

The Rise of Research in Catalonia

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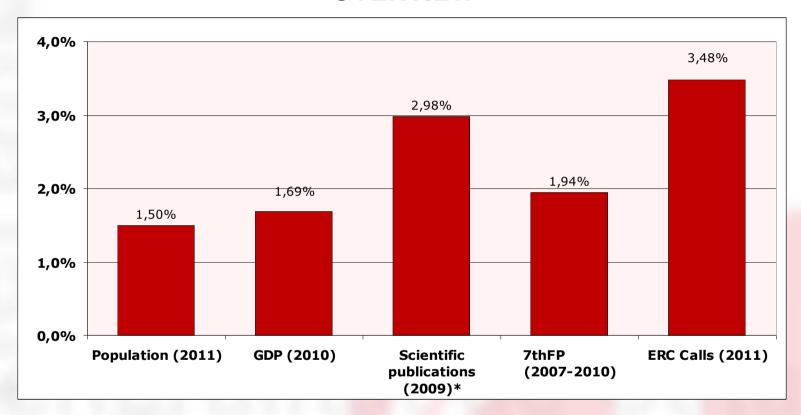
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1. Current picture

OVERVIEW



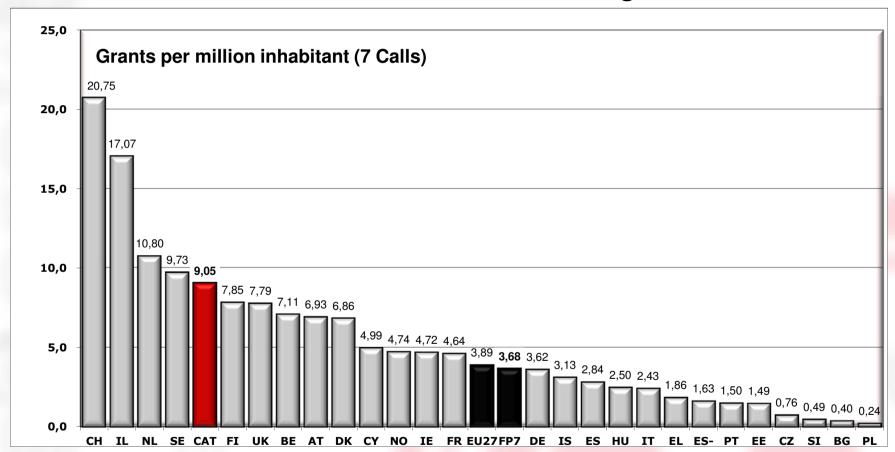
Catalan indicators: ratio as percentage of European values

Population, GDP and ERC calls: EU-27

Scientific publications: EU-25 7th Framework Program: FP7 area

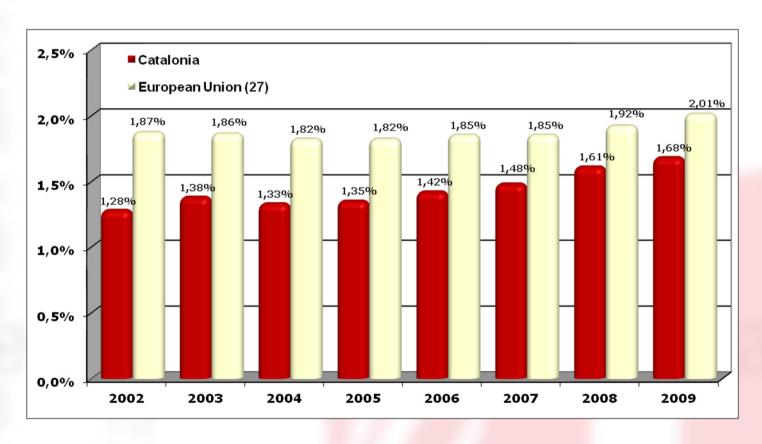
^{*} Source: Mendez, R.; Suñen, E. i Rovira, L.: National Science Indicators 2009

