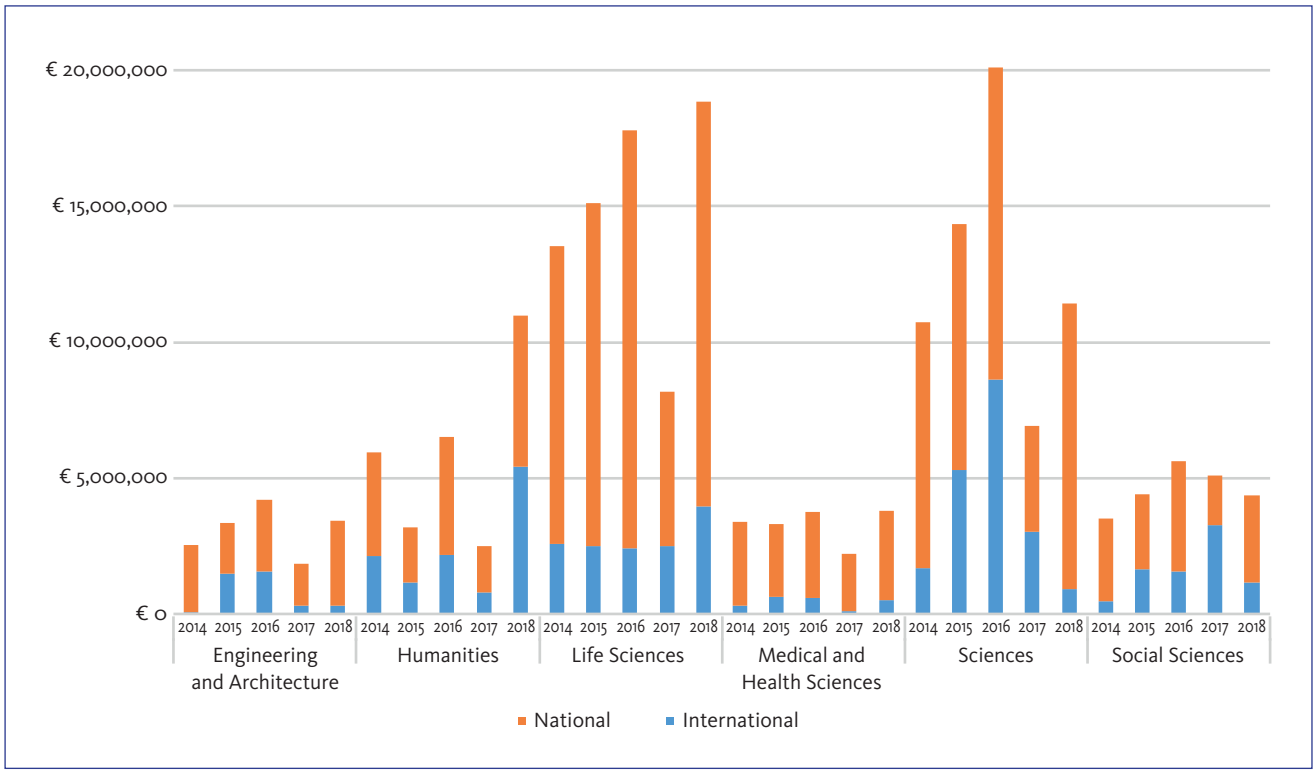


As for the research funding obtained by UB SGRs between 2014 and 2018, 79% came from competitive calls and up to almost 27% of this funding was of international origin, mainly from the European Union Horizon 2020 programme.

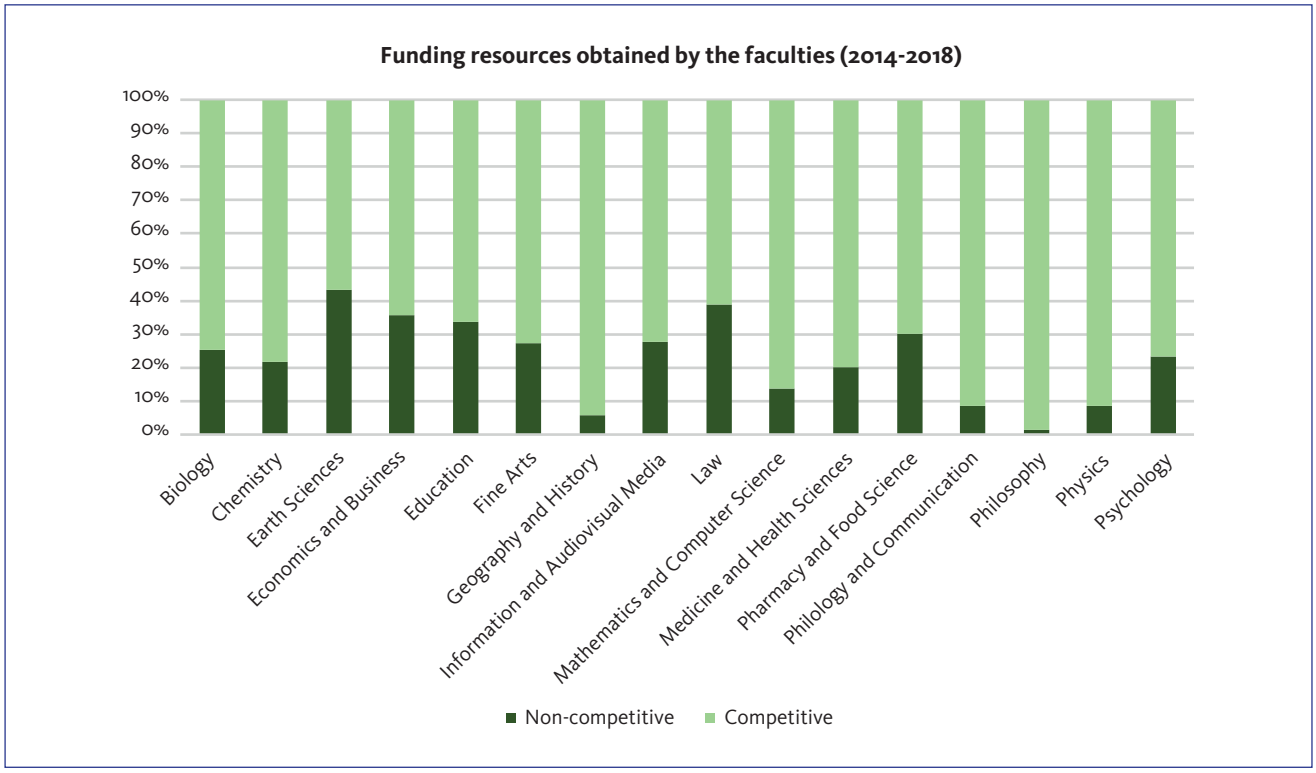


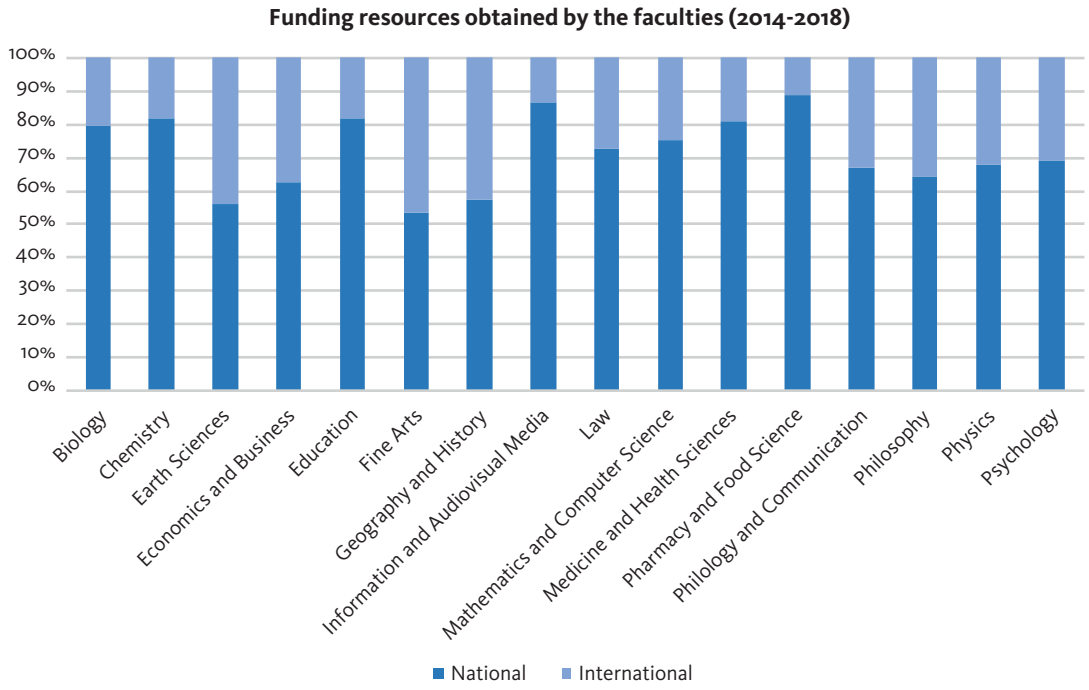
The following graphs show the evolution of the **amount of funding** obtained from 2014 to 2018 for research projects by UB SGR groups, depending on type and origin, and according to the respective knowledge areas to which the research groups belong.



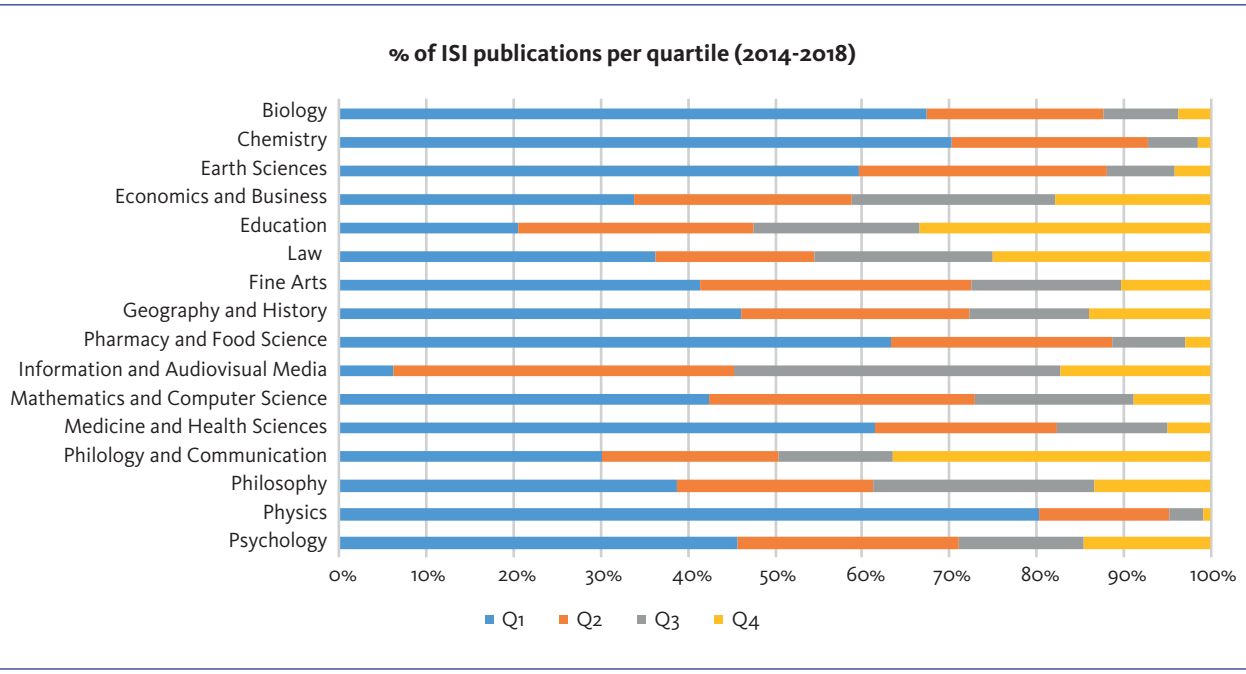


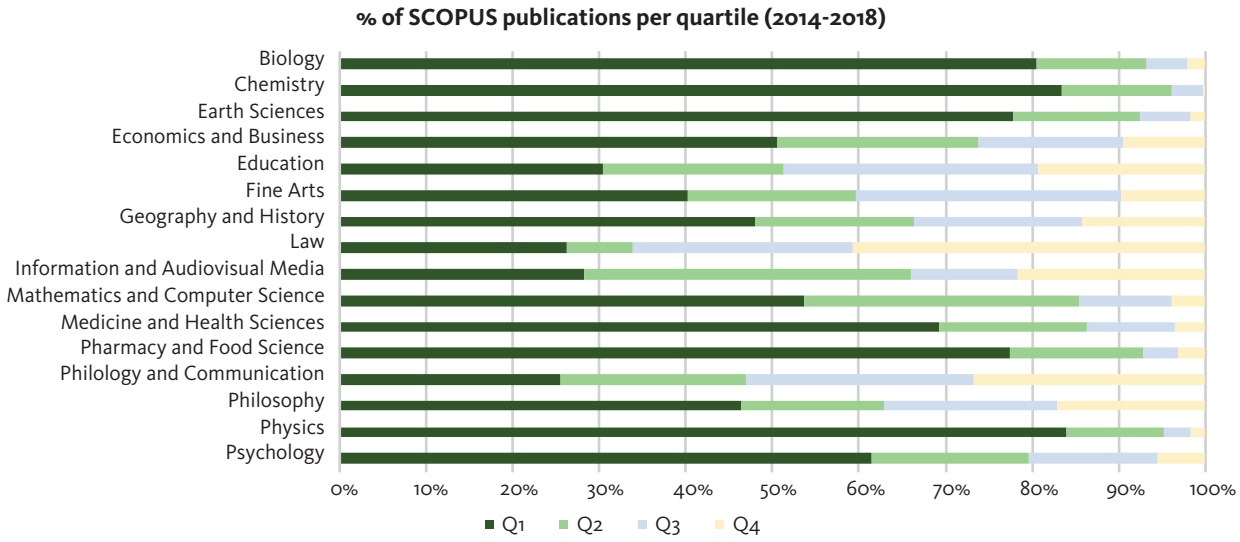
The distribution of the **funding resources** obtained by the 16 faculties for the 2014-2018 period is shown in the following graphs. In total, 79% of the funding comes from competitive calls and 73.44% has a national origin.





Regarding the **scientific output** of the 16 faculties of the UB for the period 2014-2018, the ISI and the SCOPUS analyses of publications are as follows:

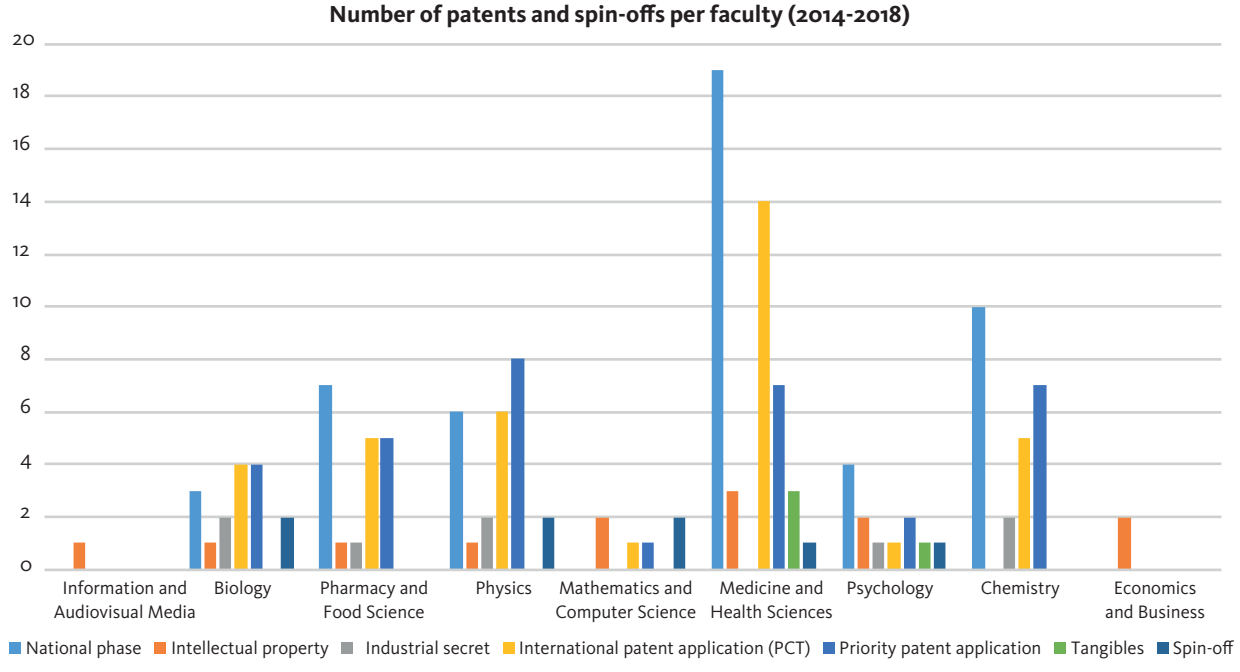




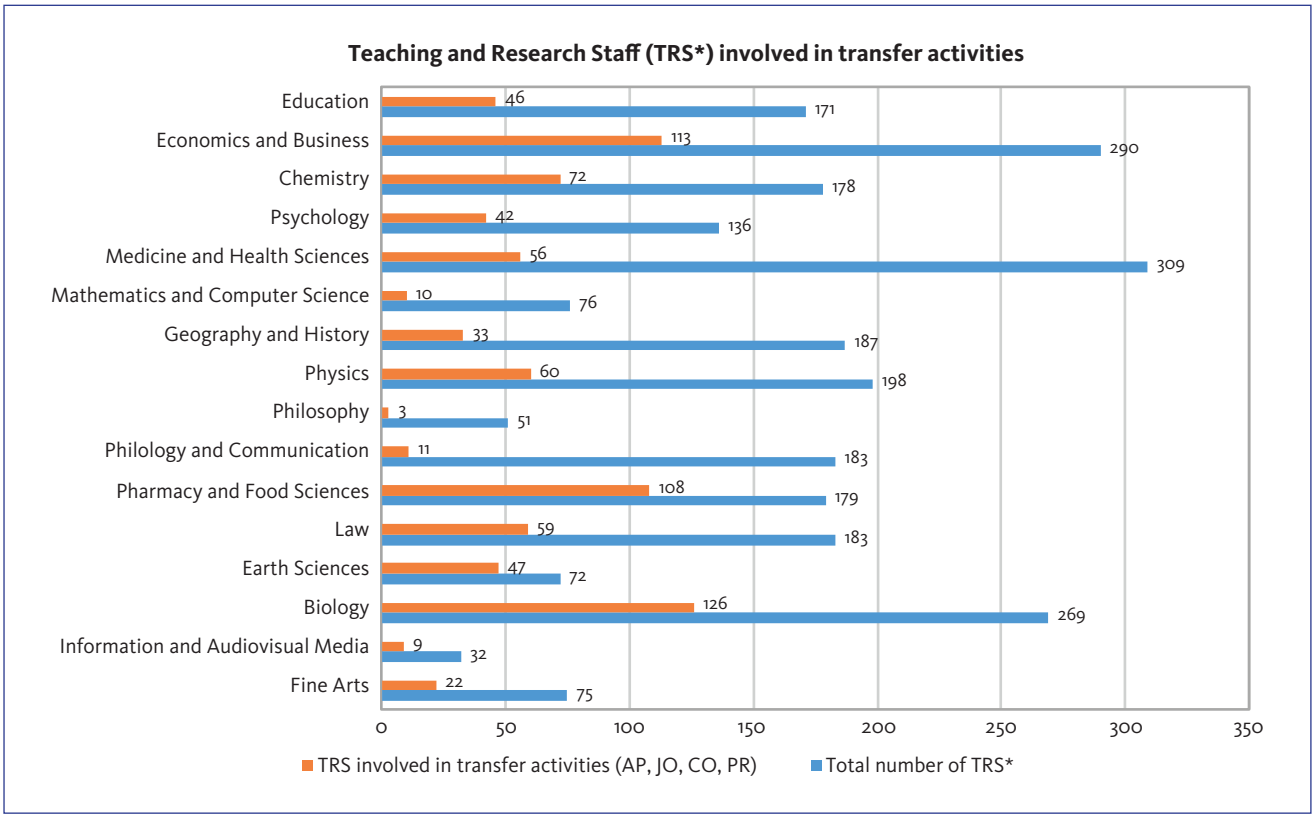
In order to join forces with R&D activities and to improve the quality of their innovation capacities, the UB conducts a number of projects **promoting knowledge and technology transfer** in basic research, between the UB and private companies and public institutions. The University of Barcelona thereby ensures that such institutions can play an instrumental role in technological innovation and fully develop the potential of the quaternary sector.

Collaboration between UB research groups and business sectors is managed by the **Bosch i Gimpera Foundation (FBG),** which takes care of all those aspects related to the knowledge transfer activity of the UB. Researchers at the UB can transfer their research findings using a variety of mechanisms, including **contract research agreements, collaborative research agreements, patent licensing** and **company creation**.

The **transfer indicators for the faculties at the UB** during the last five years are shown in the figure below.

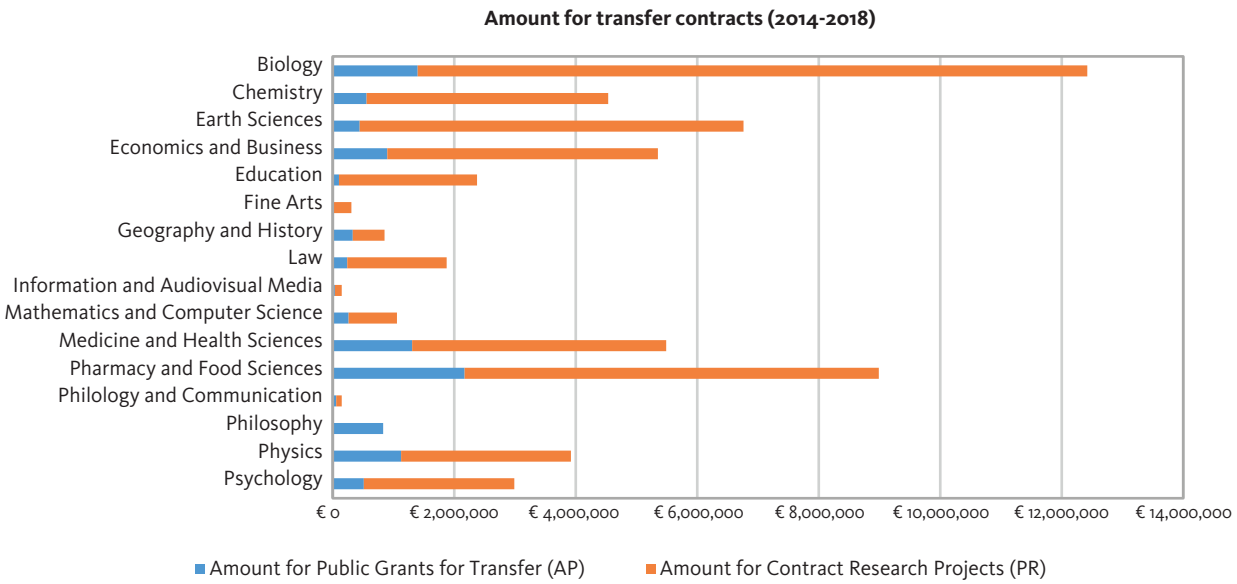


The total number of **teaching and research staff as lead or principal investigator researcher involved in transfer activities** (contract research projects, public grants for transfer, agreements with companies and institutions for consulting services and the organization of workshops for transfer initiatives) varies significantly from one faculty to another. However, as shown in the next graph, in all faculties there is significant interest in participating in these activities.



TRS* Teaching and research staff (as of December 2018), including all TRS categories with a full-time contract, acting as head researcher in transfer actions.

The **two main transfer activities** in terms of income, that is, contract research projects (PR) and the amount obtained through public calls intended specifically for transfer projects (AP), accounted for almost €53 m between 2014-2018.



2. The H2020 programme at the UB

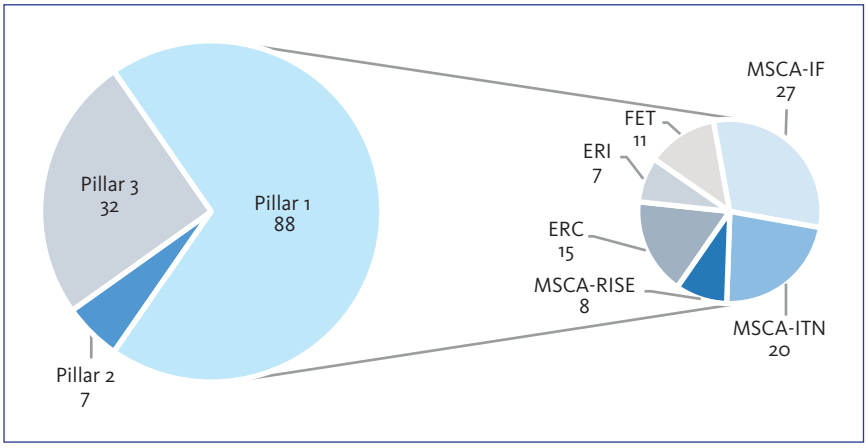
The European Commission (EC) is the largest international funding organization for research at the University of Barcelona. Horizon 2020 is the main EC research and innovation programme, with nearly 80 billion euros of funding available over seven years (2014-2020). Since the implementation of this programme, the University of Barcelona has been awarded **129 EC projects**, and **coordinates 25 of these.** The total revenue at the University of Barcelona **as of June 2019** was **more than 49 million euros**.

Horizon 2020 is built around three pillars to reinforce excellence in European research, to promote industrial initiatives and to address major social challenges:

- **Pillar 1: Excellent Science –** including grants for individual researchers from the European Research Council and Marie Skłodowska-Curie fellowships, Future and Emerging Technologies and European Research Infrastructures.

