

Mathematics at ICREA

The Catalan Institution of Research and Advanced Studies (ICREA) is a foundation created jointly by the *Generalitat de Catalunya* (the autonomous government of Catalonia), and the Catalan Foundation for Research and Innovation (FCRI). ICREA was born in 2001 with the aim of promoting scientific research in Catalonia. Its main instrument towards this goal is the annual call for permanent senior research positions. In addition to this, ICREA is also giving the opportunity to young researchers to join the R+D Catalan System through the ICREA Junior program, divided into *Junior Academia* and *Junior Empresa*, the latter aimed at bringing in scientists to the private sector.

ICREA researchers work in universities and research centers in Catalonia, and in the case of junior researchers also in companies. Currently, there are 119 senior and 13 junior researchers. Two thirds of them were working abroad at the time of being hired by ICREA. Since half of them have Spanish nationality, this means that at least one third of the hirings made by ICREA represent a clear recovery of scientific talent for the country.

ICREA has been able to attract distinguished researchers in many fields and from many different countries. The selection process is based exclusively on scientific and academic excellence, and is carried out by external expert evaluation committees. The annual ICREA calls for positions are announced worldwide, both on-line and in journals like *Nature* or *Science*, and are open to researchers of any nationality. Since ICREA receives over 400 applications from highly qualified researchers, the competition is very strong.

Approximately, 33 % of ICREA researchers belong to the area of life sciences and medicine, another 30 % to experimental sciences and Mathematics, 17 % to technology, 15 % to humanities, and 5 % to social sciences. Mathematics represents a 5 % of the total. This distribution does not obey a pre-determined system of quotas by areas, but it is simply the result of the evaluations of candidates by the expert committees, based only on the need to hire scientific talent.

Periodically, ICREA researchers undergo a

thorough evaluation of their scientific work, as well as of their degree of adaptation to their host institution and of the impact of their activity on the local community. The evaluation is based on confidential reports by peers, all from outside Catalonia. Positive evaluations usually lead to a salary increase, while repeated negative evaluations may lead to a termination of the contract.

Besides research, other important activities of ICREA researchers are: teaching of graduate courses and seminars, supervision of doctoral theses, direction of research groups, management of research projects, popularization of science, etc.

At ICREA's web page www.icrea.eu one can find much more information, both on the Institution and its researchers.

The mathematicians of ICREA

Currently, ICREA has 5 senior researchers in Mathematics: Xavier Cabré, José Antonio Carrillo, Sy D. Friedman, Xavier Tolsa, and the author of this article. There is also one junior researcher: David Asperó.

I was hired in the first call, back in 2001. In 1992 I returned to Catalonia after a 7 years stay at the University of California at Berkeley, where I earned my PhD degree and worked as a post-doctoral researcher. After 9 years in several Catalan universities, always with temporary or visiting positions, ICREA gave me a unique opportunity to stabilize my position and remain in Catalonia doing research under suitable conditions. I work at the Department of Logic and History and Philosophy of Science of the University of Barcelona and my area of research is Set Theory and its applications to Analysis (Measure Theory and Banach Space Theory) and General Topology.

In the second call, in 2002, ICREA hired José Antonio Carrillo and Xavier Tolsa. Both work at the Department of Mathematics of the Autonomous University of Barcelona (UAB). The research of J. A. Carrillo focuses on Partial Differential Equations and Mathematical Physics. At the moment of signing his contract with ICREA, J.A. Carrillo was a professor at the University of Granada. In 2003 he was awarded the price of the Spanish Society of Applied Mathematics. And very recently he

has also been awarded the Richard-Von-Misses Prize 2006 of the *Gesellschaft für Angewandte Mathematik und Mechanik (GAMM)*.

Xavier Tolsa was a *Ramón y Cajal* researcher at the UAB, but after some spectacular work in which he solved a famous problem of Painlevé's and proved the additivity of the analytic capacity, ICREA offered him a permanent position so he could stay and carry out his work in Catalonia. In 2002 he received the prestigious Salem price, and in 2004 the price of the European Mathematical Society. He is one of the invited speakers at the ICM 2006. His areas of research are Harmonic and Complex Analysis.

In the 2003 call for positions ICREA hired Xavier Cabré and Sy D. Friedman. X. Cabré works at the Department of Applied Mathematics I of the Technical University of Catalonia, in Barcelona, and his area of research are the Partial Differential Equations. He obtained his PhD at the Courant Institute of New York and was Associate Professor at the University of Texas at Austin until 2003, when he returned to Catalonia.

Sy D. Friedman was for 26 years Professor of Mathematics at the Massachusetts Institute of Technology, and is currently *Ordentliche Universitäts-Professor* and Director of the Kurt Gödel Institute for Mathematical Logic at the University of Vienna. He is joining ICREA gradually and his total incorporation at the Centre de Recerca Matemàtica, in Bellaterra (Barcelona), is expected to take place during the academic course 2006–2007. He works on Mathematical Logic.

Finally, in 2005, ICREA hired a junior researcher in Mathematics, David Asperó. He got his doctorate at the University of Barcelona and has been a postdoctoral researcher in Vienna, Helsinki, and Bristol. He is currently at the University of Barcelona and his research interests are in Set Theory, especially forcing axioms and combinatorics.

It is expected that in the next years ICREA will continue hiring mathematicians, both senior and junior, who will contribute with their work to the increase in quality of the mathematical research done in Catalonia.

Joan Bagaria
ICREA Director's Scientific Advisor and
ICREA Research Professor

Federació d'Entitats per a l'Ensenyament de les Matemàtiques a Catalunya (FEEMCAT)

Introduction

The Federation of Organisations for the Teaching of Mathematics in Catalonia (FEEMCAT) is a non-profit association and its objectives are to improve the teaching of Mathematics at all levels of education, by improving teacher training, the mathematical training of students and society's view of Mathematics.

Apart from the groups that currently form part of FEEMCAT, at the beginning the Federation also included the participation of groups



of Mathematics teachers and lecturers working in Girona (Grup Perímetre, Grup +3), Osona (Grup + o -), Lleida and Tàrraga (Grup Nombres de Ponent), and Barcelona (Grups Almosta de l'Associació de Mestres de Rosa Sensat) The Societat d'Ensenyants de Matemàtiques del Garraf (Society of Mathematics Teachers of El Garraf, SEMG) also formed part of the Federation between 1999 and 2005. Most members of these groups have gradually joined the associations that make up the Federation today:

- Associació d'Ensenyants de Matemàtiques de les Comarques Gironines (ADEMGI)
- Associació de Professors de Matemàtiques de les Comarques Meridionals (APMCM)