SCIENTIFIC EXCELLENCE: ERC grants



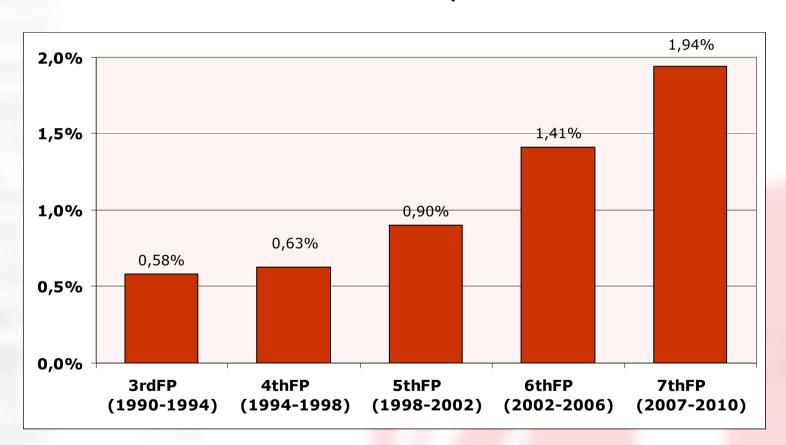
Switzerland (CH), Israel (IL), The Netherlands (NL), Sweden (SE), Catalonia (CAT), Finland (FI), United Kingdom (UK), Belgium (BE), Austria (AT), Denmark (DK), Cyprus (CY), Norway (NO), Ireland (IE), France (FR), European Union (EU27), Framework Programme Area (FP7), Germany (DE), Iceland (IS), Spain (ES), Hungary (HU), Italy (IT), Greece (EL), Spain excluding Catalonia (ES-), Portugal (PT), Estonia (EE), Czech Republic (CZ), Slovenia (SI), Bulgaria (BG), Poland (PL).

R&D EXPENDITURE [% GDP]

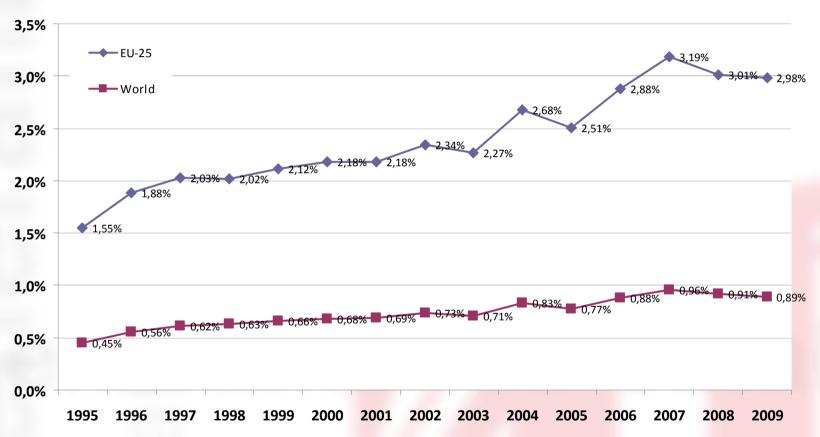


The R&D expenditure in Catalonia has undergone a sustained growth in the last decade

ATTRACTION OF EU FUNDING (FRAMEWORK PROGRAMS)



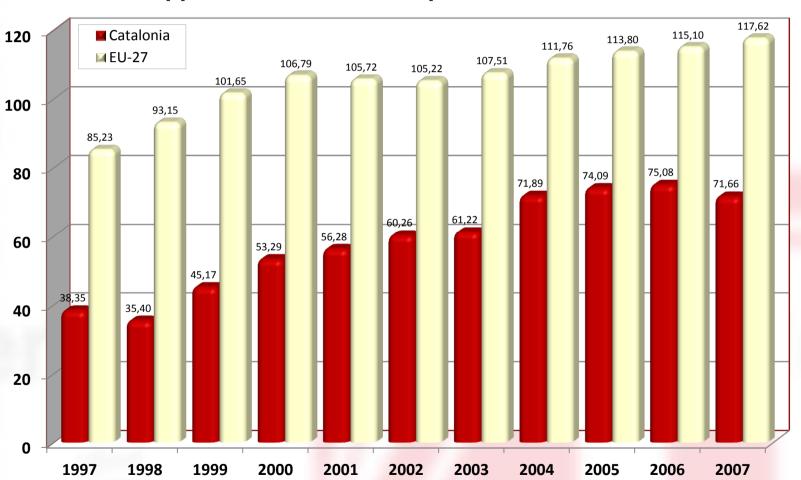
SCIENTIFIC PUBLICATIONS: Catalan share vs EU and the world