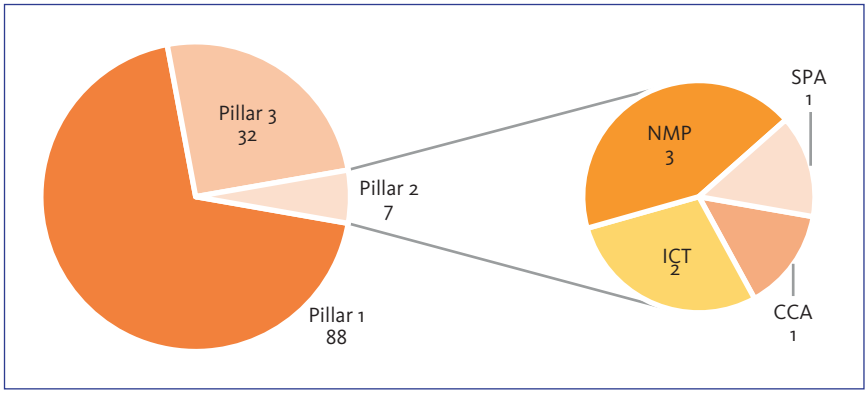
  The University of Barcelona has been awarded 88 projects in this pillar and coordinates 20 (as of June 2019). The revenues obtained in each sub-programme are detailed in this table:

ERC: European Research Council	€21,509,995
MSCA-IF: Marie Skłodowska-Curie Actions-Individual Fellowships	€4,759,379
MSCA-ITN: Marie Skłodowska-Curie Actions-Innovative Training Networks	€7,121,625
MSCA-RISE: Marie Skłodowska-Curie Actions-Research and Innovation Staff Exchanges	€836,990
FET: Future and Emerging Technologies	€4,468,810
ERI: European Research Infrastructures	€1,213,303



- **Pillar 2: Industrial Leadership –** including grants related to industrial technologies (ICT, nanotechnologies and Space). In this pillar, the University of Barcelona has been awarded seven projects. The revenues obtained in the three sub-programmes are detailed in this table:

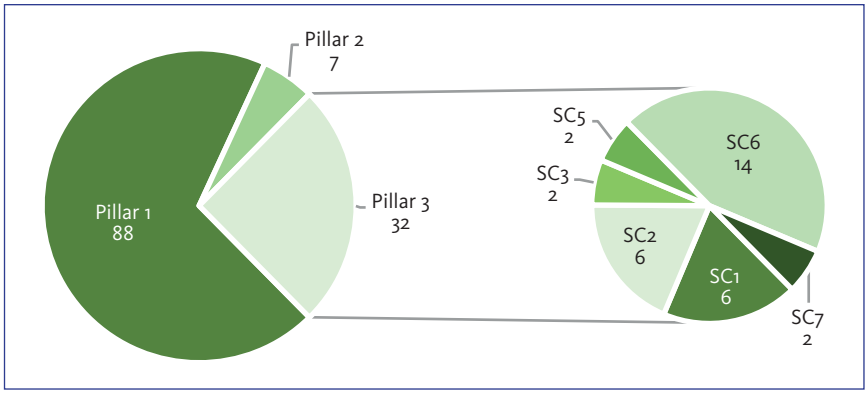
ICT: LEIT Information and Communication Technologies	€405,281
NMP: LEIT Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology	€912,732
SPA: LEIT Space	€126,248
CCA: Cross-cutting activities (Focus Areas)	€240,007



- **Pillar 3: Societal Challenges –** including research towards meeting seven broad challenges (see table below).

  The University of Barcelona is coordinating five projects of the 32 obtained in pillar 3. In the following table, the funding obtained in each sub-programme is detailed:

SC1: Health, Demographic Change and Wellbeing	€1,370,373
SC2: Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy	€1,591,983
SC3: Secure, Clean and Efficient Energy	€735,212
SC5: Climate Action, Environment, Resource Efficiency and Raw Materials	€525,215
SC6: Europe in a changing world - Inclusive, innovative and reflective societies	€2,958,691
SC7: Secure societies – Protecting freedom and security of Europe and its citizens	€552,743



H2020 research projects coordinated by the UB*

Programme	Project title	Acronym		PI	Amount granted (€)
MSCA-ITN	Philosophical Problems, Resilience and Persistent Disagreement	DIAPHORA	diaphora Philosophical Problems, Resilience and Persistent Disagreement	Sven Rosenkranz	781,946.00
MSCA-ITN	Training on Advanced Stem Cell Technologies in Neurology	ASCTN-Training	ASCTN TRAINING	Josep Maria Canals Coll	501,809.76
MSCA-RISE	Knowledge for Pesticides Control	KNOWPEC	KNOWPEC	Carmen Sans Mazon	165,172.00
FET: Future and Emerging Technologies	Overcoming the Limits of Diffraction with Superresolution Lighting on a Chip	ChipScope	CHIPSCOPE	Ángel Diéguez Barrientos	944,573.00
FET: Future and Emerging Technologies	Towards Novel Nano-Scale Technologies Based on Phoretic Flow Effects	NANOPHLOW	nanophlow	Ignacio Pagonabarraga Mora	573,750.00
ERI: European Research Infrastructures	Integrated Signal Processing for a New Generation of Active Hybrid Single Photon Sensors with ps Time Resolution	FastICpix		David Gascón Fora	50,000.00
ERI: European Research Infrastructures	Super-resolution Confocal Microscopy Enhanced by Deep-Learning	SCORED		Mario Montes Usategui	54,375.00
SC2: Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy	New Commercial European RICE (*Oryza sativa*). Harbouring Salt Tolerance Alleles to Protect the Rice Sector Against Climate Change and Apple Snail (*Pomacea insularum*) invasion	NEURICE	NEURICE New commercial EUropean RICE	Salvador Nogués Mestres	671,436.25

* Ongoing projects as of June 2019.

Programme	Project title	Acronym		PI	Amount granted (€)
SC6: Europe in a changing world - Inclusive, innovative and reflective societies	Giving Focus to the Cultural, Scientific and Social Dimension of EU – CELAC Relations	EULAC Focus		Lluís Bonet Agustí	294,285.00
SC6: Europe in a changing world - Inclusive, innovative and reflective societies	Social Platform on Cultural Heritage and European Identities	CULTURALBASE		Arturo Julio Rodríguez Morató	224,425.00
SC6: Europe in a changing world - Inclusive, innovative and reflective societies	Solidarity in European Societies: Empowerment, Social Justice and Citizenship	SOLIDUS		Marta Soler Gallart	379,633.62
SC7: Secure societies – Protecting freedom and security of Europe and its citizens	Tackle Insecurity in Marginalized Areas	MARGIN		Antonio Ramón Bartolomé Pina	437,432.50

ERC Grants at the UB*

Programme	Project title	Acronym	PI	Amount granted (€)
				
ERC - AdG	A New Strategy for Gravity and Black Holes	GravBHs	Roberto A. Emparan García de Salazar	2,138,825.00
ERC - AdG	Moments in Time in Immersive Virtual Environments	MoTIVE	Melvyn Slater	2,199,318.13
ERC - AdG	The Birth of Party Democracy. The Emergence of Mass Parties and the Choice of Electoral Laws in Europe and North America (1870-1940)	partydemocracy	Carles Boix Serra	2,500,000.00
ERC - AdG	The Sound of Special Places: Exploring Rock Art Soundscapes and the Sacred	ARTSOUNDSCAPES	Margarita Díaz-Andreu García	2,239,375.00
ERC - CoG	Beyond Precision Cosmology: Dealing with Systematic Errors	BePreSysE	Licia Verde	1,835,220.00
ERC - CoG	Breaking Barriers between Science and Heritage Approaches to Levantine Rock Art through Archaeology, Heritage Science and IT	LArcHer	Inés Domingo Sanz	1,991,178.00
ERC - CoG	Engineering Frustration in Artificial Colloidal Ices: Degeneracy, Exotic Lattices and 3D States	ENFORCE	Pietro Tierno	1,850,298.00
ERC - CoG	Ioculator Seu Mimus. Performing Music and Poetry in Medieval Iberia	MiMus	Anna Alberni Jordà	1,341,869.00
ERC - CoG	Testing the Role of Mediterranean Thermohaline Circulation as a Sensor of Transient Climate Events and Shaker of North Atlantic Circulation	TIMED	Eva Isabel Cacho Lascorz	2,275,625.00
ERC - PoC	Making Complex Gas Analytics Friendly and Available ASAP	GasApp	Juan Daniel Prades García	149,962.00
ERC - PoC	Personified Self Interaction	PSI	Melvyn Slater	149,950.00
ERC - StG	Rethinking Conscious Agency	ReConAg	Joshua Lawson Shepherd	1,064,712.00
ERC - StG	Women Travelling to Seek Abortion Care in Europe: the Impact of Barriers to Legal Abortion on Women Living in Countries with Ostensibly Liberal Abortion Laws	BAR2LEGAB	Silvia de Zordo	1,495,753.00

* Ongoing projects as of June 2019.

3. Faculties of the UB

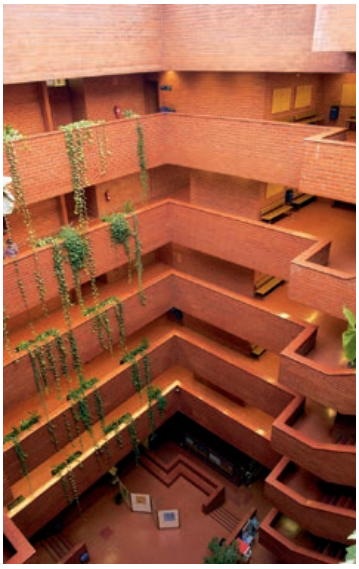
Faculty of Biology	Faculty of Information and Audiovisual Media
	
Faculty of Chemistry	**Faculty of Mathematics and Computer Science**
	
Faculty of Earth Sciences	**Faculty of Medicine and Health Sciences**
	 
Faculty of Economics and Business	**Faculty of Pharmacy and Food Sciences**
	 

FACULTIES OF THE UB

Faculty of Education	Faculty of Philology and Communication
	
Faculty of Fine Arts	**Faculty of Philosophy**
	 
Faculty of Geography and History	**Faculty of Physics**
	
Faculty of Law	**Faculty of Psychology**
	

Faculty of Biology

The **Faculty of Biology** at the University of Barcelona was established in 1974, making it a pioneering institution in Spain. At the Faculty, there are lecturers and researchers who devote their efforts to developing research projects, to making a continuous review of the improvement of teaching for more than 2,500 students, and transferring knowledge and technology jointly with societal agents and companies. The Faculty has an important global objective for the future: preserving life on a planet that is sustainable for humans and ecosystems.



The different research groups investigate all areas of life sciences, from molecules to organisms and ecosystems. This broad range is the main strength of the research environment of our faculty. It includes such attractive approaches as biodiversity, evolution, conservation and management of natural heritage, biomedicine, animal and plant physiology, microbiology, genetics, and new emerging technologies applied to life. The presence of all these research lines in the same centre allows for the exchange of ideas and methodologies and a high transversality in research.

Many of the lecturers and researchers are integrated into other research structures, such as European programmes, institutes and research centres, or R&D and innovation networks. The Faculty hosts two UB institutes, the **Biodiversity Research Institute** (IRBio) and the **Institute of Biomedicine** (IBUB), and it also participates in other UB institutes, such as the Water (IdRA), Nutrition and Food Safety (INSA), and Nanoscience and Nanotechnology (IN2UB) research institutes.

The Faculty offers laboratories, supplies and other services to facilitate research and teaching (e.g., an animal biodiversity resource centre, experimental fields, a cell culture service, and oceanographic boats).

FACTS AND FIGURES AT THE FACULTY OF BIOLOGY		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	333 (of whom: 1 ICREA; 3 RyC)
	Postdoctoral researchers	35
	Predoctoral researchers	86
	Number of nationalities represented among the staff	11
	Gender distribution of staff (% women)	47.91%
	SGR research groups (call 2017-2019)	40
Research indicators (2014-2018)	ISI publications	2,681
	% of ISI publications in 1st quartile	67.44%
	Scopus publications	2,785
	% of Scopus publications in 1st quartile	80.47%
	PhD dissertations	334
	Financing secured (competitive)	€35.95 m
	Financing secured (non-competitive)	€12.05 m
	% of international financing secured	20.22%
Transfer indicators (2014-2018)	Patents: 3 patents in national phase; 1 intellectual property; 2 industrial secrets; 4 international patent applications (PCT); 4 priority patent applications; 2 spin-offs	

Faculty of Chemistry

The **Faculty of Chemistry** has long been recognized among the faculties in Spain (both public and private) as the best institution at which to study chemistry. In the international rankings, the UB is the top Spanish University in the subjects of chemistry and materials science. The Faculty of Chemistry has a solid and long tradition in research, innovation and transfer of knowledge to industry and society.

The Faculty conducts advanced and prestigious research through the work that its teaching and research staff perform by participating in numerous national and European research projects as well as in contracts with industry.

Main research lines

- Applied life sciences and non-medical biotechnology
- Computer science and informatics
- Condensed matter physics
- Diagnostic tools, therapies and public health
- Earth system science
- Fundamental constituents of matter
- Genetics, genomics, bioinformatics and systems biology
- Immunity and infection
- Mathematics
- Molecular and structural biology and biochemistry
- Neurosciences and neural disorders
- Physical and analytical chemical sciences
- Physiology, pathophysiology and endocrinology
- Products and processes engineering
- Synthetic chemistry and materials

Services and research support facilities

- Organic, inorganic and organometallic syntheses
- Chemical and electrochemical analysis
- Isotopic analysis
- Materials characterization
- Preparation of quality control materials
- Peptide chemistry
- Tribological characterization
- Computational chemistry
- Chemical processes engineering

Some of the researchers are associated with various research institutes: the **Institute of Theoretical and Computational Chemistry** (IQTCUB), the **Institute of Nanoscience and Nanotechnology** (IN2UB), the **Water Research Institute** (IdRA) and the **Institute of Biomedicine** (IBUB). Two of the nine UB research groups that are part of the TECNIO network, focused on industrial research and technology transfer, are at the Faculty: Thermal Spray Centre (CPT) and Centre for Design and Optimization of Materials and Processes (DIOPMA).

Research initiatives supported by the Faculty

The Faculty offers research grants quarterly in the form of travel grants, for the organization of research congresses, and for inviting other researchers to visit the Faculty in order to enhance international collaborations. Once a year a call for study grants is opened for master's students who want to begin research at the Faculty. The International Research Advisory Board, which involves teaching and research staff members with a high level of international research activity, supports and encourages teaching and research staff to submit project proposals in the international arena.

FACTS AND FIGURES AT THE FACULTY OF CHEMISTRY		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	228 (of whom: 5 ICREAs; 3 RyC)
	Postdoctoral researchers	14
	Predoctoral researchers	38
	Number of nationalities represented among the staff	16
	Gender distribution of staff (% women)	34.64%
	SGR research groups (call 2017-2019)	29
Research indicators (2014-2018)	ISI publications	2,276
	% of ISI publications in 1st quartile	70.34%
	Scopus publications	2,314
	% of Scopus publications in 1st quartile	83.36%
	PhD dissertations	199
	Financing secured (competitive)	€17.98 m
	Financing secured (non-competitive)	€4.95 m
	% of international financing secured	18.31%
	Number of ERC grants	1 Starting Grant / 1 Advanced Grant
Transfer indicators (2014-2018)	Patents: 10 patents in national phase; 2 industrial secrets; 5 international patent applications (PCT); 7 priority patent applications	

www.ub.edu/ciencies-terra

Faculty of Earth Sciences

The **Faculty of Earth Sciences** of the UB is ranked among the world's top 100 faculties in geosciences and maintains a research tradition in all the fundamental disciplines of geology. This involves the study of the structure and dynamics of the solid earth as well as its interaction with the hydrosphere and biosphere. Understanding the complexity of the Earth's natural systems is essential in multidisciplinary research initiatives that respond to the key societal challenge of environmental conservation and sustainability.

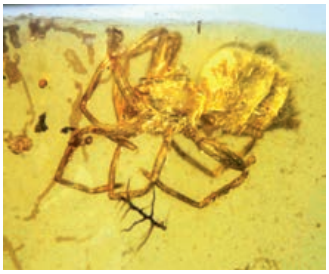
Main research lines

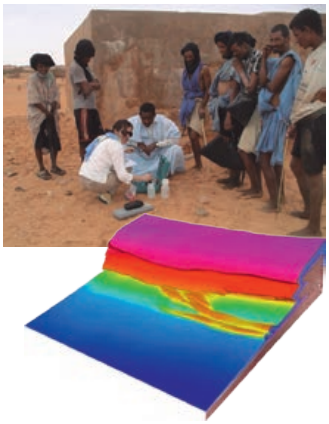
- Environmental geology, remediation of anthropogenic impacts and adaptation to climate change
- Geological hazards and impact on human activities and infrastructures
- Exploration of natural (mineral and energy) resources and reservoirs
- Paleobiology, biodiversity and ecosystem dynamics
- Paleoclimatology and paleoceanography; ocean-atmosphere interactions
- Lithospheric structure and dynamics, sedimentary systems; interaction between deep and surface geological processes

Services and research support facilities

In addition to basic laboratories, the Faculty offers a number of specific research facilities, including:

- Complete equipment for geophysical (electromagnetic, seismic, gravity and magnetic) surveying
- Thin-section laboratory for petrographic studies
- Laboratory of simulation and analogue modelling of geological processes
- Lidar laser scanner for 3D outcrop digital modelling
- CoreLab equipped with XRF Core Scanner, multisensor core logger and a Micro-CT scanner
- Multibeam ecosounder and profiler for sea floor mapping and sub-bottom exploration
- Radiogenic and environmental isotope laboratory with ultraclean room for sample preparation





Research initiatives supported by the Faculty

The Faculty hosts infrastructures that are strategic for our research groups. Support is provided to upgrade or purchase new instruments for geophysical data acquisition and characterization of geological materials.

The Faculty offers travel grants for young researchers and visiting lecturers, as well as support for the organization of scientific meetings and workshops. It also contributes to the free dissemination of scientific knowledge by publishing *Geologica Acta*, a non-profit, open-access journal indexed in the Thomson Reuters Journal Citation Reports.

FACTS AND FIGURES AT THE FACULTY OF EARTH SCIENCES		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	88 (of whom: 1 ICREA; 2 RyC)
	Postdoctoral researchers	4
	Predoctoral researchers	19
	Number of nationalities represented among the staff	7
	Gender distribution of staff (% women)	35.14%
	SGR research groups (call 2017-2019)	7
Research indicators (2014-2018)	ISI publications	741
	% of ISI publications in 1st quartile	59.51%
	Scopus publications	765
	% of Scopus publications in 1st quartile	77.78%
	PhD dissertations	73
	Financing secured (competitive)	€8.48 m
	Financing secured (non-competitive)	€6.47 m
	% of international financing secured	43.79%
	Number of ERC grants	1 Consolidator Grant

Faculty of Economics and Business

The **Faculty of Economics and Business** is a leading centre for tuition in economics, business, sociology and statistics, and can claim to be the foremost faculty in these disciplines in Catalonia. It builds on the tradition established by the former Faculty of Economic and Business Sciences, which trained the first class of economics graduates in Catalonia (1954-1959), and the University School of Business Studies, which provided tuition to many generations of business and business science graduates following its creation in 1850. The two centres merged in July 2008 to form what is now the Faculty of Economics and Business.

The Faculty of Economics and Business occupies noteworthy positions in the main national and international rankings in the areas of economics, business and sociology. Its researchers are members of institutes and observatories that make up a large proportion of the research groups at the Faculty. In addition, the Faculty has several thematic chairs, which are managed in collaboration with other institutions and organizations.

The **UB School of Economics**, the **UB Business School** and the **UB School of Sociology** are three platforms that centralise and coordinate research in Economics, Business and Sociology, respectively.

The UB School of Economics is organized into three main research areas:
- Growth, trade and spatial economics
- Public economics and policy analysis
- Behaviour, games and risk

UNIVERSITAT DE BARCELONA SCHOOL OF ECONOMICS

The UB Business School is organized into six main research areas:
- Strategy and entrepreneurship
- Technology and operations management
- Accounting
- Finance
- Marketing
- General management

UNIVERSITAT DE BARCELONA BUSINESS SCHOOL

The UB School of Sociology is organized into five main research areas:
- Inequality
- Welfare, quality of life and social policies
- Social organizations
- Environment, communities and society
- Culture, knowledge and innovation

UNIVERSITAT DE BARCELONA SCHOOL OF SOCIOLOGY

Services and research support facilities and research initiatives supported by the Faculty

The Research Committee of the Faculty includes among its responsibilities those of organizing support to research, suggesting priority lines of research for the Faculty and managing the centre's research infrastructures.

The **Job Market in Economics** is the procedure through which universities, centres of research and other institutions connect with recent PhD holders that are looking to begin careers in academia. The Faculty actively participates in this initiative by hiring international post-doc researchers and by encouraging recent graduates in the Faculty's programmes to take part.

FACTS AND FIGURES AT THE FACULTY OF ECONOMICS AND BUSINESS		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	579 (of whom: 1 ICREA)
	Postdoctoral researchers	10
	Predoctoral researchers	48
	Number of nationalities represented among the staff	27
	Gender distribution of staff (% women)	38.46%
	SGR research groups (call 2017-2019)	23
Research indicators (2014-2018)	ISI publications	866
	% of ISI publications in 1st quartile	33.83%
	Scopus publications	1,082
	% of Scopus publications in 1st quartile	50.65%
	PhD dissertations	226
	Financing secured (competitive)	€10.36 m
	Financing secured (non-competitive)	€5.69 m
	% of international financing secured	37.22%
	Number of ERC grants	2 Advanced Grants
Transfer indicators (2014-2018)	Patents: 2 intellectual properties	

Faculty of Education

The **Faculty of Education**, as the continuation of the previous faculties of Teacher Training and Education, has been welcoming new students into its classrooms for more than 170 years (the original Normal School – Escola Normal – was created in 1845). Currently, nearly 1,500 students come each year to what is the second-largest faculty at the University of Barcelona in terms of the total number of students and teachers.

The Faculty provides training in all fields related to the world of education: citizenship and values education, digitally mediated learning environments, interdisciplinary education in the arts, management of teaching centres, physical activity and education, psychology and education, research and educational change, research in language and literature teaching, social education, early childhood education, primary education, and so on.

Research at the Faculty of Education aims to contribute to improving the lives of all people and to problem-solving in different educational settings, as well as developing further knowledge of the scientific foundations of education from a cross-disciplinary perspective.

Our research is carried out in research groups and the **Institute for Research in Education** (IRE). In accordance with the 2017-2019 call of the Government of Catalonia's Agency for Management of University and Research Grants (AGAUR), the Faculty of Education incorporates 21 recognized research groups.

Main research lines

- Collaborative learning
- Digital and visual culture
- Digital literacy
- Education and health emotional education
- Educational work with families
- Evaluation of learning in the classroom
- Factors of exclusion and social and educational inclusion
- Interaction in family contexts
- Labour and educational transitions
- Language teaching with technological support
- Learning and teacher development
- Migratory movements and education
- Moral education
- Participation, democratic education and construction of citizenship
- Promotion and protection of children
- Specific didactics and didactic intermediation artefacts
- The quality and development of guidance services for youth and adults
- Virtual learning in the digital society: design and evaluation

Services and research support facilities

Research activities are managed by the Research Office (OR), which is in charge of national research programmes, the UB Office for International Research Projects (OPIR), which is responsible for European projects, and the Bosch i Gimpera Foundation (FBG), which oversees knowledge transfer and relations with the business sector.

FACTS AND FIGURES AT THE FACULTY OF EDUCATION		
Location	Mundet Campus – University of Barcelona	
Staff statistics (2018)	Teaching and research staff	628 (of whom: 1 RyC)
	Postdoctoral researchers	8
	Predoctoral researchers	19
	Number of nationalities represented among the staff	20
	Gender distribution of staff (% women)	65.80%
	SGR research groups (call 2017-2019)	21
Research indicators (2014-2018)	ISI publications	204
	% of ISI publications in 1st quartile	20.59%
	Scopus publications	398
	% of Scopus publications in 1st quartile	30.40%
	PhD dissertations	262
	Financing secured (competitive)	€3.28 m
	Financing secured (non-competitive)	€1.67 m
	% of international financing secured	17.95%

Faculty of Fine Arts

The mission of the **Faculty of Fine Arts** is focused on the creation, generation and transmission of scientific and artistic knowledge in the areas of fine arts, design, and the conservation and restoration of cultural heritage, and on planning for professional practice and the development of critical, ethical and cultural thinking in students. This is the only Fine Arts Faculty in our territory.

The concept of artistic research expresses the intimate connection between art and research regarding artists' work, with university training and this connection forming the basis for our research experiences in the various disciplines of the arts. Our research groups and projects explore options beyond notions of scientific research, so that rigour and exigency are not excluded from inquiring about processes linked to different ways of deriving knowledge. The core of our research is artistic production, and one of our main aims is to analyse changes in the meanings and influences coming from processes that use digital technology. Another objective is to develop studies about the interactions between art and science, which can be applicable to specific projects using the same artistic practice and at the same time based on cross-disciplinary knowledge.

On the other hand, in terms of conservation-restoration, our main focus is the study, documentation, characterization and identification of materials, techniques, pathologies and treatments for the conservation and restoration of cultural assets.

Main research lines

- Education in the arts, museums and visual culture: cultural policies
- Art applications for psychosocial improvement and in therapeutic contexts
- Art in the digital age
- Research in image and design
- Arts, nature and environment
- Contemporary realisms
- Conservation-restoration

Research initiatives and infrastructures supported by the Faculty

Research groups

- **IMARTE**. Research on artistic processes and new technologies
- **BRAC**: Barcelona Research Art Creation
- Conservation-Restoration of Heritage
- **ODAS.** Observatory on the Didactics of Arts
- Art, City, Society

Research centre

POLIS Research Centre: Art, City, Sustainability

Journals

- BRAC, led by Barcelona Research Group: Art-Creation
- OBSERVAR, led by Observatory on the Didactics of Arts
- ON THE W@TERFRONT, led by POLIS Research Centre

Workshops

- Sculpture
- Engraving
- Restoration

Laboratories

- Design
- Photography
- Med

FACTS AND FIGURES AT THE FACULTY OF FINE ARTS		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	195
	Postdoctoral researchers	1
	Predoctoral researchers	2
	Number of nationalities represented among the staff	9
	Gender distribution of staff (% women)	46.97%
	SGR research groups (call 2017-2019)	3
Research indicators (2014-2018)	ISI publications	29
	% of ISI publications in 1st quartile	41.38%
	Scopus publications	62
	% of Scopus publications in 1st quartile	40.32%
	PhD dissertations	185
	Financing secured (competitive)	€0.94 m
	Financing secured (non-competitive)	€0.35 m
	% of international financing secured	46.67%

www.ub.edu/facgh/gh.htm

Faculty of Geography and History

The **Faculty of Geography and History** is located on the Humanities Campus in the city centre, where the University first offered studies in the Historical Building, a landmark in one of the most emblematic squares in Barcelona. The Faculty of Geography and History was established in 1974, making it a pioneering institution in Spain. It first appeared as a result of increasing knowledge in the field of Humanities at a time of relentless diversification but, previously, the studies of the Faculty had been integrated into the Faculty of Philosophy and Literature since 1857.

The Faculty hosts the **Institute of Research in Medieval Cultures** (IRCVM) and the **Centre for International Historical Studies** (CEHI).

Main research lines

- Territorial planning, management, and administration
- Population and demography. The geographical analysis of urban social geography (structure and dynamics)
- Climatology and paleoclimatology
- Landscape management and evolution
- Cartography and Geographic Information Systems
- Advancement of theory and history of art
- Interactions with stakeholders and policymakers on preservation, study, diffusion, and respect for historical, artistic, and cultural heritage
- Indigenous communities in the Americas and Africa
- Intangible cultural heritage and cultural policies
- Societal challenges
- Digital humanities
- Archaeological sciences and archaeological research
- Prehistory
- Ancient Egypt and the Near East
- Classical antiquity
- Medieval studies, paleography, and diplomatics
- Modern world
- Contemporary history and the world today
- Gender studies

Services and research support facilities

- Laboratory of Anthropology
- Laboratory of Planning
- Laboratory of Cartography
- Multimedia Laboratory of Art History
- Laboratory of Climatology
- Laboratory of Contemporary History and Cinematography
- Laboratory of Archaeology, Prehistory and Ancient History
- Laboratory of Archaeometry
- Laboratory of Medieval Archaeology
- Landscape Evolution and Management Service

Research initiatives supported by the Faculty

As a general policy strategy, the Faculty maintains an inventory of research facilities and equipment, and, together with the research groups and faculty members, identifies priorities. In specific terms, the Research Committee announces, twice per year, travel grants for conference attendance, grants for translation and correction of papers to be published in scientific journals, and grants for the organization of congresses and day events. It also awards, once per year, support grants for the scientific journals published at the Faculty. Moreover, it also co-finances the replacement of obsolete scientific equipment.

FACTS AND FIGURES AT THE FACULTY OF GEOGRAPHY AND HISTORY		
Location	Humanities Campus	
Staff statistics (2018)	Teaching and research staff	269 (of whom: 6 ICREAs; 6 RyC)
	Postdoctoral researchers	15
	Predoctoral researchers	49
	Number of nationalities represented among the staff	14
	Gender distribution of staff (% women)	45.35%
	SGR research groups (call 2017-2019)	39
Research indicators (2014-2018)	ISI publications	416
	% of ISI publications in 1st quartile	46.15%
	Scopus publications	742
	% of Scopus publications in 1st quartile	48.11%
	PhD dissertations	380
	Financing secured (competitive)	€16.21 m
	Financing secured (non-competitive)	€1.00 m
	% of international financing secured	42.65%
	Number of ERC grants	2 Starting Grants / 3 Advanced Grants

Faculty of Law




The University of Barcelona's **Faculty of Law,** the largest in Catalonia, is an institution with a tradition that dates back to the establishment of the University itself. The Faculty of Laws and Canons, as it was then known, was part of the Estudi General of Barcelona, the forerunner to our university (founded in 1450). Over its long history, our school has managed to strike a balance between tradition and modernity, adapting to the evolving requirements of the professional and social world.

Teaching and research activities are carried out at facilities located on the Diagonal Campus. The four buildings the Faculty occupies offer the university community modern facilities surrounded by landscaped grounds in the heart of the city – a combination that makes it an exceptional space.

The teaching and research staff produce highly acclaimed research within the framework of 16 consolidated research groups and through their participation in many competitively funded research projects in Spain and at the international level. It also has four observatories and one research institute. The Faculty has its own research support services and organizes many research lectures, which are delivered by its own researchers and invited speakers from other research centres.

Main research lines
- Organization of power and territory
- International and financial governance
- Fundamental rights and vulnerability
- The global digital information society
- New conflict resolution techniques
- Criminalization, socialization and persecution of criminality
- Environmental justice and sustainable development
- Gender and rights

Services and research support facilities
- Law Library
- Research Office
- TransJus Institute
- Bioethics and Law Observatory (OBD)
- Observatory of the Penal System and Human Rights (OSPDH)
- Observatory of Public Law (IDP)
- Jean Monnet Chair on EU Environmental Law
- Jean Monnet Chair on European Private Law

Research initiatives supported by the Faculty

See the Faculty of Law's Research Strategy, approved by the Faculty's Board in December 2018.

The strategy pursues the following goals:

1. To produce quality, innovative research with impact on society through the development of basic and applied knowledge in the scientific, socio-economic and cultural spheres.
2. To produce a quality research environment with the support structures researchers need to develop as scientists and to guarantee successful generational replacement in the future.
3. To internationalize the Faculty's research output, making it more visible across academia worldwide, addressing the ongoing phenomenon of Europeanization and legal internationalization.
4. To produce research that raises the quality of learning at bachelor's degree, master's degree and doctoral level, contributing to the attainment of professional competences and the adoption of values like responsibility and social justice.
5. To provide the means for systematic, qualitative evaluation of legal research taking into account the specificities of the disciplines covered by the Faculty's researchers.

FACTS AND FIGURES AT THE FACULTY OF LAW		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	404 (of whom: 1 RyC)
	Postdoctoral researchers	4
	Predoctoral researchers	17
	Number of nationalities represented among the staff	15
	Gender distribution of staff (% women)	37.41%
	SGR research groups (call 2017-2019)	16
Research indicators (2014-2018)	ISI publications	44
	% of ISI publications in 1st quartile	36.36%
	Scopus publications	118
	% of Scopus publications in 1st quartile	26.27%
	PhD dissertations	122
	Financing secured (competitive)	€3.03 m
	% of financing secured (non-competitive)	€1.91 m
	International financing secured	27.45%

www.ub.edu/portal/web/informacio-mitjans-audiovisuals

Faculty of Information and Audiovisual Media

The **Faculty of Information and Audiovisual Media** of the University of Barcelona dates back to 1915, when the Mancomunitat de Catalunya founded the School of Librarians, from which the present-day Faculty was created. This long-standing tradition combines with a modern approach that has seen the Faculty adapt to the changing requirements of society and the professional world in a variety of eras.

The Faculty of Information and Audiovisual Media currently offers bachelor's degrees in the areas of information and documentation management and audiovisual communication. Students may then move on to a range of official master's degrees and progress to doctoral studies, or choose from a variety of UB-specific postgraduate programmes and lifelong learning courses.

The Faculty of Information and Audiovisual Media generates prestigious research of recognized quality through the efforts of its teaching and research staff across several research groups and a variety of projects at both national and international levels.

The Faculty has its own research centre (CRICC) and offers comprehensive research-support services, organizing research conferences throughout the year led by home and guest researchers.

Main research lines

- Management of libraries and services
- Libraries and education
- Open science and scientific communication
- Digital preservation
- Organization of knowledge and retrieval of information
- Study metrics about value and information
- Policies and economics of information and culture
- Audiovisual communication
- Bibliographic and documentary heritage

Services and research support facilities

- TV set
- Sound recording studio
- Audiovisual contents creation
- Alehoop program

Research initiatives supported by the Faculty

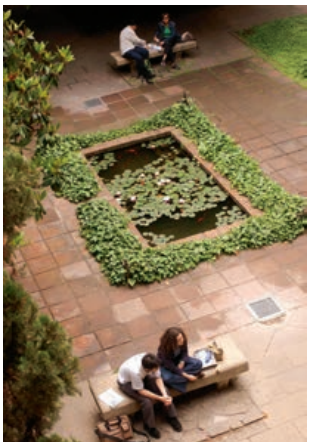
- Miar. Matrix of Information for Magazine Analysis
- *BiD: textos universitaris de biblioteconomia i documentació* online journal
- Connected knowledge: sales networks and circulation of printed matter in Spain and Latin America (HAR2017-84335-P)
- Open access to science in Spain: evaluation of its impact on the scientific communication system (CSO2014-52830P)
- History of book advertising in Spain (15th-20th centuries) (HAR2013-46336-P)
- Spanish network on open research data (CSO2015-71867-REDT)

FACTS AND FIGURES AT THE FACULTY OF INFORMATION AND AUDIOVISUAL MEDIA		
Location	UB Sants building	
Staff statistics (2018)	Teaching and research staff	69
	Number of nationalities represented among the staff	1
	Gender distribution of staff (% women)	44.93%
	SGR research groups (call 2017-2019)	2
Research indicators (2014-2018)	ISI publications	64
	% of ISI publications in 1st quartile	6.25%
	Scopus publications	106
	% of Scopus publications in 1st quartile	28.30%
	PhD dissertations	34
	Financing secured (competitive)	€3.05 m
	Financing secured (non-competitive)	€0.12 m
	% of international financing secured	13.38%
Transfer indicators (2014-2018)	Patents: 1 intellectual property	
Social media profiles	Twitter: @FIMA_UB; Instagram: fima_ub: Facebook: https://www.facebook.com/FIMAUB	

www.mat.ub.es

Faculty of Mathematics and Computer Science

The **Faculty of Mathematics and Computer Science** is located in the UB's Historic Building. It is home to more than one thousand students and over one hundred staff members. The Faculty offers two degrees, three master's and one doctoral programme.





Research specialties

Research at the Faculty covers a broad range of subjects in four main areas:

- Algebra, geometry, logic, and topology
- Analysis and probability
- Applied mathematics
- Computer science

The first area gathers researchers on topics of algebraic geometry, commutative algebra, computational algebra, homological and homotopical algebra, category theory, and differential geometry, as well as number theory, focusing on modular and automorphic forms and the Langlands program, arithmetic of elliptic curves, and Diophantine equations.

The main research lines in probability are stochastic analysis and stochastic partial differential equations, including applications to quantitative finances. In real analysis, topics of interest are interpolation and extrapolation in functional analysis and boundedness of operators in harmonic analysis. Within complex analysis, researchers tackle problems in classical function theory, Dirichlet series, and operator theory.

Research groups in applied mathematics work on qualitative and quantitative aspects of dynamical systems, interacting with other areas of mathematics and with other sciences (such as chemistry) and branches of technology (such as space mission control theory).

Computer science groups are mainly devoted to computer vision and machine learning (CVUB), as well as to virtual worlds, visualisation, and artificial intelligence (WAI).

Services and support facilities

The Faculty offers financial support in four modalities: attendance of training activities (offered to graduate students); organization of scientific meetings; funding of visiting researchers; and travel grants (offered to staff).

The **Institute of Mathematics** (IMUB) hosts conferences, seminars and advanced courses, and promotes collaboration among researchers from different fields. Seminars are regularly scheduled by the Faculty's research groups.

FACTS AND FIGURES AT THE FACULTY OF MATHEMATICS AND COMPUTER SCIENCE		
Location	Humanities Campus	
Staff statistics (2018)	Teaching and research staff	106 total (of whom: 3 ICREAs; 2 RyC)
	Postdoctoral researchers	6
	Predoctoral researchers	15
	Number of nationalities represented among the staff	9
	Gender distribution of staff (% women)	24.41%
	SGR research groups (call 2017-2019)	7
Research indicators (2014-2018)	ISI publications	448
	% of ISI publications in 1st quartile	42.41%
	Scopus publications	466
	% of Scopus publications in 1st quartile	53.65%
	PhD dissertations	57
	Financing secured (competitive)	€ 4.62 m
	Financing secured (non-competitive)	€ 0.72 m
	% of international financing secured	24.77%
Transfer indicators (2014-2018)	Patents: 2 intellectual properties; 1 international patent application (PCT); 1 priority patent application; 2 spin-offs	

www.ub.edu/medicina-ciencies-salut

Faculty of Medicine and Health Sciences





The recently renamed **Faculty of Medicine and Health Sciences** of the University of Barcelona includes the former faculties of medicine, dentistry, nursing and podiatry.

The Faculty of Medicine and Health Sciences offers 6 degrees, 12 official university master's degrees, 122 UB-specific master's degree courses and postgraduate diplomas and 3 doctoral programmes. This offer will grow in demand and supply. In this way, it is one of the strongest academic offers in the country in the field of health, which includes the degrees in medicine, biomedical sciences, biomedical engineering, nursing, podiatry and dentistry.

The Faculty of Medicine and Health Sciences is distributed over **three campuses** (Clínic, Bellvitge and Sant Joan de Déu), in direct contact with these three university hospitals. The Faculty collaborates with ten hospitals with the highest quality care, 22 primary care centres, various social health centres and a mental health centre (Sant Boi de Llobregat). The Faculty premises offer the necessary infrastructure for teaching and research: libraries, dissection rooms, research and practice laboratories, computer rooms, study rooms, communication skills laboratories, clinical skills laboratories and spaces for simulating patients in critical situations.

Many professionals will also find the most appropriate environment for organizing and developing teaching, research and dissemination tasks within their infrastructures (classrooms, audiovisual media, dissection rooms and facilities, and simulation laboratories on the various campuses).

Main research lines: the Faculty has prestigious research groups performing basic and translational biomedical research in different areas such as neurosciences, cancer, metabolism, immunology, respiratory, digestive or infection diseases, among others.

Services and research support facilities: advanced optical microscopy, electron microscopy, cytometry, proteomics, radiological protection and animal facilities, all through the CCiT-UB.

Research initiatives supported by the Faculty: our Faculty supports and participates in different research institutes, such as IDIBELL, IDIBAPS, IJC, ISGlobal, IBEC and the **Institute of Neurosciences** of the University of Barcelona, and coordinates the **Production and Validation Center of Advanced Therapies** (Creatio) at the University of Barcelona.

FACTS AND FIGURES AT THE FACULTY OF MEDICINE AND HEALTH SCIENCES		
Location	Bellvitge Health Sciences Campus and Medicine Campus – Hospital Clínic Agusti Pi i Sunyer	
Staff statistics (2018)	Teaching and research staff	1506 (of whom: 2 RyC)
	Postdoctoral researchers	16
	Predoctoral researchers	52
	Number of nationalities represented among the staff	29
	Gender distribution of staff (% women)	50.06%
	SGR research groups (call 2017-2019)	18
Research indicators (2014-2018)	ISI publications	9,188
	% of ISI publications in 1st quartile	61.35%
	Scopus publications	9,828
	% of Scopus publications in 1st quartile	69.20%
	PhD dissertations	628
	Financing secured (competitive)	€20.35 m
	Financing secured (non-competitive)	€5.11 m
	% of international financing secured	19.18%
	Number of ERC grants	1 Starting Grant
Transfer indicators (2014-2018)	Patents: 19 patents in national phase; 3 intellectual properties; 14 international patent applications (PCT); 7 priority patent applications; 3 tangibles; 1 spin-off	

www.ub.edu/farmacia

Faculty of Pharmacy and Food Sciences

The **Faculty of Pharmacy and Food Sciences**, established in 1840, presents a deep academic tradition coupled with frontier scientific knowledge. Nowadays, it welcomes over 2,000 undergraduate students every year, and is the only public faculty of its kind in Catalonia. Its strategic position contributes to it having a sizeable community of students from a wide range of backgrounds.

In terms of teaching and research, the Faculty is organized in two campuses. The Diagonal Campus, located in Barcelona, concentrates the disciplines related to pharmacy and health, whereas the Torribera Campus (Santa Coloma de Gramenet) is devoted to food science, nutrition and gastronomy.

The Faculty of Pharmacy and Food Sciences aims to offer students quality teaching, highly renowned research activity, and all the resources and services they will need throughout their time at the UB, being one of the most highly rated pharmacy schools in Europe. It is the leading faculty in Spain and 51-75 in the world according to the Shanghai Ranking 2018 (pharmacy & pharmaceutical science), and among the 100 best universities in the world and second in Spain in the disciplines of pharmacy & pharmacology (QS ranking 2019). The Faculty has its own research support services and organizes numerous research lectures and seminars. Given by researchers from the Faculty itself and other research centres, the lectures encourage collaborations and are open to anyone who wishes to attend.





Main research lines

Biochemistry & molecular biology: cancer therapy; cell signaling; microbiota-intestinal epithelium interaction; regulation of lipid metabolism in obesity and diabetes; functional genomics in fish	**Pharmacology:** pharmacology in ageing and neurodegeneration; pharmacology of amphetamine derivatives; pharmacological targets in inflammation & metabolic diseases	**Parasitology:** epidemiology, diagnostic and therapy of *Leishmania* & *Trypanosoma* infections; parasitic zoonosis; helminth fauna of vertebrates; food and environmental parasitology	**Nutrition & food science**: biomarkers and nutritional & food metabolomics; food bioactive compounds; food sensory science; quality and food safety; food intolerances; food characterization; nutrition and chronic diseases; nutrition, physical activity, sleep and chrononutrition; scientific gastronomy
Physiology: immunonutrition; brain ageing and hematoencephalic barrier; nutritional physiology and pathology; chronobiology; *in vitro* models for toxicity studies	**Botany:** ethnobotany; marine phycology; plant biodiversity & biosystematics **Toxicology**: toxicological and risk evaluation; food safety	**Soil science:** soil biogeochemistry; soil and human health; Mediterranean ecosystems; phytoremediation of soils, groundwater and contaminated sediments	**Pharmacy & pharmaceutical technology:** pre-clinical (absorption, bioanalysis, stability, protein binding); formulation and development of drug delivery systems; quality assurance; encapsulation; clinical (bioavailability & bioequivalence, clinical pharmacy & pharmaceutical care; pharmacokinetics); post-commercialization (hospital pharmacy, primary health care)
Organic chemistry: design and synthesis of bioactive compounds; nanomedicine; structural elucidation of organic compounds; synthetic methodology and total synthesis of natural products	**Plant physiology:** natural products from plants; plant biotechnology; stress response	**Microbiology:** bioactive compounds of microbial origin; microbial genetics and molecular phylogenetics **Physical chemistry:** colloids for theranostics; nanostructured drug delivery systems; biointerfaces; membrane biophysics; computational biology & drug design; conformational diseases	

FACTS AND FIGURES AT THE FACULTY OF PHARMACY AND FOOD SCIENCES		
Location	Diagonal Knowledge Gateway Campus and Food and Nutrition Torribera Campus	
Staff statistics (2018)	Teaching and research staff	333 (of whom: 1 ICREA; 3 RyC)
	Postdoctoral researchers	12
	Predoctoral researchers	42
	Number of nationalities represented among the staff	16
	Gender distribution of staff (% women)	62.02%
	SGR research groups (call 2017-2019)	26
Research indicators (2014-2018)	ISI publications	1,710
	% of ISI publications in 1st quartile	63.22%
	Scopus publications	1,792
	% of Scopus publications in 1st quartile	77.46%
	PhD dissertations	229
	Financing secured (competitive)	€14.89 m
	Financing secured (non-competitive)	€6.45 m
	% of international financing secured	10.99%
Transfer indicators (2014-2018)	Patents: 7 patents in national phase; 1 intellectual property; 1 industrial secret; 5 international patent applications (PCT); 5 priority patent applications	

Faculty of Philology and Communication

The **Faculty of Philology and Communication** is located in the Historic Building, in downtown Barcelona. The Faculty, together with the Raval building, which hosts the Faculty of Geography and History and the Faculty of Philosophy, forms the Campus of Humanities at the UB. The Faculty of Philology and Communication hosts more than 3,000 students and more than 300 lecturers. Research at the Faculty of Philology and Communication is led by its various research institutes, research groups and departments. The Faculty Research Committee is responsible for defining, monitoring and assessing the Faculty's main lines of research.

Main research lines

- Language, literature, culture and communication
- Classical studies; ancient Greek philosophy and literature; Latin literature online; medieval literary culture; troubadours; *Glossarium Mediae Latinitatis Cataloniae*; *Corpus Latinum Hispaniarum*; Indo-European languages; palaeohispanic languages; history of medieval and modern science; Judeo-Christian communities in the Near East; manuscripts and printed books; modern literature; theatre and music; mimesis and metafiction; contemporary literature; women's writing, gender and marginalization; construction of identities: gender and literature in the Arab world; women's criminal narrative; narrative of the twentieth century; film studies; postmodernity; British theatre of the 21st century
- History of language; descriptive grammar; acquisition of languages; bilingualism and linguistic substitutions; language skills in multilingual communities; language and computing; globurity; linguistic variation; interaction between German and Spanish/Catalan; acquisition of English; SomEMBED slang; legal discourse; subtitling; literary translation

Services and research support facilities

- Laboratory of Phonetics
- Centre of Linguistic Technology (STEL)
- Technical Unit of Lexicometry

Research initiatives supported by the Faculty

- Centre for Women and Literature
- Institute of Ancient Near Eastern Studies (IPOA)
- Institute for Research in Medieval Cultures (IRCVM)
- Centre for Language and Computation (CLiC)
- University Centre for Sociolinguistics and Communication (CUSC)
- Ramon Llull Documentation Centre (CDRL)
- Centre for Australian and Transnational Studies





FACTS AND FIGURES AT THE FACULTY OF PHILOLOGY AND COMMUNICATION		
Location	Humanities Campus	
Staff statistics (2018)	Teaching and research staff	313 (of whom: 2 ICREAs; 1 RyC)
	Postdoctoral researchers	5
	Predoctoral researchers	49
	Number of nationalities represented among the staff	20
	Gender distribution of staff (% women)	59.95%
	SGR research groups (call 2017-2019)	22
Research indicators (2014-2018)	ISI publications	159
	% of ISI publications in 1st quartile	30.19%
	Scopus publications	509
	% of Scopus publications in 1st quartile	25.54%
	PhD dissertations	160
	Financing secured (competitive)	€4.78 m
	Financing secured (non-competitive)	€0.44 m
	% of international financing secured	33.15%
	Number of ERC grants	1 Consolidator Grant

Faculty of Philosophy

The **Faculty of Philosophy** is the centre in charge of the organization of teaching, academic, administrative and management processes associated with obtaining academic titles in philosophy, and with research in different areas of philosophy, as well as providing the connection to corresponding professional and employment sectors. It is also the unit of representation through which its members choose the general governing bodies of the government of the University of Barcelona.

Main research lines

- History of philosophy
- Moral and political philosophy
- Logic
- Philosophy of language and mind
- Philosophy of science
- Epistemology
- Metaphysics
- Aesthetics
- Gender studies

Research initiatives supported by the Faculty

- Conferences
- Visiting talks
- Participation in conferences
- Support to research groups

FACTS AND FIGURES AT THE FACULTY OF PHILOSOPHY		
Location	Humanities Campus	
Staff statistics (2018)	Teaching and research staff	62 (of whom: 5 ICREAs; 2 RyC)
	Research Fellows	40
	Postdoctoral researchers	15
	Predoctoral researchers	25
	Number of nationalities represented among the staff	12
	Gender distribution of staff (% women)	27.45%
	SGR research groups (call 2017-2019)	6
Research indicators (2014-2018)	ISI publications	67
	% of ISI publications in 1st quartile	38.81%
	Scopus publications	181
	% of Scopus publications in 1st quartile	46.41%
	PhD dissertations	109
	Financing secured (competitive)	€5.89 m
	Financing secured (non-competitive)	€0.07 m
	% of international financing secured	35.48%
	Number of ERC grants	1 Starting Grant

Faculty of Physics

The origins of the **Faculty of Physics** date back to the year 1900 when the Section of Physics was created as a part of the Faculty of Sciences. In 1969, the Faculty of Physics held the first class in the Diagonal building. Due to the split of the Faculty of Sciences in 1974, the UB created the present-day Faculty of Physics. The recent expansion of the physics and chemistry building, started at the beginning of 2006, finally gave the Faculty of Physics spaces of its own that meet its needs.

Our most popular course has always been the bachelor's degree in Physics, a core science and the motor behind the majority of scientific and technological advances. As stated in a slogan from the Year of Physics 2005, "Physics is the basis of everything". The Faculty also offers a bachelor's degree in Electronic Engineering for Telecommunication, the possibility of graduating jointly in physics and mathematics, and a range of master's degrees.

The lecturers at the Faculty of Physics dedicate a significant part of their efforts to basic and applied research and participate in regional, national and international research projects. Therefore, a defining characteristic of the Faculty is the quantity and quality of its research, as attested to by the numerous individual and collective prizes awarded to its staff. Although a relatively small faculty at the UB, the Faculty of Physics is top ranking in the University in terms of scientific output (articles, patents, etc.) and research income (project funding), which makes us one of the leading faculties at the UB for quality scientific research.

Main research lines

- Astronomy & astrophysics (FQA)
- Bioelectronics & nanobioengineering (EEB)
- Thin layers & surface engineering (FA)
- Bio-molecules & small systems (FMC)
- Statistical & nonlinear physics (FMC)
- Materials physics & nanostructure physics (FA & FMC)
- Atomic & nuclear physics (FQA)
- Gravitation, elementary particles & strings (FQA)
- Solar energy (FA)
- Quantum information (FQA)
- High energy physics (FQA)
- Physics and computation in complex systems (FMC)
- Meteorology (FQA)
- Magnetic nanomaterials (FMC)
- Radiofrequency (EEB)
- Wavefront engineering & optical physics (FA)
- Micro-nanotechnologies for electronic devices (EEB)
- Intelligent signal processing for bioengineering sensing systems (EEB)
- Space control systems (FQA & EEB)

Services and research support facilities

- Clean room
- Service of Design and Instrumentation of Advanced Devices

Research initiatives supported by the Faculty

- Conference organization grants
- Visiting scientist and scholar programme grants

FACTS AND FIGURES AT THE FACULTY OF PHYSICS		
Location	Diagonal Knowledge Gateway Campus	
Staff statistics (2018)	Teaching and research staff	215 (of whom: 12 ICREAs; 6 RyC)
	Postdoctoral researchers	36
	Predoctoral researchers	55
	Number of nationalities represented among the staff	27
	Gender distribution of staff (% women)	19.28%
	SGR research groups (call 2017-2019)	19
Research indicators (2014-2018)	ISI publications	2,208
	% of ISI publications in 1st quartile	80.30%
	Scopus publications	2,149
	% of Scopus publications in 1st quartile	83.95%
	PhD dissertations	163
	Financing secured (competitive)	€31.02 m
	Financing secured (non-competitive)	€2.88 m
	% of international financing secured	32.16%
	Number of ERC grants	4 Starting Grants / 2 Advanced Grants / 1 Proof of Concept / 2 Consolidator Grants
Transfer indicators (2014-2018)	Patents: 6 patents in national phase; 1 intellectual property; 2 industrial secrets; 6 international patent applications (PCT); 8 priority patent applications; 2 spin-offs	

Faculty of Psychology

The **Faculty of Psychology** was established as such in 1983, although Psychology studies at the University of Barcelona go back to 1968.