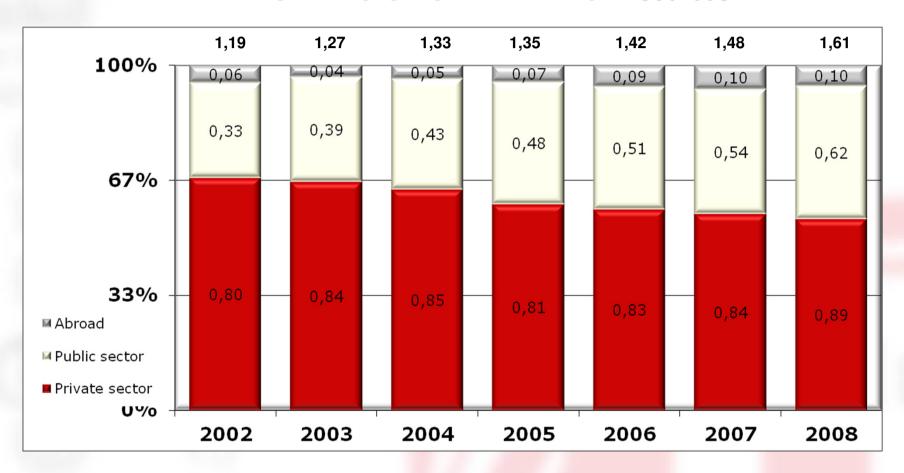
Source: Mendez, R.; Suñen, E. i Rovira, L.: National Science Indicators 2009

Data 2009 for Catalonia: 10,643 papers (1.43 papers / thousand inhabitants); 2,98% of Europe's and 0,89% of the world's totals.

INTELLECTUAL PROPERTY: Patent applications to the EPO per million inhabitants



FUNDING OF CATALAN R&D: sources

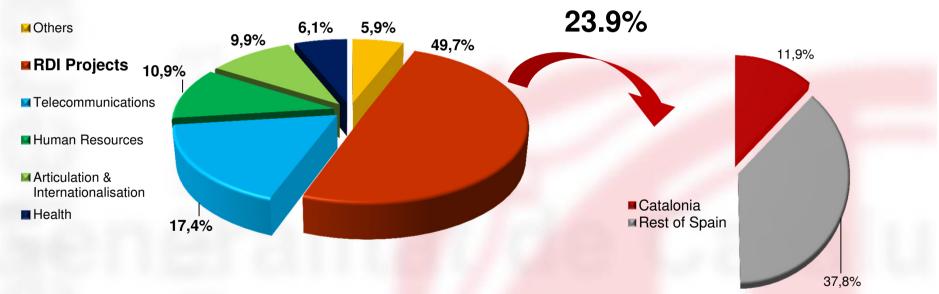


Data as % of GDP and as percentage of total R&D funding

3. Research funding

SPAIN

From the mid-eighties, projects have been awarded in Spain in an open and competitive basis. The temptation to distribute research funds among Universities and Research Institutions in an ad-hoc fashion was resisted



Competitive funding from Spanish Government: 49.27 % of National Plan for RDI (data 2008)