The Faculty of Psychology at the University of Barcelona is among the 150 top faculties in the world, according to the QS World University Rankings of 2017.

Our research contributes to solving problems relating to **education** (attention and behavioural disorders, exam anxiety, lecturer-student interaction, dyslexia, dyscalculia, etc.), **society** (violence, road safety, marketing, environmental management, communication in organisations, etc.) and **health** (psychological disorders, chronic pain, ageing, etc.), and also to furthering knowledge of the biological, psychological and social principles of **human behaviour**, in an effort to identify its most basic processes and principles.

Fifteen research groups are well-established and permanently funded covering the areas of methodology, neuroscience and cognitive functions, clinical and health psychology, social psychology, education psychology and psychogerontology, among others. The **Institute of Neurosciences** is also hosted at the Faculty. It focuses on studying the relations between brain processes, cognitive functions, emotion and behaviour, in order to contribute to enhancing well-being through knowledge and technology transfer. The Faculty is also closely linked to two other UB research institutes, the Institute of Research in Education, and the Institute of Complex Systems.

Main research lines

- Cognitive neuroscience
- Violence & antisocial behaviour
- Gerontology
- Virtual reality & its applications
- Language
- Social interaction & social psychology
- Human development
- Assessment & quantitative psychology
- Clinical psychology
- Etology & primatology

Services and research support facilities

The Faculty is equipped with full behavioural testing facilities, from cognitive tasks to online data-gathering systems. Different labs are also available: social psych lab, fully equipped for video acquisition, behavioural genetics, different EEG acquisition configurations, eye-tracking, virtual reality CAVE, and many behavioural testing sites.

Research initiatives supported by the Faculty

The Faculty is currently supporting the establishment of a shared computing point in order to improve data processing, data management and data sharing for our research groups. We expect this facility to make our researchers more competitive.

FACTS AND FIGURES AT THE FACULTY OF PSYCHOLOGY		
Location	Mundet Campus – University of Barcelona	
Staff statistics (2018)	Teaching and research staff	305 (of whom: 3 ICREAs; 2 RyC)
	Postdoctoral researchers	6
	Predoctoral researchers	37
	Number of nationalities represented among the staff	22
	Gender distribution of staff (% women)	58.62%
	SGR research groups (call 2017-2019)	15
Research indicators (2014-2018)	ISI publications	1,026
	% of ISI publications in 1st quartile	45.71%
	Scopus publications	1,179
	% of Scopus publications in 1st quartile	61.41%
	PhD dissertations	212
	Financing secured (competitive)	€10.15 m
	Financing secured (non-competitive)	€3.07 m
	% of international financing secured	30.87%
	Number of ERC grants	1 Starting Grant / 2 Advanced Grants / 2 Proof of Concept
Transfer indicators (2014-2018)	Patents: 4 patents in national phase; 2 intellectual properties; 1 industrial secret; 1 international patent application (PCT); 2 priority patent applications; 1 tangible; 1 spin-off	

4. Research Institutes of the UB

Institute of Cosmos Sciences	ICCUB	Institut de Ciències del Cosmos UNIVERSITAT DE BARCELONA EXCELENCIA MARÍA DE MAEZTU
Institute of Nanoscience and Nanotechnology	IN2	Institut de Nanociència i Nanotecnologia UNIVERSITAT DE BARCELONA
Institute of Theoretical and Computational Chemistry	iqtc	Institut de Química Teòrica i Computacional UNIVERSITAT DE BARCELONA EXCELENCIA MARÍA DE MAEZTU
Institute of Mathematics	IMUB	Institut de Matemàtica UNIVERSITAT DE BARCELONA EXCELENCIA MARÍA DE MAEZTU
Geomodels Research Institute		Institut de Recerca Geomodels UNIVERSITAT DE BARCELONA
Biodiversity Research Institute	IRBio	Institut de Recerca de la Biodiversitat UNIVERSITAT DE BARCELONA
Institute of Biomedicine	I→B=U B	Institute of Biomedicine UNIVERSITAT DE BARCELONA
Institute of Neurosciences		Institut de Neurociències UNIVERSITAT DE BARCELONA EXCELENCIA MARÍA DE MAEZTU
Institute of Complex Systems	UBICS	Institute of Complex Systems UNIVERSITAT DE BARCELONA

Nutrition and Food Safety Research Institute	Institut de Recerca en Nutrició i Seguretat Alimentària UNIVERSITAT DE BARCELONA
Water Research Institute	Institut de Recerca de l'Aigua (IdRA) UNIVERSITAT DE BARCELONA
Institute for Research on Applied Regional and Public Economics	Institut de Recerca en Economia Aplicada Regional i Pública UNIVERSITAT DE BARCELONA
Institute for Research on Medieval Cultures	Institut de Recerca en Cultures Medievals UNIVERSITAT DE BARCELONA
TransJus Research Institute	Institut de Recerca TransJus UNIVERSITAT DE BARCELONA
Institute of Ancient Near Eastern Studies	Institut del Pròxim Orient Antic UNIVERSITAT DE BARCELONA
Barcelona Economic Analysis Team	Barcelona Economic Analysis Team UNIVERSITAT DE BARCELONA
Institute of Research in Education	Institut de Recerca en Educació UNIVERSITAT DE BARCELONA

UB research institutes promote and undertake **interdisciplinary and/or specialized research activities** in various fields of **science, technology, social sciences, humanities and the arts**. They also provide scientific and technical consultancy services in their areas of expertise. The **University of Barcelona** has **17 UB-specific research institutes** and is a full member of the respective boards of a number of other research institutes.

All UB research institutes target highly competitive joint research, conduct innovative projects and promote the transfer of research results to society. Their mission is to:

- Promote interdisciplinarity and specialization
- Coordinate the research developed by different research groups
- Provide scientific and technical advice

The 17 UB-specific research institutes are:

- Institute of Cosmos Sciences (ICCUB)
- Institute of Nanoscience and Nanotechnology (IN2UB)
- Institute of Theoretical and Computational Chemistry (IQTCUB)
- Institute of Mathematics (IMUB)
- Geomodels Research Institute
- Biodiversity Research Institute (IRBio)
- Institute of Biomedicine (IBUB)
- Institute of Neurosciences (UBNeuro)
- Institute of Complex Systems (UBICS)
- Nutrition and Food Safety Research Institute (INSA-UB)
- Water Research Institute (IdRA)
- Institute for Research on Applied Regional and Public Economics (IREA)
- Institute for Research on Medieval Cultures (IRCVM)
- TransJus Research Institute
- Institute of Ancient Near Eastern Studies (IPOA)
- Barcelona Economic Analysis Team (BEAT)
- Institute of Research in Education (IRE.UB)

The strength of these research institutes is **an important asset** for the whole UB in terms of fundraising for research, both in the national and the international arenas, and because they have become true hubs of knowledge for research at the UB.

The economic value of the projects obtained by these institutes from 2014 to 2018 represented 68.7% of the total funding for research projects managed by UB researchers overall. UB institutes obtained 80.5% of this financing through competitive calls, while 25.7% was granted by international agencies.

EXCELENCIA MARÍA DE MAEZTU

ICCUB | Institut de Ciències del Cosmos UNIVERSITAT DE BARCELONA

www.icc.ub.edu

Institute of Cosmos Sciences

The **ICCUB** is one of a handful of institutions in the world that is focused on physical cosmology, at the same time addressing astrophysics, high energy physics, gravitation, nuclear and atomic physics, paying special attention to research directions and synergies among these areas that relate to cosmology. When it was created in 2006 the ICCUB brought together many lecturers and researchers that were working in various departments at the Faculty of Physics of the UB, encouraging them to explore connections in their research to cosmology and increasing their level of interaction and collaboration. Since then, the Institute has grown vigorously, expanding its research production, scientific excellence, and international participation and recruitment. Our research lines and their broad connection to cosmology are motivated by three shared major questions:

1. What are the origin and fate of the Universe?
2. What are the constituents of the Universe?
3. Why does the Universe have its present appearance?

The pursuit of these deep, long-term questions is a guiding theme that inspires us in defining and reviewing our research priorities as science and technology advance. At the same time, we seek new opportunities offered by technological developments related to our research areas to return valuable applications and benefits to society at large. In 2015, the ICCUB received the **María de Maeztu Excellence Accreditation** awarded by the Spanish Ministry of Economy and Competitiveness to six Spanish centres. The award recognizes excellence at research centres located at universities.

RESEARCH LINES AT THE ICCUB

1. Cosmology and large-scale structure
- Large-scale structure of galaxies and the intergalactic medium
- Galaxy redshift survey
- Microwave background radiation anisotropies
- Baryonic acoustic oscillations
- Dark matter and dark energy
- Neutrinos in cosmology
- Dark matter, black holes and cosmology with gravity waves
- Lyman-alpha emission from galaxies at high redshifts
- Reionization of the intergalactic medium
- Gravitational lensing as a dark matter probe

2. Experimental particle physics
- Physics of B and charm mesons
- Charge-parity (CP) symmetry violation
- Search for deviations from the Standard Model in rare B meson decays
- Design, prototype, test, installation, operation and maintenance of readout electronics for photosensors for high energy, astrophysics and medical imaging experiments
- Simulation and study of the radiation hardness of avalanche photodetectors

3. Galaxy structure and evolution
- Structure and dynamics of the galaxy
- Dark matter in the galaxy
- Semi-analytical and numerical modelling of galaxy formation and evolution
- Data processing of the Gaia mission
- Data mining systems for the scientific observatory Gaia
- The intergalactic medium as probed by quasar absorption spectra

4. Gravitation and cosmology
- Applications of holography to quantum chromodynamics
- Dark matter and dark energy in cosmology and in particle physics
- Quantum and semiclassical gravity
- Black holes: classical, quantum, stringy, astrophysical, and primordial
- Holographic principle in black holes and cosmology
- Inflation and the early universe

5. Hadronic, nuclear and atomic physics
- Hadronic physics. Strangeness and charm in the nuclear medium
- Lattice QCD calculations of light nuclear and hypernuclear systems
- Nuclear structure. Nuclear symmetry energy
- Relativistic heavy ion collisions
- Dense and hot nuclear matter and applications in nuclear astrophysics
- Radiation transport and interactions of radiation with matter
- Ultracold atomic physics and quantum many-body correlations

6. High-energy astrophysics
- Observations (radio, IR/O, X- and gamma rays): galactic sources at full spectrum, multiwavelength studies of extragalactic sources
- Theory: numerical and semi-analytical modelling (radiation processes, magnetohydrodynamics)
- Types of sources: microquasars, gamma-ray binaries, massive stars, unidentified galactic sources, extended sources, supermassive black holes, extragalactic jets, starbursts
- Instrumentation: developing future instrumentation (CTA - gamma rays)

7. Particle physics phenomenology
- Standard Model and beyond at the LHC
- B-physics, with emphasis on the analysis and physical reach of the LHCb detector
- Phenomenology of supersymmetric theories
- String phenomenology
- Unification of the fundamental forces
- Heavy quark effective theory and other effective theories of QCD
- QCD in extreme conditions: heavy ion experiments at the LHC, FAIR and other accelerators
- Lattice QCD
- Perturbative QCD: parton distribution functions
- Studies of the physics of future colliders
- Neutrino physics and its connection with astrophysics and cosmology
- Axions and other dark matter candidates

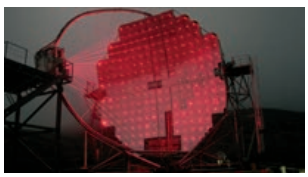
8. Quantum technologies
- Quantum computation
- Quantum simulation
- Quantum sensing and metrology

9. Star formation
- High-angular resolution observations of the first stages of stellar evolution
- Outflows, jets, and accretion disks in low- and high-mass young stellar objects
- Jets in planetary nebulae
- Computational models of star-forming clouds and star formation
- Interstellar-medium turbulence

10. Quantum field theory and string theory
- Conformal and supersymmetric field theories
- Brane dynamics
- Symmetries of string theory

FACTS AND FIGURES AT THE ICCUB

Established in	2006	
Staff statistics (2018)	Teaching and research staff	65 (of whom: 9 ICREAs: 2 RyC)
	Fellows and administrative and service staff	63
	Postdoctoral and predoctoral researchers	26 and 37
	Administrative and service staff	10
	Other collaborators	25
	% of international members among the staff	30.67%
	Gender distribution of staff (% women)	17.18%
Research indicators (2014-2018)	ISI publications	1,284
	% of ISI publications in 1st quartile	87.85%
	Scopus publications	1,247
	% of Scopus publications in 1st quartile	86.93%
	PhD dissertations	51
	Financing secured (competitive)	€16.49 m
	Financing secured (non-competitive)	€0.54 m
	% of international financing secured	41.09%
	Number of ERC grants	2 Starting Grants / 1 Consolidator Grant / 1 Advanced Grant
Transfer indicators (2014-2018)	Patents: 3 priority patent applications; 3 international patent applications (PCT); 2 spin-offs	
Director	Francesc Xavier Luri Carrascoso	xavierluri@ub.edu



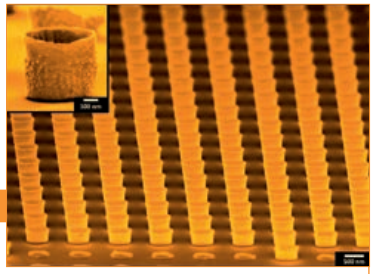
www.ub.edu/in2ub

Institute of Nanoscience and Nanotechnology

In 2006, the University of Barcelona created the **Institute of Nanoscience and Nanotechnology** (IN2UB) to coordinate the multidisciplinary research activities being carried out by several research groups of this institution. The IN2UB aims to contribute to the progress of science, at the same time promoting industrial excellence.

Members of the IN2UB come from different scientific disciplines, such as physics, chemistry, pharmacy, biochemistry, medicine and geology. Within this framework, the IN2UB aims to promote collaboration between different groups and research centres, both internally and internationally, by strengthening interdisciplinary activities which integrate both basic and applied research.

Gold nanocups
(By A. Conde, A. Labarta and X. Batlle)



RESEARCH LINES AT THE IN$_2$UB

1. Modelling, simulation and nanoscopic methods (NanoMet)
Development of instrumentation and methodology (employing experimental and theoretical tools) to characterize nanostructures and nanosystems of any nature.
- Nano-bio interactions: interactions between biological and nanoscopic systems
- Confinement-related phenomena: reactivity, magnetism, optoelectronics and quantum photonics
- Transport and conduction
- Surface effects
- Electronic structure and excitations
- Bose-Einstein condensates and quantum confined gases
- Advanced electronic microscopy (EFM, TEM, STM, EELS, EDS)
- Instrumentation and methodology development in electron microscopy

2. Modelling, simulation and nanoscopic methods (NanoMet)
Organizational patterns observable in the molecular structures that control and rule the biological systems both at the cellular and at the molecular scales. Its most relevant application is that of developing techniques and devices aimed at prevention and diagnostics in nanomedicine.
- Functionalization of surfaces
- Cellular and molecular biomechanics
- Biomimetic structures and systems
- Nanofluidics and nanorobotics. Nanomotors
- Diagnosis in nanomedicine: marking and molecular observation
- Nanobiosensors; DNA and protein chips; lab-on-a-chip

3. Nanopharmaceutics and nanomedicine (NanoPharmaMed)
Developing nanostructured systems for controlled drug release and the improvement of drug therapeutic efficiency when administered on targets to treat diseases.
- Nanostructured systems for controlled drug release. Nanocapsules
- Nanostructured systems' interaction with biological structures
- Bioavailability, toxicity and therapeutic efficiency of nanostructured systems
- Non-viral vectors. Gene therapy. Pharmacogenomics and nutrigenomics
- Molecular internalization, molecular marking and detoxification

4. Nanomagnetism and spintronics (NanoMagnetics)
Development of new systems for storage and processing of information at the nanoscopic scale for information processing. Also the study of new phenomena appearing at the nanometric size for the implementation of innovative devices for use in healthcare, sustainable energy, environment, healthy food and security. This line is also involved in the preparation and study of multifunctional molecular nanomagnets for spintronics and quantum computing.
- Magnetic nanoparticles and single molecule magnets
- Dynamic processes in nanomagnetism and interaction with microwaves
- Magnetic electronics
- Spin-based molecular quantum bits and quantum gates for quantum computing

5. Nanoelectronics, nano-optics and nanophotonics (NanoPhotoElectro)
Study and exploitation at the nanoscale of the interaction of electric, magnetic and optical properties for the design of functional nanosystems.
- NEMS (Nanoelectromechanical Systems)
- Nanodevices, nanosensors and electronic nanosystems, optoelectronics and photonics. Photonic crystals

6. Nanostructured materials (NanosMat)
Development of new nanostructured materials and improving the properties of existing materials. This line also includes knowledge-frontier research in characterization techniques and manipulation tools at the nanoscale (as electron and probe microscopies, surface analysis, or spectroscopic and magnetic characterization).
- Synthesis, nanomanufacturing and nanomanipulation
- Thin layers, nanostructured multilayers and coatings
- Nanoparticles, gels, nanofibers, nanorods, nanothreads and nanotubes
- Nanostructured metallic oxides
- Mesoporous materials and nanopatterns

7. Nanoenergy: production and storage (NanoEnergy)
Application of nanomaterials to energy production and storage to overcome efficiency and lifetime limits.
- Catalytic nanostructures for energy production. Fuel cells
- Nanomaterials for solar cells and photocatalytic processes
- Nanostructured systems for energy storage

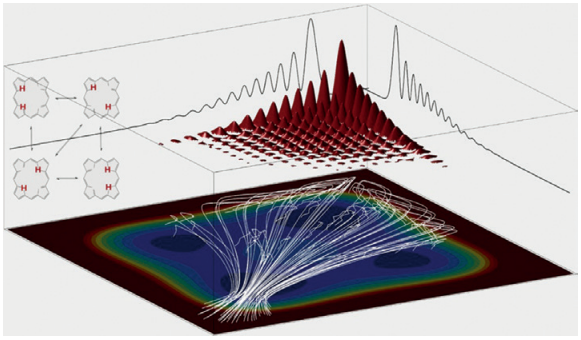
FACTS AND FIGURES AT THE IN$_2$UB

Established in	2006	
Staff statistics (2018)	Teaching and research staff	153 (of whom: 1 ICREA; 2 RyC)
	Postdoctoral researchers	10
	Predoctoral researchers	19
	Administrative and service staff	6
	Other collaborators	17
	% of international members among the staff	13.17%
	Gender distribution of staff (% women)	41.95%
Research indicators (2014-2018)	ISI publications	1,774
	% of ISI publications in 1st quartile	69.33%
	Scopus publications	1,763
	% of Scopus publications in 1st quartile	83.27%
	PhD dissertations	162
	Financing secured (competitive)	€13.86 m
	Financing secured (non-competitive)	€1.57 m
	% of international financing secured	19.94%
	Number of ERC grants	2 Starting Grants / 1 Advanced Grant / 1 Proof of Concept
Transfer indicators (2014-2018)	Patents: 12 patents in national phase; 2 industrial secrets; 7 international patent applications (PCT); 8 priority patent applications; 2 spin-offs	
Director	Guillem Aromí Bedmar	aromi@ub.edu

www.iqtc.ub.edu

Institute of Theoretical and Computational Chemistry

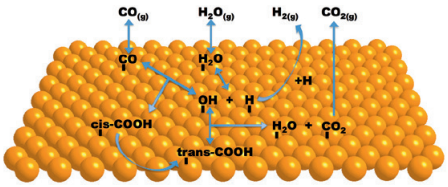
The **Institute of Theoretical and Computational Chemistry** of the **University of Barcelona** (IQTCUB) is made up of around 40 permanent researchers, experts in several fields of theoretical and computational chemistry. The research activity carried out at the IQTCUB covers methods and computational tool development, application of several techniques of electronic structure and simulation to problems in materials science, and reaction dynamics in chemical reactions as well as in biological systems and soft matter.

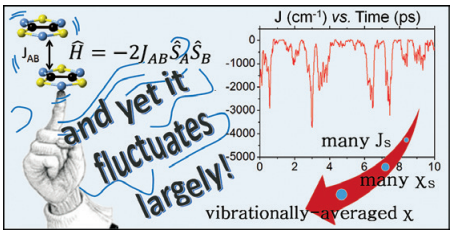


The main goal is to foster synergies between researchers, encouraging the interdisciplinary activities that allow us to tackle new challenges. Another important goal is to share expertise in handling computational resources, which are the main tools in this type of research.

RESEARCH LINES AT THE IQTCUB

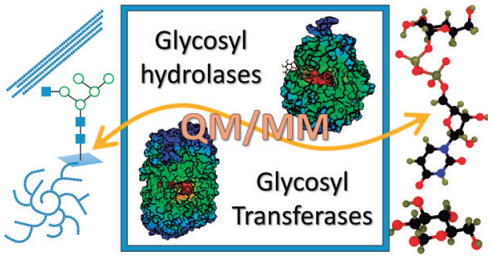
Clean energy and catalysis
Research in this area uses quantum and classical methods to design new processes and materials than can allow more efficient production of energy and also to improve the catalytic processes in heterogeneous catalysis.





Physical properties in materials and nanodevices
We employ computational methods, ranging from high-level quantum chemistry and *ab initio* molecular dynamics to classical simulation methods, to investigate the bulk, surface and nanoscale properties of a broad class of solid materials, such as complex inorganic compounds or molecular crystals.

Biochemistry and soft matter
Using a battery of computational methods, from electronic structure-based methods to classical simulations, we investigate the structure and reactivity of proteins and enzymes, drug design, processes in cellular membranes, enzymatic reactions in crowded media and soft nanoparticles in solution.



FACTS AND FIGURES AT THE IQTCUB

Established in	2006	
Staff statistics (2018)	Teaching and research staff	42 (of whom: 4 ICREAs; 1 RyC)
	Postdoctoral researchers	1
	Predoctoral researchers	2
	Administrative and service staff	1
	% of international members among the staff	6.52%
	Gender distribution of staff (% women)	10.87%
Research indicators (2014-2018)	ISI publications	668
	% of ISI publications in 1st quartile	74.85%
	Scopus publications	684
	% of Scopus publications in 1st quartile	83.19%
	PhD dissertations	33
	Financing secured (competitive)	€6.22 m
	Financing secured (non-competitive)	€0.85 m
	% of international financing secured	13.95%
Transfer indicators (2014-2018)	Patents: 1 international patent application (PCT); 2 priority patent applications; 1 trademark	
Director	Eliseo Ruiz Sabín	eliseo.ruiz@qi.ub.es

EXCELENCIA MARÍA DE MAEZTU

IMUB Institut de Matemàtica UNIVERSITAT DE BARCELONA

www.imub.ub.edu

Institute of Mathematics

The **Institute of Mathematics** of the **University of Barcelona** (IMUB) has been devoted to fostering and supporting research in all areas of mathematics since June 2000, by hosting conferences, workshops, seminars and advanced courses, and promoting interdisciplinary collaboration among researchers from different fields. The Institute has 15 research groups and over 87 members from the UB faculties of Mathematics, Biology, and Philosophy.

Collaboration with other bodies is fostered in the IMUB by inviting guest researchers who are welcome for short visits or long stays upon invitation by IMUB members. Graduate student grants are offered every year, as are opportunities for short postdoctoral stays. Together with the Department of Mathematics and Computer Science we have established a senior visiting position each year. *Collectanea Mathematica*, the oldest mathematical journal in Spain, is edited by the IMUB and published by Springer.

The IMUB is a unit of the Barcelona Graduate School of Mathematics (BGSMath). In 2015 this centre, fostered by the UB Faculty of Mathematics through its Institute of Mathematics, received the María de Maeztu Excellence Accreditation awarded by the Spanish Ministry of Economy and Competitiveness to six Spanish centres. The award recognizes excellence at research centres located at universities.

RESEARCH LINES AT THE IMUB

Algebra
Commutative algebra
Computational algebra
Homological algebra

Analysis
Complex and harmonic analysis
Real and functional analysis

Applied mathematics
Astrodynamics
Celestial mechanics
Dynamical systems
Holomorphic dynamics

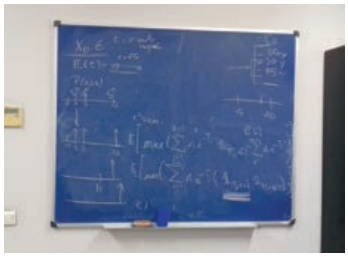
Computer science
Computer vision
Machine learning
Virtual worlds, visualization
Artificial intelligence

Geometry and topology
Algebraic geometry
Algebraic topology
Differential geometry

Mathematical logic
Algebraic logic
Model theory
Set theory

Number theory
Algebraic number theory
Arithmetic geometry

Probability and statistics
Mathematical finance
Statistics
Stochastic analysis



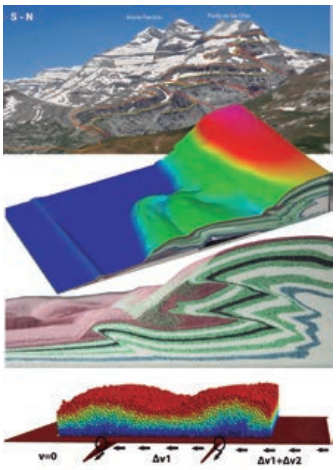
FACTS AND FIGURES AT THE IMUB

Established in	2000	
Staff statistics (2018)	Teaching and research staff	71 (of whom: 3 ICREAs; 2 RyC).
	Postdoctoral researchers	2
	% of international members among the staff	8.22%
	Gender distribution of staff (% women)	20.55%
Research indicators (2014-2018)	ISI publications	448
	% of ISI publications in 1st quartile	43.97%
	Scopus publications	460
	% of Scopus publications in 1st quartile	54.78%
	PhD dissertations	51
	Financing secured (competitive)	€5.67 m
	Financing secured (non-competitive)	€0.87 m
	% of international financing secured	20.84%
Transfer indicators (2014-2018)	Patents: 2 intellectual properties; 1 international patent application (PCT); 1 priority patent application; 2 spin-offs	
Director	Joaquim Ortega Cerdà	jortega@ub.edu; imub@ub.edu

www.ub.edu/geomodels

GEOMODELS Research Institute

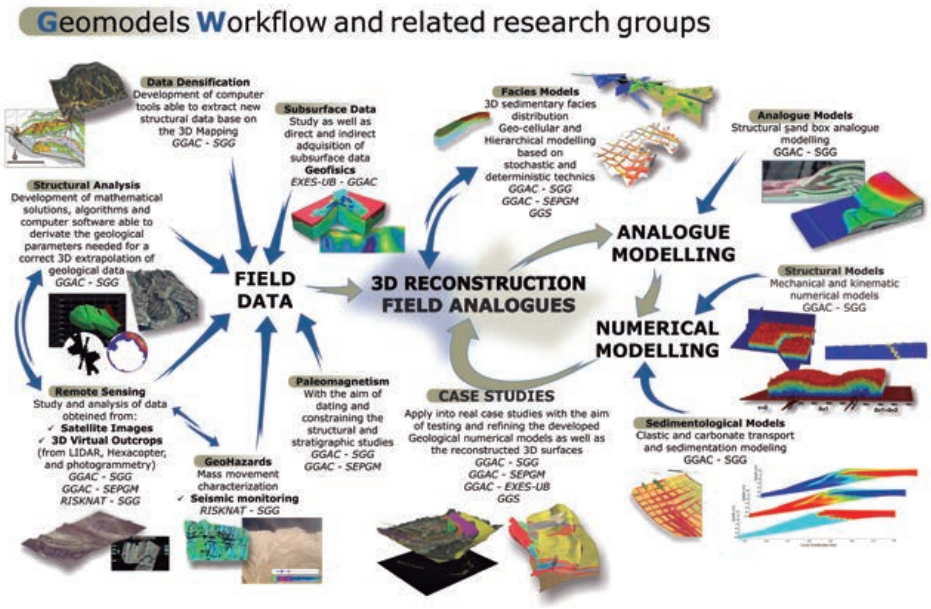
The main goal of the **GEOMODELS Research Institute** is the development of new technologies and their incorporation into the area of earth sciences research. More specifically, the creation of new modelling techniques to characterize and correctly understand geological systems in terms of generation, placement and quality of geologic resources and reservoirs; geo-mechanical terrain behaviour; and natural hazards and their impact on the surface.



A multidisciplinary team has been established to model geological processes in order to improve their quantification and the prediction of related phenomena in space and time. More specifically, we deal with 3D characterization of geological bodies, the numerical simulation of processes within these bodies, and the use of the resultant 3D models to tackle hazard scenarios.

The GEOMODELS Research Institute is a multidisciplinary research centre assembling geological and engineering methodologies. The results are scientific (improvement of knowledge and characterization of geological processes) and technological (development of new methodologies and modelling tools).

RESEARCH LINES AT GEOMODELS



FACTS AND FIGURES AT GEOMODELS

Established in	2008	
Staff statistics (2018)	Teaching and research staff	33 (of whom: 1 ICREA)
	Postdoctoral researchers	1
	Predoctoral researchers	8
	Administrative and service staff	4
	Other collaborators	7
	% of international members among the staff	7.55%
	Gender distribution of staff (% women)	33.96%
Research indicators (2014-2018)	ISI publications	226
	% of ISI publications in 1st quartile	46.90%
	Scopus publications	238
	% of Scopus publications in 1st quartile	75.63%
	PhD dissertations	33
	Financing secured (competitive)	€2.22 m
	Financing secured (non-competitive)	€5.40 m
	% of international financing secured	43.90%
Director	Eduard Roca Abella	eduardroca@ub.edu

www.ub.edu/irbio

Biodiversity Research Institute

The **Biodiversity Research Institute** (IRBio) of the University of Barcelona brings together academics, young researchers and collaborators who work on a wide variety of issues related to biodiversity, from the scale of the genome to the ecosystem. The diversity of subjects requires the application of different approaches (morphological, molecular, ecological, biogeographical and bioinformatical). IRBio brings together studies in the terrestrial environment, and in continental and marine waters.

Mission: The IRBio is conducting basic and applied research, as well as frontier research in the field of biodiversity.
Objectives: The IRBio encompasses research, advice and dissemination.

Research: to promote outstanding research in knowledge generation and the evaluation of biodiversity.
Advice: to provide assistance to public and private entities for the management and conservation of biodiversity.
Dissemination: to raise awareness and increase society's commitment to biodiversity issues.

Research areas at the IRBio	Description	Research lines
Biodiversity conservation and management (MAC)	This area provides knowledge and understanding of biodiversity within a socio-economic, political and cultural context, for efficient management and future preservation.	Agroecology Autoecology: use of habitat and trophic resources Behaviour biology Biodiversity conservation and management of community ecology Population biology
Evolutionary and systematic biology (EVO)	This area provides essential understanding of the patterns of biological diversity and the processes that shaped them at multiple hierarchical levels, from genes to ecosystems, as well as the development mechanisms responsible for evolutionary change.	Biogeography and phylogeography Evolutionary developmental biology Evolutionary ecology Genetics and genomics Paleobiology Systematics
Biodiversity and ecosystem functioning (ECO)	This area provides insights into the processes (fluxes of energy and matter), the organisms and their interactions over space and time that sustain the Earth's ecosystems.	Agroecology Autoecology: use of habitat and trophic resources Biogeography and phylogeography Chemical ecology Community ecology Paleobiology
Biodiversity, health and environment (SOC)	This area focuses on the enormous range of benefits that biodiversity provides to our health and well-being. The identification and understanding of the links between biodiversity, health and environment is strategic to human living.	Agroecology Autoecology: use of habitat and trophic resources Biogeography and phylogeography One Health

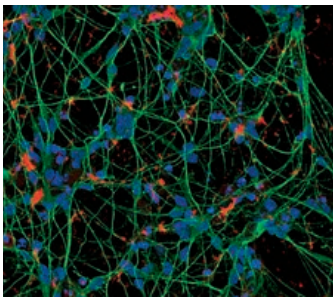
FACTS AND FIGURES AT THE IRBIO		
Established in	2006	
Staff statistics (2018)	Teaching and research staff	82 (of whom: 1 ICREA; 2 RyC)
	Postdoctoral researchers	9
	Predoctoral researchers	18
	Administrative and service staff	19
	Other collaborators	53
	Other	4
	% of international members among the staff	15,14%
	Gender distribution of staff (% women)	42.16%
Research indicators (2014-2018)	ISI publications	967
	% of ISI publications in 1st quartile	59.36%
	Scopus publications	1,022
	% of Scopus publications in 1st quartile	72.11%
	PhD dissertations	82
	Financing secured (competitive)	€8.70 m
	Financing secured (non-competitive)	€4.10 m
	% of international financing secured	22.55%
Director	Francisco Javier Sans Serra	fsans@ub.edu

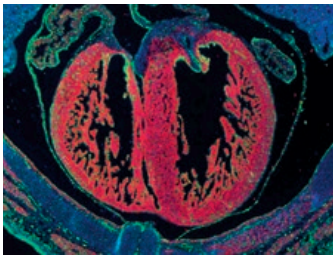
Institute of Biomedicine
UNIVERSITAT DE BARCELONA

www.ub.edu/ibub/

Institute of Biomedicine

The **Institute of Biomedicine of the University of Barcelona** (IBUB) conducts basic research and provides an interactive framework for scientists from different fields to conduct multidisciplinary integrated research in biomedicine, with a particular focus on medicinal chemistry, human genetics and metabolic-related diseases, cell plasticity and reprogramming.



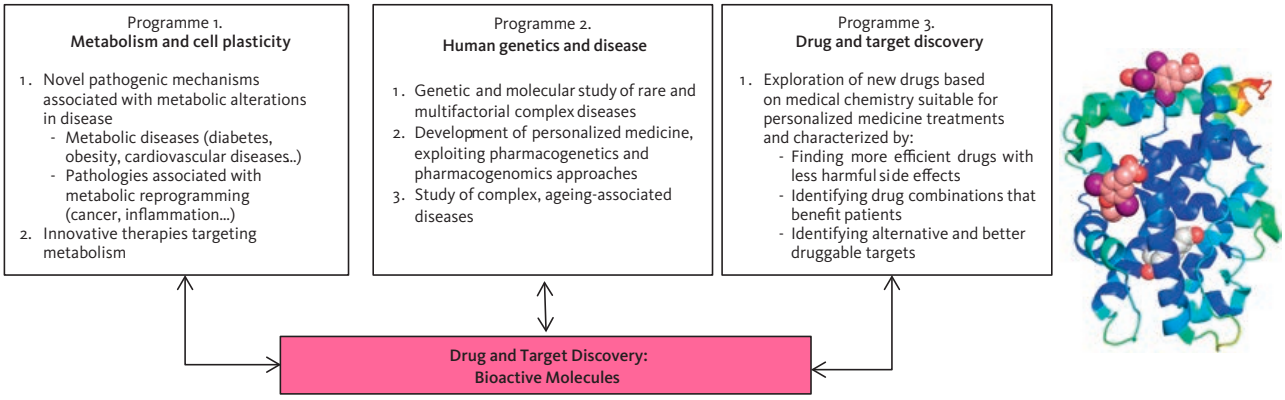


The IBUB's objectives are:

- to generate knowledge of biological systems using an integrative approach to identify druggable targets and design bioactive molecules with therapeutic potential;
- to improve the quality of society's living standards and public health, promoting it at an international level, within a framework based on sustainability and high ethical standards;
- to act as a quality centre for biomedical research training, thus maintaining the Institute's founding mission as an entity that brings together UB researchers from the faculties of Biology, Chemistry, and Pharmacy.

RESEARCH LINES AT THE IBUB

The IBUB's structure is based on the following research programmes:



FACTS AND FIGURES AT THE IBUB

Established in	2005	
Staff statistics (2018)	Teaching and research staff	120 (of whom: 1 ICREA; 1 RyC)
	Postdoctoral researchers	7
	Predoctoral researchers	2
	Administrative and service staff	5
	Other collaborators	9
	% of international members among the staff	6.99%
	Gender distribution of staff (% women)	51.75%
Research indicators (2014-2018)	ISI publications	1,149
	% of ISI publications in 1st quartile	73.54%
	Scopus publications	1,190
	% of Scopus publications in 1st quartile	85.29%
	PhD dissertations	176
	Financing secured (competitive)	€23.17 m
	Financing secured (non-competitive)	€2.78 m
	% of international financing secured	14.82%
	Number of ERC grants	1 Starting Grant
Transfer indicators (2014-2018)	Patents: 4 patents in national phase; 1 intellectual property; 2 industrial secrets; 4 international patent applications (PCT); 4 priority patent applications; 1 spin-off	
Director	Marçal Pastor Anglada	mpastor@ub.edu

www.neurociencies.ub.edu

Institute of Neurosciences

The **Institute of Neurosciences** is a frontrunner in international neuroscience research, being one of the few institutes in the world that investigates the brain at every level. This includes research groups in neurobiology, neuropharmacology, pathophysiology, neurology, psychiatry, clinical psychology, neuropsychobiology and cognitive neurosciences.

The Institute brings together about 300 researchers from the faculties of Psychology, Medicine, Pharmacy and Biology, and develops research activities at the university hospitals located in the multicultural city of Barcelona. We encourage and welcome collaboration with international research groups and organizations to boost the global vision of the Institute.

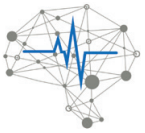
Our members enjoy benefits such as being part of a close community, learning from some of the best neuroscience researchers in the world, collaborating in both the private and public sectors, and state-of-the-art facilities.

RESEARCH AREAS AT THE INSTITUTE OF NEUROSCIENCES

Pathophysiology of nervous system disease

Mental health

Experimental neurology

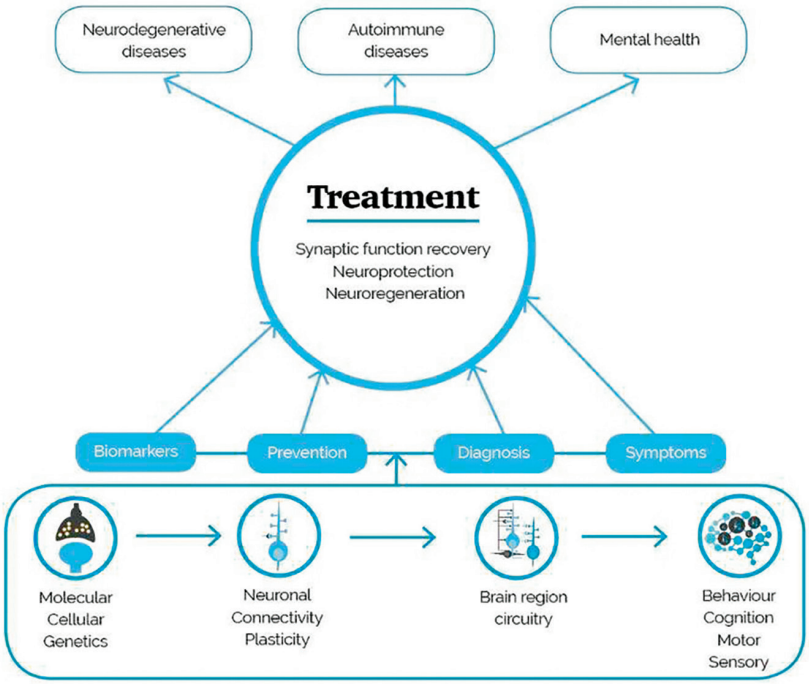


Cognitive and behavioural neuroscience

Knowledge transfer

The Institute of Neurosciences actively pursues opportunities to collaborate with both public and private bodies on mutual objectives related to increasing knowledge and technology transfer.

Interdisciplinary and translational research at the Institute of Neurosciences



FACTS AND FIGURES AT THE INSTITUTE OF NEUROSCIENCES

Established in	2015	
Staff statistics (2018)	Teaching and research staff	154 (of whom: 3 ICREAs; 3 RyC)
	Postdoctoral researchers	15
	Predoctoral researchers	33
	Administrative and service staff	16
	Other collaborators	52
	% of international members among the staff	14.44%
	Gender distribution of staff (% women)	58.15%
Research indicators (2014-2018)	ISI publications	1,952
	% of ISI publications in 1st quartile	62.24%
	Scopus publications	2,072
	% of Scopus publications in 1st quartile	76.45%
	PhD dissertations	247
	Financing secured (competitive)	€23.04 m
	Financing secured (non-competitive)	€4.92 m
	% of international financing secured	26.49%
	Number of ERC grants	1 Starting Grant / 2 Advanced Grants / 2 Proofs of Concept
Transfer indicators (2014-2018)	Patents: 9 patents in national phase; 2 intellectual properties; 1 industrial secret; 4 international patent applications (PCT); 4 priority patent applications	
Director	Jordi Alberch Vié	ubneuro@ub.edu; alberch@ub.edu

ubics.ub.edu

Institute of Complex Systems

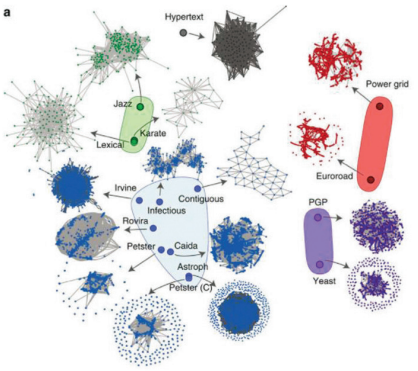
Complex systems are characterized by their emergent behavior as a non-trivial result of the evolution of a considerable number of microscopic units that interact with each other. Expressed in other words: the study of complex systems seeks to understand the behaviour and properties of the whole system that cannot be derived directly from the study of the properties of its parts in isolation.

This is the essence of the research of complex systems, where the nature of the units is irrelevant. Associated strategies to address the study of a specific phenomenon, then, may be widely shared by a large number of phenomena characteristic of various disciplines. We could even say that the complexity of the science itself is the result of the fusion of different disciplines and approaches in the same challenge. Therefore, the study of complex systems integrates problems and merges methodologies that can have very different origins.

RESEARCH LINES AT THE UBICS

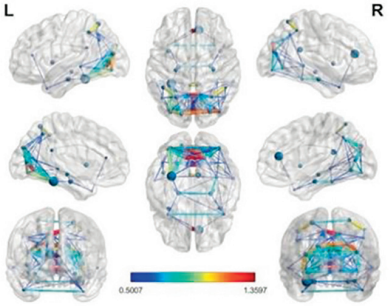
Foundations

Research on the identification and description of the general principles and key mechanisms that govern complex systems, encompassing network science, big data, statistical physics and dynamical systems.



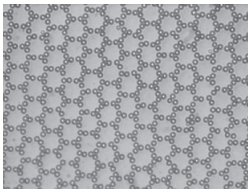
Social sciences

Social sciences study human behaviour, present and past, from the individual level to large collective interactions at a societal, political and economic level.



Science of matter

The science of complex matter focuses on soft matters, active materials and smart materials as well as complex flows and complex fluids. Their degree of complexity demands the adaptation or the extension of currently existing tools to new situations.



Life sciences

Research focused on solving a large variety of problems in the biological context that includes the study of fundamental molecular mechanisms, genomics and proteomics, the generation of forces and the mechanics of cells and tissues, morphogenesis and development, systems biology at the cellular level, and neuroscience.

FACTS AND FIGURES AT THE UBICS

Established in	2015	
Staff statistics (2018)	Teaching and research staff	35 (of whom: 2 ICREAs)
	Postdoctoral researchers	4
	Predoctoral researchers	2
	Administrative and service staff	3
	Other collaborators	10
	% of international members among the staff	16.67%
	Gender distribution of staff (% women)	35.19%
Research indicators (2016-2018)	ISI publications	148
	% of ISI publications in 1st quartile	74.32%
	Scopus publications	148
	% of Scopus publications in 1st quartile	83.11%
	PhD dissertations	38
	Financing secured (competitive)	€7.20 m
	Financing secured (non-competitive)	€0.90 m
	% of international financing secured	54.39%
	Number of ERC grants	1 Starting Grant / 1 Advanced Grant
Transfer indicators (2016-2018)	Patents: 1 intellectual propierty	
Director	Albert Diaz-Guilera	albert.diaz@ub.edu

insa.ub.edu

Nutrition and Food Safety Research Institute

The **Nutrition and Food Safety Research Institute (INSA·UB)** is backed by several research groups belonging to the UB faculties of Pharmacy and Food Sciences, Biology, Chemistry, and Geography and History, as well as others from associated centres and hospitals linked to the UB. INSA·UB aims to meet the needs of today's society in terms of research, training and service provision in sectors related to the agro-food industry.

Mission

- To carry out high-quality research in its field and ensure its relevance to food science and human health.
- To foster technology transfer and offer expert advice and training to the food industry and government bodies.
- To provide consumers with information based on scientific research.

A. Influence of diet on human health and disease

- Effect of foods on intestinal development and intestinal health
- Prebiotics and probiotics and intestinal health indicators
- Immunonutrition
- Diet and prevention of disease: inflammatory bowel disease, obesity, cardiovascular disease, diabetes, Alzheimer...
- Diet and oxidative stress and cell proliferation
- Diet and aging
- Identification of metabolomic profiles associated with metabotypes of risk of disease and / or healthy aging
- Nutrition and psychosocial development

B. Safe foods and diets

- Viral safety of foods and water (norovirus, hepatitis A and hepatitis E virus)
- Detection of chemical contaminants: residues, antibiotics, biogenic amines, environmental contaminants, plastiziers....
- Food safety in organic foods
- Evaluation of toxicity with alternative experimental models
- Studies on antibiotic alternatives in animal feeding
- Risk assessment studies for human and environmental health
- Interaction between food components and pharmaceutical drugs
- Risk perception studies

C. Food authentication and quality

- Food authentication: of olive oil, fats.....
- Oxidation, stability and food quality
- Characterization of sensory attributes and compounds that determine organoleptic quality

D. Biotechnology for agri-food improvements

- Agrobiotechnology for more sustainable and healthier vegetables:
  - Tolerance of crops and fruity trees to abiotic stresses
  - Biostimulants and biofertilisers
  - Fruit physiology and technology
- Fats in animal feeding: influence on the quality of foods of animal origin
- Supplements in animal feeding

E. By-product valorization

- Detection and identification of peptide substances that add value to functional foods
- Valorization of food industry by-products
- Upcycling of vine, wine, oil waste products

F. Managing food knowledge and promotion of informed consumer food choices

- History of food, eating habits and behaviors
- Risk perception studies
- Food archeological studies

FACTS AND FIGURES AT THE INSA-UB		
Established in	2005	
Staff statistics (2018)	Teaching and research staff	75 (of whom: 3 RyC).
	Postdoctoral researchers	8
	Predoctoral researchers	11
	Administrative and service staff	6
	Other collaborators	28
	% of international members among the staff	17.19%
	Gender distribution of staff (% women)	68.75%
Research indicators (2014-2018)	ISI publications	682
	% of ISI publications in 1st quartile	67.60%
	Scopus publications	703
	% of Scopus publications in 1st quartile	85.35%
	PhD dissertations	82
	Financing secured (competitive)	€7.70 m
	Financing secured (non-competitive)	€2.33 m
	% of international financing secured	19.71%
	Patents: 1 international patent application (PCT); 1 priority patent application	
Director	Rosa María Lamuela Raventós	lamuela@ub.edu

Institut de Recerca de l'Aigua (IdRA)
UNIVERSITAT DE BARCELONA

www.ub.edu/aigua

Water Research Institute

Water is essential for life and for the development of our society. Water plays a major role in society, politics and the economy, and its management is one of the challenges that must be tackled in the twenty-first century. The fight against contamination, the call for rational water use, efforts to overcome shortfalls in supply, and the forecast and management of extreme situations (droughts and floods) are all priorities that need professionals with the capacity and the criteria for action. The required actions range from highly specific aspects of local supply to involvement in European and international strategies.

For this reason, and to improve interdisciplinary research, the University of Barcelona founded the **Water Research Institute (IdRA)**. The Institute strengthens the University's potential through specific structures and instruments devised to channel research and teaching in the field of water. Researchers affiliated with the Institute belong to the nine faculties and 16 different departments of the University of Barcelona.

RESEARCH LINES AT THE IdRA

- Water quality (physics, chemistry, microbiology, parasitology, biology, etc.)
- Health issues related to water resources
- Unconventional water resources
- Natural mineral water
- Advanced wastewater treatment
- Aerobic and anaerobic digestion systems in wastewater and sludge
- Microbial source tracking
- Biofilms in water
- River and reservoir ecology
- Eutrophic systems
- Cyanobacteria and aquatic microalgae
- Biodiversity of freshwater algae
- Agronomy and improving crop yields for increased efficiency in water use
- Methods for the use of water resources: geological, geochemical and geophysical
- Seawater: properties, dynamics and behaviour
- Oceanography
- Modelling contaminated aquifers: salt intrusion and industrial or agricultural pollution
- Legislation affecting water: legal regime pertaining to water quality and dumping
- Economic instruments of environmental policy and water demand management
- Climate change: variability and associated risk
- Climatology: urban, synoptic, historical and agricultural
- Climatic atlas and precipitation analysis
- Analysis of hydrometeorological risks and of the related communication and social aspects
- History of the use and management of water resources
- Socioeconomic and political repercussions of variations in the avaibility of water
- Waterscapes: archaeological, cultural and scenic heritage
- Water archaeology, past human-water relationships
- Landscape, visual poetics and water aesthetics

FACTS AND FIGURES AT THE IdRA

Established in	2005	
Staff statistics (2018) *	Teaching and research staff	91 (of whom: 1 RyC)
	Postdoctoral researchers	3
	Predoctoral researchers	8
	Administrative and service staff	6
	Other collaborators	5
	% of international members among the staff	3.54%
	Gender distribution of staff (% women)	50.44%
Research indicators (2014-2018)	ISI publications	774
	% of ISI publications in 1st quartile	66.80%
	Scopus publications	819
	% of Scopus publications in 1st quartile	79%
	PhD dissertations	129
	Financing secured (competitive)	€8.92 m
	Financing secured (non-competitive)	€3.53 m
	% of international financing secured	19.10%
Transfer indicators (2014-2018)	Patents: 1 patent in national phase; 2 international patent applications (PCT); 2 priority patent applications; 1 spin-off	
Director	José Francisco García Martínez	institutaigua@ub.edu

* The Water Research Institute also has 26 more researchers and administrative personnel as permanent external collaborators

www.ub-irea.com

Institute for Research on Applied Regional and Public Economics

The **Institute for Research on Applied Regional and Public Economics** (IREA) was founded in 2005 to bring together some 60 researchers working in three government-consolidated research groups in the area of applied economics: Regional Quantitative Analysis (AQR), Risk in Finance and Insurance (RISC), and Governments and Markets (GiM). All researchers are attached to the UB Department of Econometrics, Statistics and Applied Economics.

The IREA conducts research in four different fields:

- The quantitative study of regional and urban economic activity and the analysis of regional and local economic policy.
- The study of public economic activity in financial markets, using techniques in industrial organization to assess the impact of privatization, regulation and competition in public service markets.
- The analysis of risk factors in finance and insurance.
- The development of micro- and macroeconometric techniques in the applied analysis of economic activity, focusing on the quantitative assessment of public policy.

RESEARCH LINES AT THE IREA

1. Regional Quantitative Analysis Group – AQR

- Regional economic growth
- The labour market
- Productivity and technological capital: innovation and human capital
- Spatial economics
- Regional and urban strategic indicators
- Studies in economic impact
- Macroeconomic predictions, simulations and monitoring of the current economic situation
- Survey design
- Sector analysis
- Econometric methods for applied economics

2. Research Group on Governments and Markets – GiM

- Company privatization and outsourcing of public services
- Networking industry regulation: economics and policy
- Empirical industrial economics. Economic analysis of competitors
- Research in regional and urban economics
- Transport infrastructures: economics and policy

3. Risk in Finance and Insurance Group – RISC

- Financial economics
- Risk management and quantification
- Longevity and dependence insurance
- Data analytics, big data and data science
- Operational risk

FACTS AND FIGURES AT THE IREA

Established in	2005	
Staff statistics (2018)	Teaching and research staff	50
	Other collaborators	2
	% of international members among the staff	3.85%
	Gender distribution of staff (% women)	40.38%
Research indicators (2014-2018)	ISI publications	276
	% of ISI publications in 1st quartile	31.88%
	Scopus publications	319
	% of Scopus publications in 1st quartile	52.04%
	PhD dissertations	53
	CARHUS+ publications	250
	% of CARHUS+ publications in level A	30%
	Financing secured (competitive)	€1.75 m
	Financing secured (non-competitive)	€2.17 m
	% of international financing secured	13.31%
Director	Montserrat Guillen Estany	mguillen@ub.edu

Institut de Recerca en Cultures Medievals
UNIVERSITAT DE BARCELONA

www.ircvm.ub.edu

Institute for Medieval Cultures

The **Institute for Medieval Cultures** (IRCVM) aims to bring research on the Middle Ages to the highest level of excellence and become a model for medieval studies in Catalonia and Europe. IRCVM was set up in 2008 to collect and coordinate the work of researchers from different disciplines of the UB, experts on the Middle Ages.