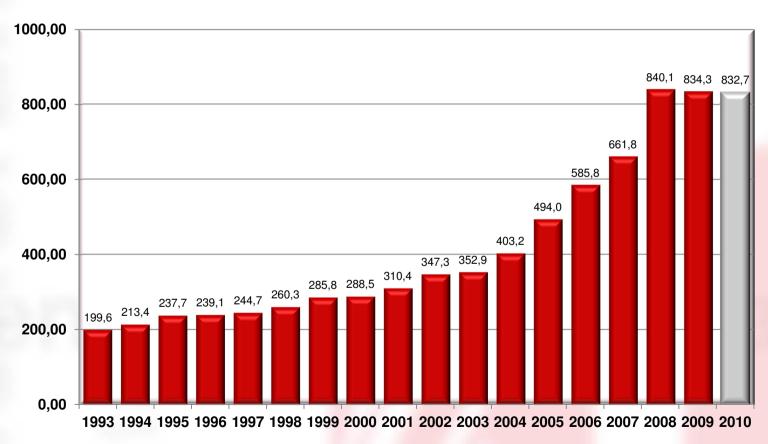
Catalonia receives 23.9 % of the Spanish Government Competitive funds

Source: FECYT, SISE 2009

3. Research funding

CATALONIA

R&D Budget Commitment from the Catalan Government. Evolution 1993 – 2010



Budget (in M€): expenses on R&D from all departments of the Catalan Government

3. Research funding

EU: FEDER Structural Funds

Period	EU FEDER funds for R&D [M€]	% of total FEDER funds received
2000-2006	555.83	14.1
2007-2013	450.93	39.5

Evolution EU FEDER funds received in Catalonia for Competitiveness, Innovation, Research and Development, and percentage of total FEDER funds received for the periods indicated

- **TALENT**
- **RESEARCH CENTERS**
- LARGE FACILITIES
- SYSTEM CONSOLIDATION



pproaching Bax sions by plane over the axure Mediterranean Sea offers breat haking views. The city's beachfrost and landmark slews. The citys beachtrons and annumer sleyscopers reveal why the proud-capital of Catalonia has become a major tourist destination. And Cananias has become a major tourist destination. And in the midst of that vista, the-omega-shaped complex of the Baroolona Biomedical Research Park (BBAP) not only complements the city's architectural style, but signifies the city's growing ambitions in science.

Spanish science-stagnated under a 48-year right-wing dictatorship followed by 30 years of, at best, timid

reforms. But from 2004, the newly elected Socialist government increased science funding by 60% and started tackling the bureaucracies that obstructed change and from our new young talent (see Nature 451, 1029; 2009). The government emphasized its commitment after re-election earlier this year by creating a science and innovation ministry, led by biologist Cristina Garmendia.

Barcelona in the lead

The Autonomous Community of Catalonia, always one of the most industrialized regions of Spain, was varyahead. The national funding windfull expanded the regional government's acience initiative, launched in 2003, which set up 30 new institutes. These institutes are all publicprivate foundations, mostly covering aspects of the life sciences, and nearly all are located in an daround

its science base, with Barcelona surging ahead as a Mediterranean science hub, reports Quirin

Schlermeier.

Spain is revitalizing Catalan government, the city council of Barcelona and Pompen Pabra University, it opened two years ago. It now houses the Centre for Genomic Regulation (CRG) and five other public research institutes. Some 80 BBRP groups study a broad variety of topics, from stem cells to computational biology. And in a way that could hardly have been imagined 10 years ago, all these groups and institutes are flourishing with international personnel and collaborations, aided by increased salaries and a loosening of traditionally restrictive

salaries and a locaring of traditionally restrictive Spanish recuiziness policies. The CRG now has 26 groups with 10 more toxics yet to be recruited, eventually rising to some 400 scientists. It is modelled on the lines of the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, with which it now has a systema-biology collaboration. Like EMBL, the CRG encourages movement by giving group leaders five-year contracts with a maximum four-year extension. It always has an eye open for talented PhD students and postdoes from flurope and doewhere.