The IRCVM fosters the training and specialization of future medievalists through the master's degree in Medieval Cultures and the UB doctoral programme on Medieval Cultures.

RESEARCH LINES AT THE IRCVM

Medieval archaeology. Archaeololgical interventions and research on the relationships between medieval archaeology, art, history, and material culture.	
Laboratory of digital humanities. Implementation of digital tools for documentary analysis, generation of historical cartographies or mapping with Geographic Information Systems (GIS), virtual recreations of spaces or objects, and databases.	
Medieval hospitals. Project for the study of medieval hospital structures. In collaboration with the Hospital de la Santa Creu i Sant Pau Foundation.	
History of literacy and written culture. Studies on literacy, reading and writing in late Antiquity and medieval Europe.	
Medieval spirituality. Studies of religious culture in medieval Europe.	
Landscape, environment, and spaces. Studies in art, iconography, architectural history, and material culture in late Antiquity and medieval Europe.	

Publications

- ***IRCVM-Medieval Cultures***, in collaboration with Viella Editrice (Rome)
- ***Lliçons/Lessons***, in collaboration with Edicions de la Universitat de Barcelona
- ***SVMMA. Revista de Cultures Medievals/ SVMMA***. Journal of Medieval Cultures
- ***IRCVM Premis*** in collaboration with Edicions de la Universitat de Barcelona

FACTS AND FIGURES AT THE IRCVM

Established in	2008	
Staff statistics (2018)	Teaching and research staff	57 (of whom: 1 ICREA; 1 RyC).
	Postdoctoral researchers	2
	Predoctoral researchers	1
	Other collaborators	20
	% of international members among the staff	8.75%
	Gender distribution of staff (% women)	53.75%
Research indicators (2014-2018)	ISI publications	8
	% of ISI publications in 1st quartile	37.50%
	Scopus publications	123
	% of Scopus publications in 1st quartile	5.69%
	PhD dissertations	41
	Financing secured (competitive)	€2.89 m
	Financing secured (non-competitive)	€0.09 m
	% of international financing secured	50.61%
	Number of ERC grants	1 Consolidator Grant
Director	Meritxell Simó Torres	msimotor@ub.edu

www.ub.edu/instituttransjus

TransJus Research Institute

TransJus, the **Legal Research Institute** of the **University of Barcelona**, was created with the idea of becoming a transversal centre of research, involving university experts from different disciplines at international, European, national, regional and local levels. The fields of expertise at TransJus cover social and legal sciences, reflecting the structure of the UB Faculty of Law and the background of its researchers. The TransJus Institute aims to promote the interaction of the disciplines of law, political sciences, psychology and economics.

These interactions between disciplines allow for a more accurate and appropriate analysis of social reality, which is a prerequisite to proposing more effective solutions. This coordinated approach is becoming increasingly necessary because, as is also evident in other fields of research, the most interesting topics are often at the intersections of different branches of knowledge.

RESEARCH LINES AT TRANSJUS
Individual, family and women's rights Equality policies have made a considerable impact in recent years in virtually all aspects of law, and in the public and private arenas. Research in this field includes studies on new forms of family, ageing, non-discrimination and affirmative actions, among others.
Governance, transparency, financial crisis and corruption in the context of socio-economic crisis The perception of the quality of democracy in a country implies active measures from procedural law and the guarantees that this can offer. Private and public ethics, good governance and good administration, along with preventive measures against corruption, are some of the areas of research that can fit this purpose.
Environment, territory and sustainability Territory management and town planning, housing, energy sources, environmental sustainability, climate change, and the links between city and human rights are all challenges that will shape tomorrow's society. Beyond the right to a safe environment or to sustainable development, which are rights traditionally linked to the areas of administrative, criminal or public international law, the key aspects to guaranteeing the sustainable management of a territory must also involve multidisciplinary political and legal considerations.
Cooperation, peace and international security Cooperation between different actors and international subjects is one of the main principles of contemporary international law that aims to achieve world peace among nations. It also affects other human activities that are regulated by criminal and procedural law (international criminal law, universal jurisdiction, extradition), by international civil and private law (family adoption), commercial and tax law, and the relations between governments.
Ageing The well-known demographic ageing of our societies is a common problem in many areas of the world. The data is certainly extraordinary, also in relation to the Spanish and Catalan situations. This area of research, which began in 2017, analyses ageing and its impact on various areas of the public, private and third sectors (pensions, urban planning, etc.) from a cross-disciplinary perspective (private and public law, political science, public management, criminology, medicine, economics, etc.).
Artificial intelligence, big data and data protection This line of research, initiated in 2018, seeks to tackle the so-called fourth revolution, which involves the use of big data processed through algorithms, including machine learning, in both the private and public sectors with a cross-disciplinary perspective (law, engineering, ethics, political science, public management, criminology, etc.), bearing in mind the limits presented by regulation on personal data protection.

FACTS AND FIGURES AT TRANSJUS		
Established in	2012	
Staff statistics (2018)	Teaching and research staff	76
	Postdoctoral researchers	1
	% of international members among the staff	1.3%
	Gender distribution of staff (% women)	45.45%
Research indicators (2014-2018)	ISI publications	24
	% of ISI publications in 1st quartile	41.67%
	Scopus publications	61
	% of Scopus publications in 1st quartile	24.59%
	PhD dissertations	77
	Financing secured (competitive)	€1.66 m
	Financing secured (non-competitive)	€1.16 m
	% international financing secured	30.69%
Director	Cristina González Beilfuss	cgonzalezb@ub.edu

Institut del Pròxim Orient Antic
UNIVERSITAT DE BARCELONA

www.ub.edu/ipoa

Institute of Ancient Near Eastern Studies

The presence of the **Interuniversity Institute of Ancient Near Eastern Studies** (IPOA) in our university environment is justified by the nature of the discipline: highly specialized, complex, and of interest to a minority who have to meet the strictest requirements of linguistic training.

The Institute aims to introduce new study and research plans in key areas of the history of culture, which are also of great social interest today. These studies are a complement to and a natural progression for study programmes in Semitic philology, classical philology, ancient history, linguistics, and theoretical philosophy.

The IPOA is a meeting point for interdepartmental and interuniversity research. It offers a full series of courses in the field, which are too complex and specialized to be included in the standard academic programmes. Thus, alongside its research commitments, the Institute also fulfils a unique social and academic function.

RESEARCH LINES AT THE IPOA

Assyriology

Egyptology*

Semitics

Indo-Iranology

Archaeology**

*Egyptology images: archaeological mission at Oxyrhynchus, Egypt
**Archaeology images: archaeological mission at Tell Amarna, Syria

FACTS AND FIGURES AT THE IPOA

Established in	1993	
Staff statistics (2018)	Teaching and research staff	6
	Administrative and service staff	1
	Gender distribution of staff (% women)	14.29%
Research indicators (2014 -2018)	ISI publications	2
	Scopus publications	7
	% of Scopus publications in 1st quartile	28.57%
	PhD dissertations	4
	Financing secured (competitive)	€0.15 m
	Financing secured (non-competitive)	€0.10 m
	% international financing secured	24.42%
Director	Ignacio Javier Adiego Lajara	Ignasi.adiego@ub.edu

www.ub.edu/beat

Barcelona Economic Analysis Team

BEAT is a research institute created at the University of Barcelona in 2016. It promotes high quality research in economics, the creation of synergies between researchers of different disciplines, and the collaboration of several research groups. The institute aims to become a significant player within European economics in order to attract top students and the best scientific talent worldwide.

BEAT is an energetic response to recent developments in the organization of scientific research worldwide, which is moving fast in the direction of bigger, better integrated and more flexible teams capable of competing for funds internationally and attracting talent.

BEAT comprises 40 active members participating in five consolidated research groups: Centre for Economic Analysis and Social Policy (CAEPS); Centre for Research in Welfare Economics (CREB); Economy, Energy and Environmental Pressures (EEEP); Economic History and Development (HDE), and Game Theory and Assignment Markets (TJMA).

BEAT is firmly committed to quality because quality is the necessary condition to achieve scientific excellence, academic recognition and societal impact.

BEAT has an unambiguous commitment to social responsibility. It will strive to produce excellently trained graduate students, to become a centre of reference for both the private and the public sector in its areas of research, and to inform the public debate on relevant economic issues.

RESEARCH LINES AT THE BEAT

Behaviour, markets and games

This line covers the analysis of behaviour, both individual and strategic; the design of market regulations and efficient rules of assignment; cost-sharing mechanisms, and cooperative solutions to societal problems.

There is a wide range of problems that can be examined through this approach, from regulation of utilities such as electricity and telecommunications to the study of corruption in organizations; from marriage and divorce to bankruptcy law; from media and online markets to the design of spectrum license auctions; from the study of the gender wage gap to the analysis of saving and retirement decisions.

Macroeconomics, development and trade

What policies can be adopted to boost economic growth? What are its long-run determinants? How do globalization and international trade affect economic development?

This line tackles these questions in an integrated way: economic growth is the output of a process which combines input factors; the productivity of these inputs is affected by technological change and international trade. In turn, globalization affects income distribution across and within countries through division of labour and the relocation of firms. The resulting distributions of income have their own impact on future economic growth.

Environment, sustainability and well-being

This line considers the environmental and socioeconomic factors that shape the present and future well-being of the population. It encompasses aspects such as income and wealth, jobs and earnings, housing conditions, health status, subjective well-being, work-life balance, skills and education, social capital, civic engagement, and governance.

It has two main focuses: social policies (health, pensions, education) aimed at promoting individual health and well-being while guaranteeing the sustainability of the welfare state; and environmental challenges, such as climate change, global warming and pollution, which have a large potential impact on economic output and personal well-being.

FACTS AND FIGURES AT THE BEAT

Established in	2016	
Staff statistics (2018)	Teaching and research staff	34
	% of international members among the staff	5.88%
	Gender distribution of staff (% women)	32.35%
Research indicators (2016-2018)	ISI publications	82
	% of ISI publications in 1st quartile	30.4 9%
	Scopus publications	90
	% of Scopus publications in 1st quartile	47.78%
	PhD dissertations	29
	Financing secured (competitive)	€1.44 m
	Financing secured (non-competitive)	€0.18 m
	% international financing secured	10.69%
Transfer indicators (2016-2018)	Patents: 2 intellectual properties	
Director	Joan Calzada Aymerich	calzada@ub.edu

www.ub.edu/ire

Institute of Research in Education

The **Institute of Research in Education (IRE.UB)** was founded in 2016 as an autonomous centre, linked to the University of Barcelona, to promote research in education.

The main goal of the Institute of Research in Education is to foster research activity in the field of education and synergies between researchers and research groups in the areas of common knowledge. Education is conceived as one of the fundamental pillars of developed societies, and the educational level achieved by the citizenship of a country is an indicator of its degree of economic and social development. The centrality of knowledge requires citizenship capable of continuously updating its learning. For this reason, education is configured as a strategic sector and an instrument for improving the individual well-being of society.

RESEARCH LINES AT THE IRE.UB	
Contexts of learning and education	• Factors that influence learning and educational success • Social changes and education • Specific didactics and didactic intermediation artifacts • Education by competences • Learning and teacher development • The quality and development of guidance services for youth and adults • Labour and educational transitions • The relationships between higher education and society
Technology-driven learning environments	• Collaborative learning • Virtual learning in the digital society: design and evaluation • Processes of interaction and construction of knowledge in virtual contexts of teaching and learning • Language teaching with technological support • Communication competence in digital environments • Digital and visual culture • Digital literacy • Social networks and education
Equity, welfare and inclusion	• Factors of exclusion and social and educational inclusion • Democracy and education • Participation, education and construction of citizenship • Community development and education • Promotion and protection of children • Educational work with families • Migratory movements and education • Education and health. Emotional education
Educational system, teacher training and the knowledge society	• Educational interaction processes • Teacher / student interaction • Interaction in family contexts • Moral education • Evaluation of learning in the classroom • Educational discourses

FACTS AND FIGURES AT THE IRE.UB		
Established in	2016	
Staff statistics (2018)	Teaching and research staff	73
	Postdoctoral researchers	1
	Predoctoral researchers	1
	Other collaborators	4
	% of international members among the staff	1.27%
	Gender distribution of staff (% women)	58.23%
Research indicators (2016-2018)	ISI publications	89
	% of ISI publications in 1st quartile	15.73%
	Scopus publications	182
	% of Scopus publications in 1st quartile	28.02%
	PhD dissertations	183
	Financing secured (competitive)	€2.44 m
	Financing secured (non-competitive)	€0.68 m
	% international financing secured	25.51%
Director	Antonio Ramón Bartolomé Pina	abartolome@ub.edu

5. Research institutes in which the UB participates*

August Pi i Sunyer Biomedical Research Institute (IDIBAPS)	IDIBAPS Institut d'Investigacions Biomèdiques August Pi i Sunyer
Bellvitge Institute of Biomedical Research (IDIBELL)	IDIBELL Institut d'Investigació Biomèdica de Bellvitge
Barcelona Institute for Global Health (ISGlobal)	ISGlobal Barcelona Institute for Global Health
Institute for Research in Biomedicine (IRB Barcelona)	IRB Barcelona Institute for Research in Biomedicine; Excelencia Severo Ochoa
Institute for Bioengineering of Catalonia (IBEC)	IBEC Institute for Bioengineering of Catalonia; Excelencia Severo Ochoa
Josep Carreras Leukaemia Research Institute (IJC)	Josep Carreras Leukaemia Research Institute
Sant Joan de Déu Research Institute (IRSJD)	SJD Sant Joan de Déu Institut de Recerca
Centre for Research on Ecology and Forestry Applications (CREAF)	CREAF
Centre for Research in Agricultural Genomics (CRAG)	CRAG Centre for Research in Agricultural Genomics; Excelencia Severo Ochoa
Institute for Space Studies of Catalonia (IEEC)	IEEC Institut d'Estudis Espacials de Catalunya
The Barcelona Institute of Economics (IEB)	IEB Institut d'Economia de Barcelona. Centre de Recerca en Federalisme Fiscal i Economia Regional

*Selection based on impact of research and the relationship with the University of Barcelona

IDIBAPS
Institut D'Investigacions Biomèdiques August Pi i Sunyer

www.idibaps.org

August Pi i Sunyer Biomedical Research Institute

The **August Pi i Sunyer Biomedical Research Institute** (IDIBAPS) is a public research institute engaged in translational research in the field of biomedicine. Founded in 1996, its mission is to develop research of excellence that integrates basic biomedical and clinical science with the health problems of our society. IDIBAPS aims to contribute significantly to improving the health and quality of life of people through high-impact research.

The IDIBAPS scientific staff has been recruited by the Institute itself or from its constituent institutions: Hospital Clínic de Barcelona (HCB), the University of Barcelona School of Medicine and Health Sciences (UB), and the Institute of Biomedical Research of Barcelona under the Spanish Council for Scientific Research (IIBB-CSIC). Currently, seven group leaders are sponsored by the ICREA Foundation.

HR EXCELLENCE IN RESEARCH

Overall, more than 1,500 people are committed to the 110 research groups organized in five different areas:

Area 1. Biological aggression and response mechanisms
Area 2. Respiratory, cardiovascular and renal pathobiology and bioengineering
Area 3. Liver, digestive system and metabolism
Area 4. Clinical and experimental neuroscience
Area 5. Oncology and hematology

FUNDACIÓ CLÍNIC BARCELONA

As well as the significant number of original articles published each year (over 1,000), the Institute is outstanding for its growing implication in major national and international projects. The number of projects funded by the European Commission (more than 30) is notable, including two ERC consolidator grants and two ERC synergy grants. Also, the leadership of H2020 projects by IDIBAPS investigators is worthy of note. At national level, the participation of IDIBAPS in the Networked Biomedical Research Centres (CIBER), promoted by the Spanish Ministry of Science and Innovation, is also very significant. Finally, the ten spin-off companies created by IDIBAPS' researchers and the increasing number of license agreements demonstrate its commitment to transferring the results of research to society.

FACTS AND FIGURES AT THE IDIBAPS		
Established in	1996	
Staff statistics (2018)	Researchers	364 (R3); 110 (R4)
	Postdoctoral researchers	314
	Predoctoral researchers	422
	Technical support personnel	276
	Core facilities	41
	Management staff	100
	Number of nationalities represented among the staff	38
	Gender distribution of staff (% women)	63%
Research indicators (2015-2018)	ISI publications	5,274
	% of ISI publications in 1st quartile	66%
	Financing secured	€57.57 m
	Number of ERC grants	4
Transfer indicators (2015-2018)	Patents: 23 priority patents; 22 PCT; 12 national phases; 5 software; 6 spin-offs	
Director	Elias Campo Güerri	direccio@idibaps.org

Source: information and images provided by IDIBAPS

www.idibell.org

Bellvitge Biomedical Research Institute

The **Bellvitge Biomedical Research Institute** (IDIBELL) is a research centre in biomedicine founded in 2004. Its stakeholders are the Bellvitge University Hospital and the Viladecans Hospital of the Catalan Health Institute, the Catalan Institute of Oncology, the University of Barcelona and the City Council of L'Hospitalet de Llobregat. In 2017, the Centre for Regenerative Medicine of Barcelona (CMR[B]) began the establishment of the clinical translational programme for regenerative medicine in Catalonia (P-CMR[C]) with IDIBELL.

Our institution carries out applied research, which integrates knowledge and innovation in health and contributes to improving people's quality of life. Over one thousand IDIBELL researchers are organized in three thematic areas: cancer, neurosciences, and translational medicine; and in ten research programmes and more than 60 research groups. In 2019, a new regenerative medicine area was set up through the new P-CMR[C].

IDIBELL has the vision of becoming a biomedical research institute of **European excellence** by ensuring our results lead to innovation and knowledge transfer, and improved **healthcare** for citizens. **Translational research** is pivotal for the research centre and its closeness to the patient motivates our researchers to look for innovative solutions for health problems. **Research, innovation and society** are the bases on which researchers work every day in order to improve the quality of life of citizens.

RESEARCH AREAS AT THE IDIBELL

Cancer area
- Molecular mechanisms and experimental therapy in oncology programme
- Epigenetics and cancer biology programme
- Epidemiology, public health, cancer prevention and palliative care programme

Neuroscience area
- Neuroscience programme

Translational medicine area
- Diabetes and metabolism programme
- Genes, disease and therapy programme
- Cardiovascular, respiratory and systemic diseases and cellular ageing programme
- Digestive systems, diagnostics, pharmacogenetics, care support and clinical prevention programme
- Infectious diseases and transplantation programme

Regenerative medicine area
- Clinical translational programme for regenerative medicine in Catalonia

FACTS AND FIGURES AT THE IDIBELL		
Established in	2004	
Staff statistics (2018)	Research staff	1,291
	Fellows and administrative and service staff	69
	Number of nationalities represented among the staff*	40
	Gender distribution of staff (% women)	61 %
Research indicators (2015-2018)	ISI publications**	4,949
	% of ISI publications in 1st quartile**	59.38%
	Financing secured	€111.2 m
	Number of ERC Grants	4
Transfer indicators (2015-2018)	Patents: 17 priority patents; 17 PCT/EUR/USA patents; 4 spin-offs; 1 trademark	
Director	Gabriel Capellá Munar	gcapella@idibell.cat

*2017; ** 2014-2017 period

Source: information and images provided by IDIBELL

www.isglobal.org

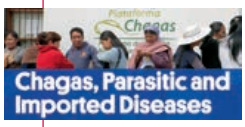
Barcelona Institute for Global Health

The **Barcelona Institute for Global Health** – ISGlobal – is a cutting-edge institution with the capacity to address global public health challenges through research, translation and education. ISGlobal has an ambitious vision as a world-class centre in research, translation and education in global health, working towards a world in which all people can enjoy health, and committed to improving global health and promoting health equity.

ISGlobal has a broad research portfolio in communicable and non-communicable diseases with special attention to environmental and climate health determinants.

RESEARCH IS ORGANIZED IN NINE DIFFERENT PROGRAMMES

Air pollution and urban environment. We analyse the health risks and benefits of the built environment and the exposures associated with urban living, including air pollution, noise, temperature and green spaces.



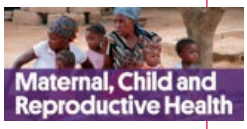
Chagas, parasitic and imported diseases. We are working to develop new drugs for the treatment of Chagas disease, as well as biomarkers of therapeutic response. In the field of imported diseases, we undertake clinical research and epidemiological surveillance.

Childhood and environment. We assess the effects of environmental pollutants, nutrition, and lifestyle (pre- and post-natal) on children's health and development, including neurobehavioural development, obesity and metabolism, as well as respiratory and mental health.

Climate and health. We investigate the effects that the environmental consequences of climate change (temperature, extreme precipitation events, heat waves, etc.) may have on human health, and we develop predictive computational models.

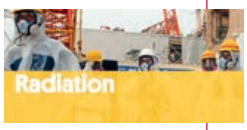
Malaria. Our work in malaria covers the whole spectrum from basic science to operational research on the implementation of interventions undertaken to reduce and, ultimately, eliminate malaria.

Maternal, infant and reproductive health. We study the infectious diseases that affect women and children in low-resource countries, including malaria in pregnancy and human papilloma virus as well as the impact of co-infection with HIV/AIDS. Other lines of work include the assessment of preventive measures, such as maternal immunisation, the identification of the main causes of death, and the study of inequities in maternal and reproductive health.



Non-communicable diseases and environment. We aim to study the causes and mechanisms of the development and progression of cancers and respiratory and allergic diseases throughout the life course, in high-, low- and middle-income countries. We focus on environmental, occupational and lifestyle determinants, and incorporate advanced epidemiological, bioinformatics and statistical methods.

Radiation. We investigate the effects on human health of different types of radiation: ionising radiation, including medical exposures and radiation from Chernobyl and Fukushima; and non-ionising radiation, such as that emitted by mobile communications devices. The aim is to assess the impact of radiation on public health and to improve the population's radiation protection.



Viral and bacterial infections. Our objective is to improve the diagnosis and treatment of infectious diseases, to understand the causes of antibiotic resistance, and to find new ways of combating infections. In addition, we study HIV/AIDS and tuberculosis, focusing on the problems of the epidemics in sub-Saharan Africa. Our work includes epidemiological and operational studies aimed at improving access to antiretroviral therapy as well as the evaluation of new tools for the diagnosis, treatment and prevention of tuberculosis.

FACTS AND FIGURES AT THE ISGLOBAL

Established in	2010	
Staff statistics (2018)	Research staff	199 (including 4 ICREA, 3 RyC, 3 Miguel Servet I)
	Administrative and technical staff	202 (62 admin + 140 technical staff)
	Number of nationalities represented among the staff	35
	Gender distribution of staff (% women)	65%
Research indicators (2015-2018)	ISI publications	1,592
	% of ISI publications in 1st quartile	76%
	Financing secured (2016-2018)*	€75.6 m
	Number of ERC grants	1 Advanced Grant / 1 Starting Grant
Transfer indicators (2015-2018)	11 patents; 1 spin-off; 1 software; 18 clinical guidelines	
Director	Antoni Plasència Taradach	antoni.plasencia@isglobal.org

Source: information and images provided by ISGlobal

*Since ISGlobal and CREAL merged in June 2016, the financing secured refers to the 2016-2018 period when the two institutions integrated their financial accounts

EXCELENCIA SEVERO OCHOA

www.irbbarcelona.org

Institute for Research in Biomedicine

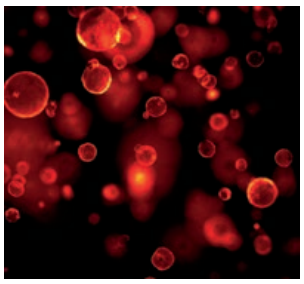
IRB Barcelona is a world-class research centre devoted to understanding fundamental questions about human health and disease. It was founded in October 2005 by the Government of Catalonia and the University of Barcelona (UB), and is located at the Barcelona Science Park.

The Institute's mission includes conducting multidisciplinary research of excellence at the unique junction of biology, chemistry and medicine; providing high-level training in the biomedical sciences to staff, students and visitors; driving innovation through active technology transfer to the benefit of society, and actively participating in an open dialogue with the public through a series of engagement and education activities.

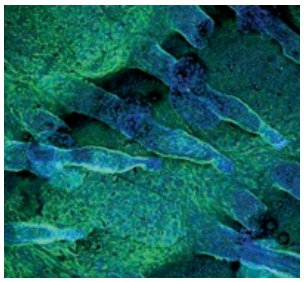
HR EXCELLENCE IN RESEARCH

RESEARCH AREAS AT THE IRB BARCELONA

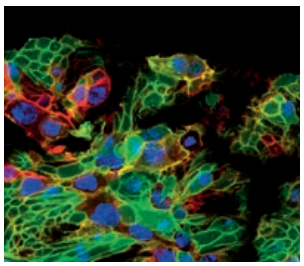
Cancer science: The Cancer Science programme strives to unravel the molecular, cellular and physiological processes that lead to cancer and the most deadly complication of this disease, metastasis. Detailed studies of the mechanisms responsible for malignant transformation and of the relationship between stem cells and cancer will improve the chances of finding solutions and thus making a significant difference to patients' lives.



Ageing and metabolism: Our ageing society brings with it significant challenges with respect to health. The Ageing and Metabolism programme focuses on deciphering the mechanisms underlying the ageing process and associated disruptions in metabolic pathways. Research efforts into these fields seek to develop precision therapies for ageing-related diseases, placing the emphasis on multi-morbidities, with the purpose of ensuring healthy ageing.



Mechanisms of disease: Human diseases are characterized by impairments in cellular and molecular functions. The Mechanisms of Disease programme is devoted to understanding the correct functions of cells and thus identifying the underlying bases of pathological conditions. The programme applies a highly interdisciplinary approach, involving genetics, proteomics and animal models of human disease, to provide answers to fundamental questions in the life sciences.



FACTS AND FIGURES AT THE IRB BARCELONA

Established in	2005	
Staff statistics (2018)	Research staff	254 (researchers at laboratories) 74 (technical staff at laboratories)
	Administrative and support staff	33 (core facilities) 53 (administration)
	Number of nationalities represented among the staff	29
	Gender distribution of staff (% women)	56%
Research indicators (2015-2018)	ISI publications	772
	% of ISI publications in 1st quartile	91%
	Financing secured	€104.5 m
	Number of ERC Grants	15
Transfer indicators (2015-2018)	12 total priority patents (12 EU or US Priority) 12 PCT applications 4 spin-offs 7 licenses	
Director	Francesc Posas Garriga	info@irbbarcelona.org

Source: information and images provided by IRB Barcelona

www.ibecbarcelona.org

Institute for Bioengineering of Catalonia

The **Institute for Bioengineering of Catalonia** (IBEC) is a research institute that develops interdisciplinary research of excellence, from basic research to medical applications, in the fields of biomedical engineering and nanomedicine. Its aim is to be an international leader in bioengineering and the technological partner of choice for hospitals, biomedical research centres and universities in the surrounding area.

RESEARCH AT THE IBEC

The novel vision promoted at IBEC is to exploit and connect the multidisciplinarity of its groups, aligning their complementary capacities through four broad areas of expertise:

- Nanomedicine: nanobiosensing; microfluidics; nanofabrication; beyond-AFM/ST microscopy tools to characterize biological samples at the nanoscale; nanorobotics; nanoscopy; drug delivery improvement; nano-scale characterization of bacterial-host interactions; organ/lab-on-a-chip.
- Mechanobiology: new technologies to measure physical forces at the cell-cell and cell-matrix interface; optogenetics to control cell mechanics; molecular mechanism that cells employ to sense and respond to rigidity.
- Cell engineering: cell reprogramming; control differentiation of stem cells; cell niches; biomaterials for regenerative medicine; cell-material interaction; biomimetics; cellular and molecular biology; antibacterial strategies.
- ICT for health: application of advanced information and communication technologies to healthcare, including modelling; signal processing; automatics/control software for robotics; theory of mind and brain; cognition.

To this end, IBEC focuses its scientific and technological work around three core application areas:

Bioengineering for future medicine, with the aim of developing technology that goes beyond the existing paradigm of hospital care to incorporate new areas such as photopharmacology, organs on chips and diagnosis based on the mechanical behaviour of cells and tissues. The future of medicine will mean personalised medicine, hand-held diagnostic platforms, wearable monitoring devices and other technological advances to make healthcare more effective, cheaper and more convenient.

Bioengineering for regenerative therapies, with the aim of developing regeneration technology to allow the creation of implants able to bring about the regeneration of damaged tissues or organs and to develop cell therapies.

Bioengineering for active ageing, with the aim of developing care and technology to meet the needs of an increasingly ageing population. Biomedical engineering can contribute greatly to improving the quality of life of older people.

RESEARCH AT THE IBEC		
Established in	2005	
Staff statistics (2018)	Research staff	299
	Administrative and support staff	47
	Number of nationalities represented among the staff	28
	Gender distribution of staff (% women)	49%
Research indicators (2015-2018)	ISI publications	496
	% of ISI publications in 1st quartile	77.4%
	Annual budget	€7.12 m (2015); €8.38 m (2016); €10.37 m (2017); €12.16 m (2018)
	Number of ERC Grants	4 Starting Grants / 2 Consolidator Grants / 1 Advanced Grant / 3 Proofs of Concept
Transfer indicators (2015-2018)	Priority patent applications (12); PCT applications (9); entry into national phases (8); spin-offs (1)	
Director	Josep Samitier Martí	j.samitier@ibecbarcelona.eu

Source: information and images provided by IBEC

www.carrerasresearch.org/en

Josep Carreras Leukaemia Research Institute

The **Josep Carreras Leukaemia Research Institute** (IJC) is an independent biomedical research institute (CERCA) launched by the Catalan Government in 2010. IJC performs biomedical research and personalized medicine in the field of malignant blood diseases, especially leukaemia. The Institute has close collaborations with hospitals and health centres, and promotes translational research. The staff includes many basic research scientists, who focus on the mechanisms that cause the disease to appear. They are in constant contact with health professionals and haematologists, who are the ones treating patients in hospitals, and together they try to answer questions such as why some forms are resistant to drugs, how to predict the response of each patient, and so on. This model speeds up research processes and aims at making discoveries and new treatments available to patients in a shorter space of time.

With the objective and commitment of making leukaemia a curable disease for everybody and in all cases, the **Josep Carreras Leukaemia Research Institute** covers lines of research principally in leukaemia, but also in other areas of blood cancers, such as lymphomas, multiple myeloma, myelodysplastic syndromes, and others. Transversal lines of research benefit all haematological patients, including improvements in bone marrow transplants (efficiency and secondary effects); epigenetic alterations, which can give rise to the development of tumour cells; clinical trials and studies into thrombosis and infections, which are the main causes of death in these patients.

The campus hosts several research institutions including the Institute for Health Science Research Germans Trias i Pujol (IGTP) and the Germans Trias University Hospital, affiliated with the Autonomous University of Barcelona (UAB). The Spanish Ministry of Health awarded Excellence status to the campus in 2014 and re-evaluation is pending in 2019. IGTP and IJC are subscribed to the European Charter and Code of Conduct for the Recruitment of Researchers.

IJC has access to state-of-the-art research facilities, including a computational cluster of 240 cores maintained by a dedicated systems administrator; biobanking; genomics; animal housing (rat, fish, mouse and pig); flow cytometry; microscopy (confocal, EM); bioimaging and proteomics and metabolomics; an immune and histopathology facility; state-of-the-art S2 level cell cultures, and a complete molecular biology and biochemistry laboratory, through collaboration agreements with an extensive number of scientific services in the Barcelona research hub. This includes high-end infrastructures such as the Alba synchrotron and the Barcelona Supercomputer Mare Nostrum.

RESEARCH LINES AT THE IJC

In 2019 the IJC is hosting 15 research groups and continues recruiting. Leukemia research at the Josep Carreras Leukaemia Research Institute is carried out within ten research lines:

1. Acute leukaemia
2. Chronic lymphoproliferative disorders
3. Chronic myeloproliferative neoplasms
4. Monoclonal gammopathies
5. Myelodysplastic syndromes
6. Hematological malignancies and coagulation
7. Complications associated with therapeutic processes
8. Haemopoietic stem cell transplant and cell therapy
9. Epidemiological research
10. Clinical research trials

FACTS AND FIGURES AT THE IJC

Established in	2010	
Staff statistics (2018)	Teaching and research staff	89
	Fellows and administrative and service staff	26
	Number of nationalities represented among the staff	13
	Gender distribution of staff (% women)	45%
Research indicators (2015-2018)	ISI publications	353
	% of ISI publications in 1st quartile	94%
	Financing secured	€3.62 m
	Number of ERC grants	1
Transfer indicators (2015-2018)	2 patents; 2 patents in progress; 1 spin-off	
Director	Manel Esteller Badosa	mesteller@carrerasresearch.org; mesteller@ub.edu

Source: information and images provided by IJC

www.fsjd.org/ca/irsjd_146921

Sant Joan de Déu Research Institute

The **Sant Joan de Déu Research Institute** (IRSJD) is a medical, academic and university centre devoted to answering the questions raised by pediatric medicine and the whole human developmental process. It was created in 2015 with the aim of formalizing scientific collaborations between research groups of the Hospital Sant Joan de Déu (HSJD), the University of Barcelona (UB), the Polytechnic University of Catalonia (UPC) and the Parc Sanitari (PSSJD) that had existed for a long time, and whose main objectives have always concerned the improvement of the pediatric patient.

The goal of the IRSJD is to meet new challenges in pediatric medicine by encouraging interdisciplinary research of the highest quality with a core focus on research into brain, cancer, adaptive response, metabolism and immunobiology, and technological innovation.

RESEARCH LINES AT THE IRSJD	
Neurosciences	Research in this area is translational and patient-oriented and it is based on clinical, diagnostic and treatment aspects (including clinical trials). It also incorporates more basic approaches, such as the search for new biochemical and molecular biomarkers and the study of pathophysiological mechanisms involved in genetic rare diseases, neurophysiological aspects and cognitive neuroscience research, and mental health lines.
Adaptive response, metabolism and immunobiology	As detailed in the descriptor of this complex research programme, different pediatric diseases caused mainly by environmental factors are studied, always considering the adaptive response as a fundamental factor. Thus, it is investigated in different areas: i) endocrinology and metabolism; ii) infectious and pediatric immune diseases, and iii) environmental factors and adaptive response.
Pediatric cancer	The research groups in this programme perform clinical, translational, and basic research on developmental tumours. Notable activities done by groups in this area include i) molecular diagnosis, performing all molecular and cellular biology techniques necessary for the molecular diagnosis, prognosis and clinical follow-up of patients affected by developmental tumors, and ii) translational research, focused on the identification of new diagnostic/prognostic markers, as well as new treatments for patients with developmental tumors.
Health technologies and innovation	The aim of this area is to bring design and technological problem-solving skills to research carried out at the IRSJD, to provide technological solutions and innovations to detected needs, and to promote innovation in existing solutions for broader market-available use.
Associated clinical research	An area formed by groups with great potential for collaboration with the Institute's other programmes, mainly in the development of biomedical devices creating transfer products or in the study of the impact of diseases on the development of the pediatric patient. In addition, the impact on the health system of these groups is high, since most of these lines investigate aspects of health and disease that involve numerous groups of patients.

FACTS AND FIGURES AT THE IRSJD		
Established in	2015	
Staff statistics (2018)	Teaching and research staff	421
	Fellows and administrative and service staff	178
	Number of nationalities represented among the staff	22
	Gender distribution of staff (% women)	69.62%
Research indicators (2015-2018)	ISI publications	1,508
	% of ISI publications in 1st quartile	56.75%
	Financing secured	€29 m
Transfer indicators (2015-2018)	3 priority patents; 10 PCT/EUR/USA patents; 6 SIPO/JPO/KIPO patents; 2 spin-offs	
Director	Francesc Palau Martínez	fpalau@sjdhospitalbarcelona.org

Source: information and images provided by IRSJD

CREAF

www.creaf.cat

Centre for Research on Ecology and Forestry Applications

Research, Innovation and Knowledge Transfer in Terrestrial Ecology

CREAF is a public research centre dedicated to terrestrial ecology and territorial analysis, producing knowledge and methodologies for conservation, management, and adaptation of the environment to global change.

The centre's objective is to work as a bridge between academia, administrations and society, promoting awareness and exchanging knowledge within its scope of activities, at the local, regional and global levels.

CREAF's research portfolio is wide and multidisciplinary, including advances in basic research as well as important contributions to environmental topics of significant socioeconomic impact.

Our science responds to the research needs of local and international governmental organizations.

RESEARCH FIELDS AT THE CREAF	
Global change • Climate change • Land use change and landscape dynamics • Fires • Biological invasions • Integrative and adaptive management of water and the landscape • Urbanization and biodiversity	**Earth observation** • Long-term ecosystem monitoring • GIS and remote sensing methodologies and applications • Regional and global environmental information services • Geospatial products and international standards
Biodiversity • Species distribution and phenology • Behaviour, ecology and evolution • Population and community dynamics • Ecological networks and species interactions • Evolutionary ecology	**Ecosystem functioning** • Stores and flows of water, carbon, and nutrients • Atmosphere-biosphere interactions • Soil function and restoration • Functional biogeography • Chemical ecology, ecotoxicology, metagenomics, and metabolomics
Cross-disciplinary topics • Forests • Mediterranean basin • Ecosystem services • Sustainability • Citizen science • Big data and data quality	  

FACTS AND FIGURES AT THE CREAF		
Established in	1987	
Staff statistics (2018)	Research staff	86 (CREAF, UAB, CSIC, UB, ICREA), 37 fellows
	Administrative and support staff	56
	Number of nationalities represented among the staff	10
	Gender distribution of staff (% women)	44%
Research indicators (2015-2018)	ISI publications	243
	% of ISI publications in 1st quartile	80%
	Financing secured	€3.51 m
	Number of ERC Grants	1 Synergy Grant
Director	Joan Pino Vilalta	Joan.Pino@uab.cat

Source: information and images provided by the CREAF

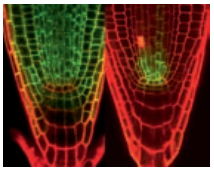
www.cragenomica.es

Centre for Research in Agricultural Genomics

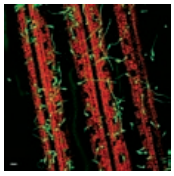
CRAG strives to translate the results of its research into benefits for society. It also aims to train the next generation of plant and farm animal scientists, who will play a vital role in helping to address the societal and global challenges of this century.

The **Centre for Research in Agricultural Genomics** (CRAG) is an independent organization established as a consortium of four Institutions: the Spanish National Research Council (CSIC), the Institute of Agrifood Research and Technology (IRTA), the Autonomous University of Barcelona (UAB), and the University of Barcelona (UB). This innovative arrangement **brings together diverse plant and farm animal research groups**, and provides a unique nurturing ground for research and training**.** In 2015 CRAG received the **Severo Ochoa Centre of Excellence** award and the **Human Resources Excellence in Research** accreditation.

Research at CRAG unites groups working on basic science in plant development, physiology, metabolism and genetics, groups in bioinformatics and genomics of plants and farm animals, and applied projects developed together with agbio, biotech, and breeding companies. CRAG therefore **brings together excellence in basic science and applied studies in close collaboration with industry.** The Centre is organized into **four different scientific programmes.** These programmes are supported by several state-of-the-art technological platforms, which are also open to the wider scientific community.

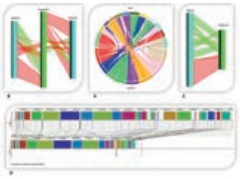


Plant development and signal transduction
The sessile nature of plants makes these organisms very versatile and plastic in growing and adapting to a broad range of, and changing, environmental conditions. The common aim of the programme is to understand how these changes affect different aspects of plant development. Using a multidisciplinary approach we study aspects such as light perception, photoperiod, circadian clock, hormone signalling, signal transduction, floral transition or flower development, and seed development and germination.



Plant responses to biotic and abiotic stress
Plants have sophisticated mechanisms to defend against attacks of pathogenic organisms and adverse environmental conditions. The research groups integrated in this programme are interested in knowing the molecular mechanisms of recognition, the signalling pathways operating and the responses of plants facing biotic and abiotic stress conditions, including the development of practical applications to potentiate resistances or implement corrective actions.

Plant metabolism and metabolic engineering
Plants are a primary source of nutrients, materials, and chemicals for humans. The Plant Metabolism and Metabolic Engineering programme aims to generate fundamental knowledge of how plants control their primary and secondary metabolism to respond to environmental cues and eventually improve the quality of plant products.



Plant and animal genomics
The aims of the Plant and Animal Genomics programme are to understand the genome organization, variability and evolution of different crops and domestic animals and to elucidate the genetics of important traits of species of agricultural interest.

FACTS AND FIGURES AT THE CRAG		
Established in	2003	
Staff statistics (2018)	Research staff	37 permanent (4 ICREA), 3 career track fellows (2 RyC) and 42 postdocs
	Fellows and technical, administrative and service staff	61 PhD students, 42 technical and 24 administrative
	Number of nationalities represented among the staff	26
	Gender distribution of staff (% women)	52%
Research indicators (2015-2018)	ISI publications	300
	% of ISI publications in 1st quartile	87.3%
	Financing secured	€29.4 m
	Number of ERC grants	1 Consolidator Grant / 1 Proof of Concept
Transfer indicators (2015-2018)	Patents: PCT entry (2); ES granted (1); priority applications (2)	
Director	José Luis Riechmann	Joseluis.riechmann@cragenomica.es

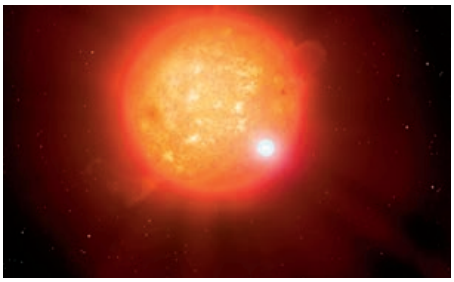
Souce: information and images provided by CRAG

IEEC
Institut d'Estudis Espacials de Catalunya

www.ieec.cat

Institute of Space Studies of Catalonia

The IEEC (**Institut d'Estudis Espacials de Catalunya**) is a research institute that studies all areas of space and space sciences, including astrophysics, cosmology, planetary science, Earth observation, and space engineering. Its mission is to push the frontiers of space research from the scientific and technological domains for the ultimate benefit of society. Its specific objectives are: to promote astronomical and space research; to become an internationally recognized centre in order to attract talent and foster collaborations both locally and worldwide; to be an efficient agent of knowledge, innovation and technology transfer in the field; and to raise science awareness in society by communicating scientific culture.



The IEEC was established in February 1996 a private, non-profit foundation to foster space R&D in Catalonia. It currently has a Board of Trustees composed of the Generalitat de Catalunya (Catalan Government), **the University of Barcelona** (UB), the Autonomous University of Barcelona (UAB), the Polytechnic University of Catalonia (UPC), and the Spanish Research Council (CSIC). The IEEC also belongs to the CERCA Institution – the government agency for research centres in Catalonia. The IEEC is structured in the form of four research units, which constitute the backbone of its R&D activity. Each of these units was created and is governed by the rules of one of the academic institutions that are members of the Board of Trustees.

The research units are:

- Institute of Cosmos Sciences – ICCUB (UB)
- Centre for Space Studies and Research – CERES (UAB)
- Research Group in Space Sciences and Technologies – CTE (UPC)
- Institute of Space Sciences – ICE (CSIC)

CURRENT RELEVANT PROJECTS AT THE IEEC		
Space missions: • Nanosatellites • ARIEL • LISA • Euclid • eXTP • Gaia • Geros-ISS • LISA Pathfinder • METOP • PLATO • RoHP-PAZ • Solar Orbiter	**Ground-based instrumentation:** • Montsec Astronomical Observatory • IRAIT • Warwick 1-m Telescope • CTA-Cherenkov Telescope Array • CARMENES • DES- Dark Energy Survey • DESI • MIRADAS • PAU-Physics of the Accelerating Universe	**Networks:** • Astronet-II (Marie Curie RTN) • Asterics • E-Gem • PHAROS (COST)

FACTS AND FIGURES AT THE IEEC		
Established in	1996	
Staff statistics (2018)	Research staff	68
	Fellows and administrative and service staff	130
	Gender distribution of staff (% women)	17%
Research indicators (2018)	ISI publications	378
	% of ISI publications in 1st quartile	85.7%
	Funding secured (competitive + contracts)	€2.7 m
Director	Ignasi Ribas Canudas	director@ieec.cat

Source: information and images provided by IEEC

IEB
Institut d'Economia de Barcelona

www.ieb.ub.edu

Barcelona Institute of Economics

The **Barcelona Institute of Economics** (IEB) is a research centre whose goals are to promote and disseminate work in applied economics, and to contribute to the debate and decision-making process in economic policy.

The excellent outputs, together with the quantity and quality of the seminars and workshops organized, the number of visiting researchers welcomed, and the number of working papers published as part of the IEB series, give credence to our excellence as a research centre and to our international vision and vocation, built on an enviable track record spanning almost two decades.

Given our particular interest in disseminating our research, our goal to stimulate broader public debates on relevant and compelling issues, and our impetus to provide guidance in the area of economic policy formulation, the Institute has been highly active in forging partnerships with academia, the public sector and business community. As part of this mission, the Institute publishes the IEB Reports (comprising the Report on Fiscal Federalism and Public Finances); the Info IEB, a widely circulated newsletter, and, since 2016, the Autonomous Community Financing Map.

The wide range of events we organize (e.g., symposia, conferences, workshops) serves to promote our research, and ensure that we reach a broad audience and make a rigorous contribution to debates on critical and relevant social questions.

The IEB was founded in 2001 and received a major boost with the creation of the IEB Foundation in 2008. The invaluable support of our trustees (Abertis, Applus, La Caixa, Naturgy, Barcelona City Council, the University of Barcelona and the Autonomous University of Barcelona) to the Institute have gone a long way to ensuring the continued success of our various endeavours. In 2018 we also benefitted from the support of Barcelona Provincial Council, the Institute for Fiscal Studies (IEF) and Agbar. The Institute hosts the Chair on Energy Sustainability at the UB (funded by the Foundation for Energy and Environmental Sustainability, FUNSEAM) and the Chair on Smart Cities at the UB (funded by the University of Barcelona), which as of 2019 is the City of Barcelona Chair on Urban Economics at the UB (with the support of Barcelona City Council).

RESEARCH AREAS AT THE IEB

Area 1. Fiscal federalism. Its primary goal is the study of the public finances and the political economy of multilevel governments (i.e., supranational, national, regional and local). Its research covers topics such as the effects of decentralization on the quality of public services, the effects of taxes on the mobility of individuals and firms, the effects of intergovernmental transfers on subnational decisions and the impact on the local economy, the political economy of the territorial allocation of public spending and transfers, the determinants of government quality at the local level and the effects on development, the coordination of fiscal policies across levels of government, and the relation between the design of multilevel government and country stability.

Area 2. The cities research programme has as its primary goal the study of the role of cities as motors of prosperity. The different lines of research currently being developed address such critical questions as the determinants of city growth and the social relations established in them, agglomeration economies as a key element for explaining the productivity of cities and their expectations of growth, the functioning of local labour markets and the design of public policies to give appropriate responses to the current problems cities face. The programme also receives support from the UB Chair on Smart Cities.

Area 3. Tax systems analysis. This programme aims at promoting high quality research in the field of taxation, taking into account not only the traditional approach to optimal taxation, but also administrative issues and decentralization or the globalization context. The ultimate aim of the programme is to generate socially useful knowledge in this field. Special emphasis is placed on empirical research, and on analysis of the Spanish tax system.

Area 4. The IEB research programme in infrastructure and transport. The aim of this programme is to promote research from an economic viewpoint, in order to generate knowledge that is useful to society and able to guide public policy. It focuses on the effects of infrastructure investments and transport policies on economic growth and the environment, and examines the impact of policies of regional distribution.

Area 5. The Chair on Energy Sustainability at the UB, which promotes research on the production, supply, and use of energy needed to maintain social welfare and development, placing special emphasis on economic, environmental, and social aspects. The three main areas of interest are energy sustainability, competition and consumers, and energy firms.

Area 6. Public policies. At the end of 2018, the IEB broadened its thematic research areas with the creation of the IEB research programme in public policies, which integrates the previous human capital programme. Thus, in addition to promoting analyses related to education and human capital, this new area includes research in innovation, labour markets, health economics and security policies, fundamentally from an economic perspective.

FACTS AND FIGURES AT THE IEB

Established in	2001	
Staff statistics (2018)	Research staff	44
	Fellows and administrative and service staff	35
	Number of nationalities represented among the staff	7
	Gender distribution of staff (% women)	32.1%
Research indicators (2015-2018)	ISI publications (2015-2018)	219
	% of ISI publications in 1st quartile (2015-2018)	11%
	Financing secured	€2.42 m
Director	José María Durán-Cabré	ieb@ub.edu

Source: information and images provided by IEB

6. Scientific and Technological Centres of the University of Barcelona

CCiTUB

Centres Científics i Tecnològics
UNIVERSITAT DE BARCELONA

The **Scientific and Technological Centres** of the **University of Barcelona** (CCiTUB) are a research infrastructure facility with the main goal of supporting research and innovation in the areas of chemistry, material sciences and biosciences. In order to accomplish this goal, the CCiTUB provide state-of-the-art characterization technologies and specialized technological advice to both the research community and industry. An important part of their task is aimed at methodological research in order to improve both the capabilities and infrastructure of the CCiTUB. They also have the mission to encourage and promote educational activities by organizing courses, scientific workshops, equipment demonstrations and technical seminars.

Additionally, the CCiTUB aim to enforce the university-industry relationship and promote innovation and technological transfer by participating in agreements and R+D+i projects with industry.

Currently, the CCiTUB occupy **more than 12,000 m²** distributed over four of the six campuses of the University of Barcelona. They have a staff of **170 highly qualified technicians** (50 with PhD qualifications) and manage a variety of instrumental technologies, grouped into **36 technology units**, which include all kinds of advanced characterization techniques and microscopy, nuclear magnetic resonance, mass spectrometry, spectroscopy, high-performance biotechniques, radiation protection and animal facilities.

Significantly, the **Nuclear Magnetic Resonance Unit** and the **Microscopy Applied to Materials Unit** have been recognized as nodes of Singular Scientific and Technological Facilities (ICTS) by the Spanish Government, making the University of Barcelona one of three universities recognized as having two nodes in Spain and the only one in Catalonia.

The **NMR Unit** is included in the R-LRB ICTS and plays an important role in the development of NMR at an international level, performing very high field NMR experiments to study the structure and dynamics of complex molecules of biological interest and advising pharmaceutical companies about new NMR applications. This NMR unit is also involved in other research areas such as chemistry, molecular, cellular and genetic biology, food science, technology and biotechnology.

The **Microscopy Applied to Materials Unit** is included in the ELECMI ICTS within the area of materials, an area in which CCiTUB have a large variety of characterization techniques that complement the electron microscopes themselves, such as microprobes, X-ray diffractometers, Raman microscopy, and so on. These techniques offer researchers the possibility of developing new methodologies without the limitations presented by disciplinary boundaries.

In 2005, the CCiTUB were accredited with the **ISO 9001:2000** certification for the quality of their management system. They are registered as **Agroalimentary Laboratories of Catalonia** and are also accredited by the **Food and Drug Administration** as a contract laboratory to carry out drugs tests.

Moreover, the CCiTUB are currently coordinating the Spanish Network for Advanced Optical Microscopy, created to facilitate knowledge transfer and to promote collaborations between different microscopy facilities, laboratories and institutes

whose activity involves basic research and/or development in optical microscopy and digital imaging. The **Advanced Optical Microscopy Unit** of the CCiTUB is recognized as a Spanish node in the Euro-BioImaging programme, a large-scale **pan-European research infrastructure project** within the European Strategy Forum on Research Infrastructures (ESFRI) roadmap.

The CCiTUB have an active user portfolio of **4,250 users**, and their services are accessed by more than one thousand users every year. These users come from different departments and institutes of the University of Barcelona, other universities and public bodies and industry. Industrial customers represent many different sectors of the economy, including the pharmaceutical, cosmetic, chemical, environmental, health, food, automotive and energy sectors.

Specifically, during 2018, the CCiTUB worked for 420 researchers and 50 departments of the University of Barcelona. The CCiTUB also provided services to 550 investigators from 92 public institutions, and 310 users from private companies. Approximately 85% of these private companies are SMEs with headquarters in Catalan territory and, every year, 50 new companies join the user portfolio of the CCiTUB.

The experience of the CCiTUB has shown that the involvement of technical support staff in research projects is becoming more essential as they are responsible for delicate and highly innovative techniques, which are difficult to execute and require very specific training and knowledge, rarely found within a single research group or a specific department level.