"In the past five years, Barcelona has turned into a premier location for biomedical research," says Luis Sermoo, the former head of EMBIS structural-biology programme, who is now in charge of the CRG's systems-biology unit. He says the city has a "California spirit" — an attractive location and a strong international science base that has helped attract scientists and technicians to the

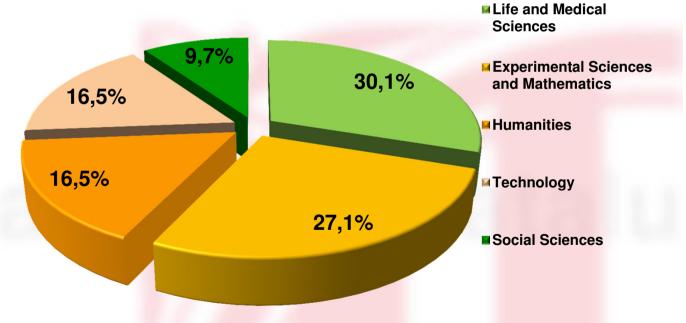
TALENT: ICREA

A Foundation with public funding



FEATURES:

- □ Recruitment of international talent
- ■New hiring formulae



Multidisciplinary Talent = 236 Researchers and Research Professors

Data: November 2011

TALENT: ICREA

ICREA Researchers by country of origin

41,9%

_0,8%

0,8%

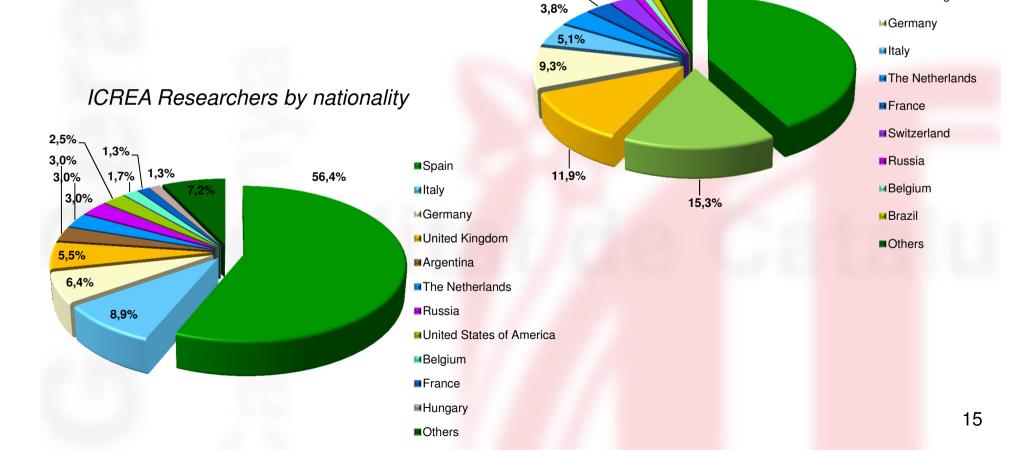
3,0%

3,0%_

■Spain

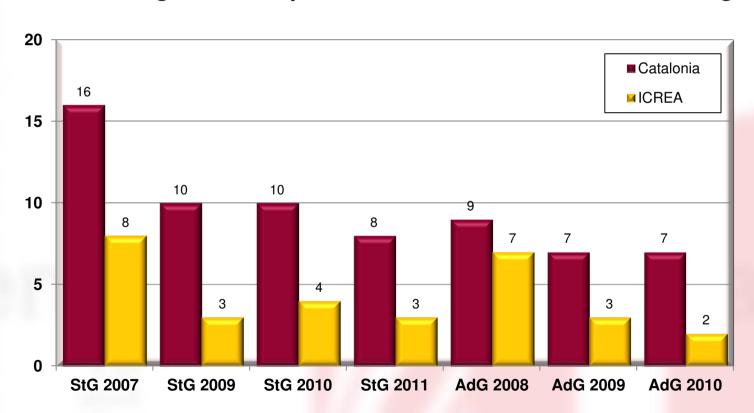
■United States of America

■United Kingdom



TALENT: ICREA

ICREA strengthens competitiveness for the obtention of ERC grants



RESEARCH CENTERS



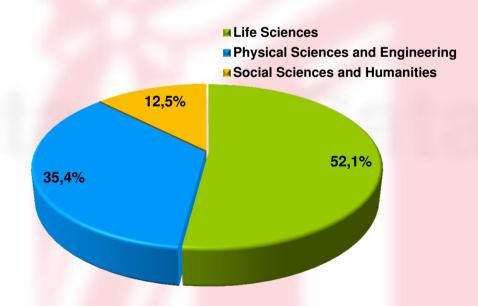
10 YEARS AGO:

- A network of hospitals with noteworthy research activity and a good base of universities, both essential in the growth of research.
- Some CSIC Centers located in Catalonia, in a disproportionately low number.. But... Catalonia was weak in Research Centers. Building up new centers became important in our R&D policy.

CURRENTLY:

A system of Research centers.

Percentage of centers devoted to each field. Classification acording to ERC



RESEARCH CENTERS

Principles

GOVERNANCE	Legal standing (typically, foundations)			
	 Labor contracts. No civil servants (except those seconded from universities that remain civil servant of their universities). 			
	Multiannual financial programming agreed with the Catalan Government			
	 Private sector rules 			
	Boards with authority and Government participation			
	 Control over its own personnel policy and hiring (for the scientific, management and administrative staff). 			
	 Director: Ideally it should be a distinguished scientist. The Director is more than a scientific director, it is also endowed with management authority 			
RESEARCH	Critical mass of researchers			
	■ International evaluation committee and periodic evaluation			
	Ambition of scientific excellence			
ENVIRONMENT	■ Location at university campuses			
	 Cooperative attitude towards universities and other research centers. International orientation 			

RESEARCH CENTERS

Some flagships

		ICREA Researchers	ERC Grants	EU projects (as leader)
Centre de Regulació Genòmica	CRG (Center for Genomic Regulation)	11	5	16
BARCELONA NSTITUTE OG RESEARCH N SIGNESONE	IRB (Biomedical Research Institute)	13	1	11
ICIQ IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	ICIQ (Catalan Institute of Chemical Research)	8	7	6
Institut de Clències Fotòniques	ICFO (Catalan Institute of Photonics)	10	6	11
CREI D	CREI (Center of Research on International Economy)	0	5	3

The number of ICREA researchers, ERC grantees and European projects participating as leaders correspond to current data and activities of these centers

LARGE FACILITIES

ALBA

□ A new generation Synchrotron: final tests to start operating being performed on November 2011



LARGE FACILITIES

CNAG (National Center for Genomic Analysis):

□ CNAG can currently sequence 250 Gb per day (250,000,000,000 bases) and generate a complete human genome at 30-fold coverage in less than one day (Operations started on March 2010)



LARGE FACILITIES

BSC (Barcelona Supercomputing Center):

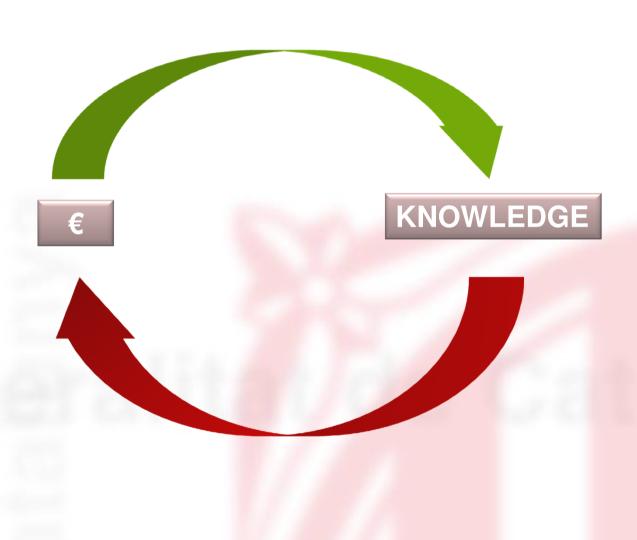
BSC-CNS manages MareNostrum, one of the most powerful supercomputers in Europe, located inside an old chapel. BSC participates in the EU project PRACE



5. Challenges ahead

- Consolidate budget commitment
- Attract and maintain talent
- Efficiency
- Internationalisation & Keeping international position

5. Challenges ahead



5. Challenges ahead



And there is an obvious one:
not being weakened by the
crisis. It is a thought challenge,
but the system is resilient and
the public authorities heavily
committed



Thank you for your attention

Further contact:

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