It is particularly interesting to note that the work carried out at CCiTUB laboratories usually involves the participation of several technological units, which reflects the CCiTUB's ability to respond to problems that require multidisciplinary application and the use of different and complementary techniques. Thus, the CCiTUB guarantee comprehensive care for a high number of research projects by coordinating human resources and high performance equipment.

More information: www.ccit.ub.edu
Twitter: @ccitub

* Images, from top to bottom:
– Field emission scanning electron microscope
– Electron microprobe
– High-resolution transmission electron microscope with EDX spectrometer, STEM detector and precision electron diffraction system
– Field emission high-resolution transmission electron microscope with EELS spectrometer, STEM detector and precision electron diffraction system

7. UB Doctoral School

The **Doctoral School** of the **University of Barcelona** (EDUB) has organized doctorate studies at the UB since 2013. Its creation was approved by the Order ECO/119/2013 of 7 June (DOGC 19 July 2013) in order to organize, within the framework of the University's scientific policy, the professional training of doctoral students. In this sense, it provides researchers with an interdisciplinary approach linked to a coherent scientific project and organized within the framework of doctoral programmes.

The EDUB manages UB doctoral studies and activities in all areas of knowledge. In this way, an optimal transversal approach is ensured and this contributes to coherence in the international development and profile of the doctoral training on offer.

UNIVERSITAT DE BARCELONA

Escola de Doctorat

Mission and vision

The mission of the Doctoral School of the UB is the academic and administrative organization of doctoral programmes, so that students are able to obtain doctoral degrees. It also promotes excellence, visibility and internationalization.

The vision is to promote and support academic excellence for the creation and transfer of knowledge in doctoral training, and to become a unit that contributes to the consolidation of research at the UB as an internationally recognized university of excellence.

Objectives

The strategic objective of the UB Doctoral School is to be an organizational model, both academic and administrative, of doctoral programmes guaranteeing the quality of the academic offer as well as the efficiency of its management.

The general objectives are the planning, development and monitoring of doctoral programmes and other training activities in the field of research, with special attention to a transversal and multidisciplinary approach.

The School in numbers*

48	**4,690**	**1,494** (31.7%)
DOCTORAL PROGRAMMES	PhD STUDENTS	INTERNATIONAL PhD STUDENTS
541	**76**	**108**
THESES DEFENDED	DEGREES WITH INTERNATIONAL MENTION	EXTRAORDINARY DOCTORAL AWARDS
21	**574**	**18 PROJECTS**
CO-TUTORSHIP AGREEMENTS	GRANTED PhD STUDENTS	INDUSTRIAL DOCTORATES

*Source: *The University of Barcelona in figures* (October 2019)

Training activities

In addition to the writing of theses, doctoral training also consists of specific and transversal training activities. Each doctoral programme requires training and a minimum number of hours to fulfil this requirement.

Specific training activities

These are particular to each doctoral programme and related to its research field. Check the specific activities offered and requested by each programme.

Transversal training activities

The UB Doctoral School (EDUB) organizes several transversal training activities to offer complementary training, alongside specific research training. These activities are open to all researchers enrolled in a doctoral programme at the University of Barcelona. Each participant receives an accrediting certificate that will be recognized as proof of transversal training by every doctoral programme.

These activities, called training capsules, are structured in different formats and scheduled throughout the academic year. They are free for all students enrolled in a UB doctorate.

Some of the capsules that have already been offered include the following:

- *How to disseminate my doctoral thesis*
- *Compressed statistics for non-statisticians*
- *Open science*
- *How to communicate the results of my research*
- *Ethics in research*
- *Stress control during a doctoral degree*
- *What to do after a doctorate?*
- *Workshop: practical guide for new doctoral supervisors*
- *What is entrepreneurship? What does it mean to be an entrepreneur?*

International mobility

The EDUB offers doctoral students the possibility of completing a research stay abroad within the framework of the Erasmus+ programme.

The Erasmus+ programme is an EU-funded exchange programme for students of universities of the 33 participant countries (28 EU member states, Norway, Liechtenstein, Iceland, Turkey and Macedonia).

The number of mobility places offered depends on the agreements between the UB Doctoral School and these countries.

More information: www.ub.edu/escola_doctorat/
Twitter: @DoctoratUB

8. Communication and dissemination

8.1. Science communication

La UB divulga

Press Office

Since the early 1990s, the Press Office of the University of Barcelona has employed journalists who are specialized in scientific communication and been in charge of publishing research results in the media. The Press Office produces news, articles, press releases and press conferences, and keeps UB researchers in contact with local, national and international journalists. It also helps journalists get in touch with experts. About 40% of press hits are related to news about research results.

- **Press clipping**: the Press Office provides staff with information of media coverage in press and on radio, TV and online platforms.
- **Expert guide**: teaching and research staff can participate actively in the media as experts.
- **The Conversation**: by established agreement, teaching staff can write articles related to their lines of research to be published on this international platform.
- **Eurekalert and Alphagalileo**: two platforms to disseminate research data globally.
- ***A bord del Beagle*:** episodes of this audiovisual series give voice to the teaching and research staff of the UB who try to answer current affairs issues in a communicative way.

More information: premsa@ub.edu

8.2. Scientific Culture and Innovation Unit

Scientific communication and dissemination at the UB is based on several different strategies. Regarding the communication of research results, carried out by the Press Office, the aim is to improve the visibility of research carried out at the UB. To this end, there are several strategies to widen the range and effects of scientific communication.

The main objective of the dissemination activities carried out by the **Scientific Culture and Innovation Unit** (UCC+i) is to improve the scientific culture of the population and to promote scientific vocations.

In order to do so, the UCC+i designs an activity programme for the general public every year, taking a multidisciplinary and cross-sectional approach to encourage collaboration and set up synergies among researchers from all knowledge fields, departments and research centres that are part of the University of Barcelona, optimizing proposals that are already in place, and presenting new projects.

The current programme includes upkeep of the UCC+i's communication channels with society, such as its website and social networks, and projects such as:

- **Camins infinits**: young researchers in training who visit primary and secondary schools.

- **ArqueUB**: activities to bring the world of archaeology closer to citizens.
- **Toc-toc** (knock knock): lectures and activities by UB researchers in bodies and institutions such as civic centres, libraries, schools, and so on.
- **Discover La UB Divulga**: internal lectures where UCC+i encourages researchers to work on dissemination by sharing information about the unit.
- **Animated Science**: animated videos with scientific content, made in three languages, which include episodes on topics such as scientific method, shadows, a balanced diet, and sustainable tourism.
- **Botanical tours.**
- **The UB Science Festival**: where more than 200 researchers offer practical activities for over 2,000 visitors.
- Participation in fairs and external events with hands-on activities, led by researchers from the University. For instance, we take part in the **Saló de l'Ensenyament de Barcelona** education fair and the Mobile World Congress's youth mobile festival, **YoMo Barcelona**.
- **Comas i Solà contest**: a short film competition where researchers in training present their research studies to the audience. This initiative seeks films that show and tell the research that these UB training researchers are carrying out.

More information: www.ub.edu/laubdivulga
Twitter: @UBDivulga
Facebook: https://www.facebook.com/LaUBdivulga/
Instagram: @UBDivulga

9. The Bosch i Gimpera Foundation

The **Bosch i Gimpera Foundation** (FBG) is the **technology transfer** and **innovation unit** of the **University of Barcelona**. The FBG is responsible for transferring the results of the research carried out at the UB to society through the creation of spin-offs, patent licensing, and contracts with companies and institutions, thus contributing to the competitiveness of the business framework and the improvement of social welfare. In 2018, collaborations between the UB and different socio-economic agents enabled the development of **640 projects and contracts valued at €32.65 million**. During the period 2016-2018, **41 technologies** have been licensed and **7 spin-offs** created.

Bosch i Gimpera
UNIVERSITAT DE BARCELONA

Activity indicators in 2018

789 projects
32.65 million euros through UB contracts
640 companies and public institutions have developed R&D+I projects with the University of Barcelona through the FBG

50 new invention disclosures
16 priority patent applications
69 new patents filed
37 patents granted
15 license agreements

2 new spin-offs
18 assessed ideas

852 people hired within research projects

63 managed grants

15.79 million euros of grant revenues
43 grants awarded both by public and private institutions and companies, with a revenue of 4.21 million euros
20 grants awarded by the European Commission with a revenue of 11.58 million euros

Since 2016, the FBG is co-financed by the European Regional Development Fund (ERDF) through the REINNOVA UB-FBG project.

Research projects and services managed through the FBG (2016-2018)

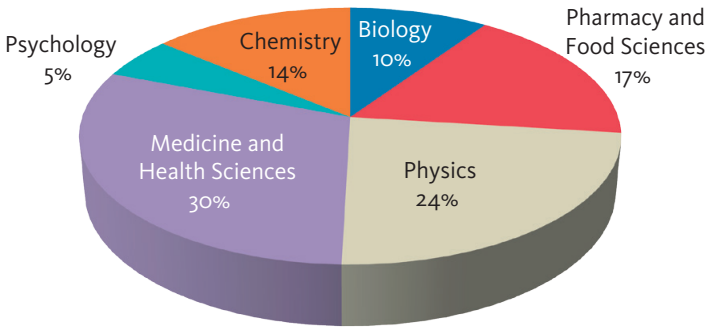
The Bosch i Gimpera Foundation manages projects jointly developed by research groups, departments and research institutes of the University of Barcelona and public and private bodies, such as collaborative or commissioned R&D; advisory and consultancy work for third parties; the drafting of studies, reports and opinions, and technical support and analysis services, among others. The average of this activity in the 2016-2018 period amounted to **12 million euros** and **632 projects and service contracts**.

Patents, valorization and licensing (2016-2018)

As for patents, valorization and licensing, **41 license agreements** were signed from 2016 to 2018. In addition, in 2018 **17 European patents** were also applied for through the FBG, together with the UB Patent Centre, making the University of Barcelona the leading Spanish university in terms of the number of European patent applications.

	2016	2017	2018	Total 2016-2018
New invention disclosures	53	55	50	**158**
Priority patent applications	13	12	16	**41**
New patents filed	76	77	69	**222**
Granted patents	35	64	37	**136**
License agreements	17	9	15	**41**

New patents filed 2016-2018



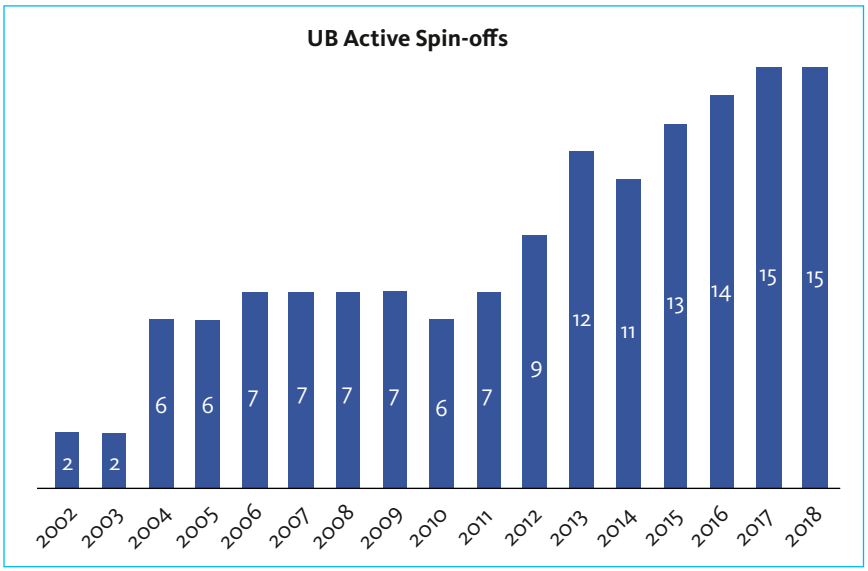
Business creation and support for the entrepreneur (2016-2018)

From 2016 to 2018, the FBG collaborated in the creation of **7 innovative companies** arising from UB projects. Furthermore, **84 entrepreneurial projects** were given guidance.

The FBG is responsible for monitoring spin-offs in which the University of Barcelona is a shareholder through Innovative and Scientific Culture UB (CIC-UB). From 2016 to 2018, CIC-UB became shareholder in **4 spin-offs**:

bluephage	**Bluephage, S.L.** Development and commercialization of solutions for the control of safety and quality of water by microbiological indicators
ColorSensing tracking true colors	**Color Sensing, S.L.** Colour correction of digital images
DBGen OCULAR GENOMICS	**DBGen, S.L.** Ocular diagnosis
ENLIGHTING TECHNOLOGIES	**Enlighting Technologies, S.L.** Development of intelligent lighting systems

From 2016 to 2018, the UB spin-offs in which the UB is a shareholder received €10.3 million in public and private funding, and have generated an **aggregate income of more than €14.5 million**.



UB research groups awarded TECNIO certification

TECNIO certification, created by the Government of Catalonia through ACCIÓ, identifies differential applied technology providers and facilitators. The Bosch i Gimpera Foundation obtained TECNIO certification in 2016 as a facilitating body that offers companies a portfolio of market-ready, developed technologies in different scientific/technological areas. In addition, nine UB research groups have obtained TECNIO certification as developers. This certification identifies research groups that develop differential technology for companies or facilitate its use.

TECNIO-certified UB groups in 2018 are:

CELL TEC UB	**CELLTEC UB** – Cellular and Molecular Technology Research Centre
UB CEMIC	**CEMIC** – Micro-Nanosystems for Instrumentation and Communications Engineering Centre
CERETOX Centre de Recerca en Toxicologia	**CERETOX** – Toxicology Research Centre
CPT MORE THAN COATINGS	**CPT** – Thermal Spray Centre
Diopma	**DIOPMA** – Centre for Design and Optimization of Processes and Materials
SDM Servei de Desenvolupament del Medicament	**SDM** – Medicine Development Centre
Creatio Production and validation center of advanced therapies UNIVERSITAT DE BARCELONA	**CREATIO** – Production and Validation Center of Advanced Therapies
DATA SCIENCE @ UNIVERSITAT DE BARCELONA	**Data Science@UB**
MAiMA ISÒTOPS ESTABLES I MINERALOGIA	**MAiMA** – Stable Isotopes and Mineralogy Group

Reference networks

In 2018, the Bosch i Gimpera Foundation managed six of the **eight reference networks** currently promoted by the Catalan government:

- **XaRTA**, R&D&I reference network that coordinates excellence in food technology research teams
- **XREAP**, reference network for research in applied economics
- **XREPP**, reference network in economics and public policies
- **XRQTC**, reference network in theoretical and computational chemistry
- **XRB**, Catalan biotechnology reference network
- **XRAQ**, research reference network in aquaculture

In the 2016-018 period we started new projects that have strengthened the synergy between scientists, research groups, entrepreneurs, investors, and industry.

- **Science + Partners event**, which brings together people from the business world and investors (Partners) and researchers (Science) who lead projects that are advanced enough to be transferred.
- **F2I grant fund**, which has distributed €155,000 to boost innovation and transfer among researchers at the University of Barcelona.

Contact: www.fbg.ub.edu / Tel: +34 93 403 99 00 / Email: fbg@fbg.ub.edu

10. Barcelona Science Park

The **Barcelona Science Park** (PCB) leads research, knowledge transfer and innovation through smart management of spaces, services and relationships. Our aim is to dynamize the PCB community – more than 2,800 researchers, entrepreneurs and business leaders, especially in the life sciences – to turn ideas into innovations.

Created in 1997 by the University of Barcelona, the PCB has over 30,000 square metres of offices and laboratories, as well as a wide range of scientific and technological services designed specially to facilitate R&D in the health and life sciences. The PCB's range of flexible, modular spaces to meet clients' needs allows us to accompany businesses as they grow and develop. We have a diversified catalogue of spaces that range from co-working rooms (offices) and shared laboratories, perfect for entrepreneurs and companies just getting started, to R&D laboratories that can adapt to the needs of large pharmaceutical or medical technology companies.

The scientific services of the PCB also adapt to demand, ranging from self-service access to basic technology through custom projects conducted through PCB platforms, research centres and UB services at the Park.

This setting also features an ideal space for specialized scientific and non-scientific service companies (bioinformatics and information technology, patents and intellectual property management, business development, investment funds, training, etc.) and companies from a variety of sectors, including chemicals, cosmetics and the environment.

The PCB offers an environment that promotes interaction and collaboration among the first-class research bodies and companies it houses. To dynamize the PCB community and connect it with the national and international innovation ecosystem, the Park organizes an extensive programme of activities (seminars, conferences, networking sessions, informal meetings, etc.) and has created shared spaces in all of its buildings to help generate synergies, boost cooperation and identify business opportunities.

One of the points that sets the Barcelona Science Park apart from other facilities is its wide range of scientific and technological services, geared towards both on-site clients and external research groups from here and other countries. This offering is complemented by a series of professional and general services, exclusively for on-site companies and institutions, and a programme to dynamize the PCB community that seeks to boost interaction among members and the innovation ecosystem.

Parc Científic de Barcelona
UNIVERSITAT DE BARCELONA

Dynamization activities

The PCB promotes a programme of 20-25 activities per year (networking events, conferences, panel discussions, training workshops, delegations to fairs, leisure activities, etc.) that aim to promote interaction and collaboration among members of the PCB community and key stakeholders in the national and international innovation ecosystem. Moreover, the Park hosts around 300 events each year (seminars, conferences, congresses, courses, etc.) held by on-site and external organizations, most of which are open to the community.

Scientific and technological services (exclusively for on-site companies and organizations)

On-site clients of the PCB are part of a pass system that gives them the following benefits: self-service access and set rates by volume of use to our package of Core Scientific Services (SCC). The pass system also gives access to the radioactivity facility, the *Drosophila* service, the shared chemistry room and the special reaction service (open to external clients).

PCB Community

The Barcelona Science Park brings together more than 50 companies (on-site and associated), large research centres, 12 units and scientific services of the University of Barcelona and 15 non-profit organizations: a dynamic, innovative community of over 85 organizations and 2,000 professionals.

Hosted bodies

Companies

AELIX, ÁlamoConsulting, ALTHEA, aromics, asderco, AVINENT Implant System, AVX PHARMA, BAULA, bicosome, bionure, BioSeed Capital, cebiotex, Chemotargets, CIRCE, CYTES, Danone artificial nature, BioLab, DROPLITE, embryotools, enantia, ENDOR, EQA, ESTEVE, clínica eugin, Farmaprojects, funbrain, GAIN THERAPEUTICS, GalChimia, GENESIS Biomed, Global Remediation, GlyCardial Diagnostics, Greenaltech, HIPRA, idpharma, Instituto Empresarial de Biotecnología, inbitec, Iproteos, LeanBioPro, Lodo Therapeutics, MEDICAL ONE, METEO SIM, MOIRAI BIODESIGN, MOLOMICS, Mosaic Biomedicals, Northern Biologics, NTF Neuroscience Technologies, NBS Newborn Solutions, Nutraceutical OTC, OilFlux, ONA Therapeutics, ONCOKIDS BIOSCIENCES, ORDESA GROUP, Pharma Mar, Pharmaphenix, ProteoDesign, QIAGEN, senolytx, SiTec PharmaBio, SOM BIOTECH, Syna Therapeutics, thepapermill, UNIMED, Vesimin Health, VLC, Whole Genix, XENOPAT, ZBM PATENTS & TRADEMARKS, ZBM BUSINESS CONNECT

R&D centres

cnag, CRG, grr Grup de Recerca de Reumatologia, IRB BARCELONA, IBEC Institute for Bioengineering of Catalonia, ibmb Institut de Biologia Molecular de Barcelona CSIC, ICCUB

Non-profit organizations

ACER, biocat, CataloniaBio & HealthTech, eit Health, europeGIEB, European Federation of Biotechnology, DTI, Fundació FCBarcelona, Fundació GAEM, LEITAT Technological Center

University of Barcelona groups, units and services

UNIVERSITAT DE BARCELONA

Biomolecular NMR
Developmental Neurobiology and Cell Regeneration Group
Microbial Biotechnology and host-pathogen interaction
Macrophage Biology Group
Patents Center
Research Group on Marine Geosciences
Translational Immunology Group

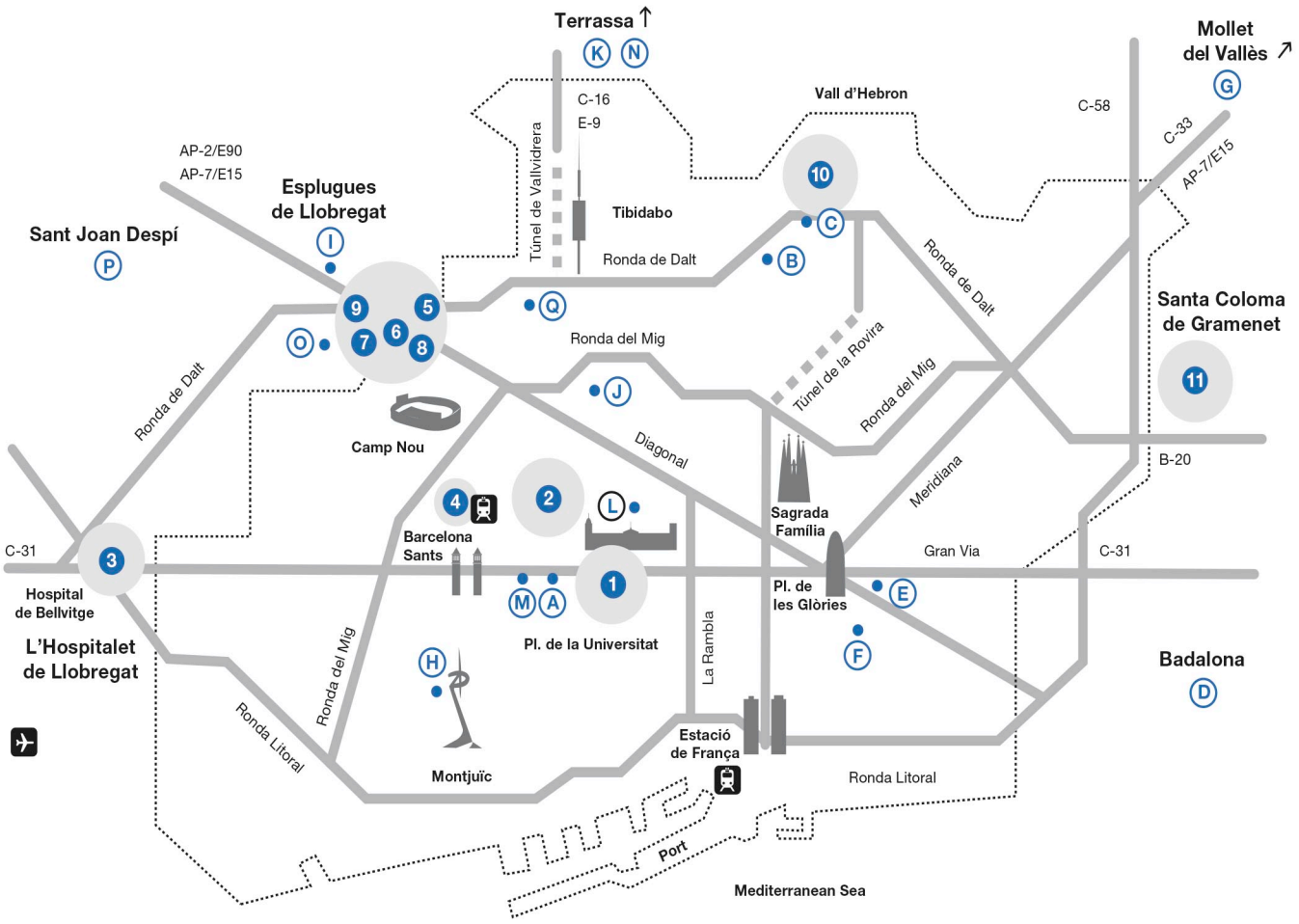
CCiTUB Centres Científics i Tecnològics UNIVERSITAT DE BARCELONA

Bosch i Gimpera UNIVERSITAT DE BARCELONA

IBUB

Associated entities

arian international, BSG, BRUKER, eurofins BioPharma Product Testing, fiN, Funseam, Pharmaphenix, Recipharm, Uquifa



1 Humanities Campus
- Rector's Office, General Manager's Office and general services
- Faculty of Philology and Communication
- Faculty of Philosophy
- Faculty of Geography and History
- Faculty of Mathematics and Computer Science

2 Medicine Campus Clínic August Pi i Sunyer
- Faculty of Medicine and Health Sciences
- Hospital Clínic of Barcelona
- Hall of Residence Ramon Llul

3 Bellvitge Health Sciences Campus
- Faculty of Medicine and Health Sciences
- University Hospital of Bellvitge

4
- Faculty of Information Science and Audiovisual Media

Barcelona Knowledge Gateway Campus

5
- Faculty of Economics and Business
- Faculty of Law

6
- Faculty of Biology
- Faculty of Chemistry
- Faculty of Earth Science
- Faculty of Fine Arts
- Faculty of Pharmacy and Food Science
- Faculty of Physics

7
- Barcelona Science Park

8
- Penyafort-Montserrat Hall of Residence
- Aleu University Residence

9
- Sports UB

10 Mundet Campus
- Faculty of Education
- Faculty of Psychology
- Institute of Education Sciences

11 Food and Nutrition Torribera Campus
- Faculty of Pharmacy and Food Science

A
- Area of Further Training (AFC)
  School of Modern Languages (EIM)

B
- Center for International Historical Studies (CEHI)

C
- CETT University School of Hotel Management

D
- El Carme Cultural Centre
  Area of Further Training (EIM)

E
- Humanities and Social Sciences Park

F
- Institute for Lifelong Learning (IL3-UB)

G
- Institute of Public Safety of Catalonia (ISPC)

H
- National Institute of Physical Education of Catalonia (INEFC)

I
- Sant Joan de Déu University School of Nursing

J
- Sant Jordi Hall of Residence

K
- School of Cinema and Audiovisual Studies of Catalonia (ESCAC)

L
- School of New Interactive Technologies (ENTI)

M
- School of Public Relations (ESRP)

N
- School of Trade and Distribution (ESCODI)

O
- Student Suport Service (SAE)

P
- Torre de la Creu
  Area of Further Training (EIM)

Q
- Finca Pedro Pons
- CEI International Affairs
- Ombuds Officer
- Doctors' Senate

UNIVERSITAT DE BARCELONA

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University of Barcelona
Gran Via de les Corts Catalanes, 585
08007 Barcelona
Tel.: 934 021 100
www.ub.edu