

Discussion forum

Problems and Opportunities of the Spanish Scientific Enterprise

By Jose Niño-Mora, founding Secretary of the Spanish Association for the Advancement of Science and Technology (AACTE)

The current generation of Spanish scientists is not only the most numerous, but also the best prepared in the history of our country. Previous generations had to work in an environment characterised by chronic underfunding, overload of non-research-related activities, obstacles to the free flow of ideas and a lack of public appreciation for science. Nevertheless, a significant number of them were able to overcome those obstacles and achieve international recognition. The case of Santiago Ramón y Cajal, Nobel Prize for Physiology and Medicine in 1906, in recognition of his fundamental work on the structure of the nervous system, stands out as an epitome of the power of the individual genius to overcome the system's shortcomings. Unlike Cajal, other top Spanish scientists had to emigrate to pursue research at the highest level. Our second (and most recent) Nobel Prize winner in science, Severo Ochoa (Physiology and Medicine, 1959), is the foremost example of this *brain drain*.

In contrast, nowadays we are witnessing a relatively abundant crop of Spanish scientists educated at top international research centers and performing world class work. The share of publications by Spanish researchers, out of the total world output, amounted to 2.5% in 1995, up from negligible past levels. A major factor accounting for this growth has been the increasing level of public investment in scientific and technological development in our country since the restoration of democracy, almost 25 years ago.

During the late 1980s the Spanish government launched an ambitious National R & D Plan. It set out to co-ordinate the major fronts of R & D enterprise: graduate and postdoctoral training, national priority areas, technology transfer, etc. The level of public funding for R & D grew substantially during the initial years of the Plan's implementation.

A major component of the Plan was a policy to promote graduate and postdoctoral training in centers of research excellence, through the allocation of competitive research fellowships. Many top Spanish graduates and postgraduates seized this opportunity, and went to learn and work with the international leaders in their fields. Others did the same with funding from their host countries. The European Commission, through the TMR/Marie Curie fellowship programmes, provided further opportunities. One objective of this policy was to eventually reintegrate these scientists into the national R & D system, thus reaping the benefits of the public investment made in their training. The government even launched a scheme of "reincorporation contracts", aimed precisely at reversing a possible brain drain.

Yet events did not unfold as many of us had dared to hope. Public support for R & D did not grow consistently: in 1996 it hit a 5-year rock bottom, sliding down to a mere 0.76 % of GDP, while the European average was 1.83%. The expectation of many scientists to find a position in Spain after a successful stay at a top international centre was often frustrated: academic openings were few and far

between. Furthermore, the public competitive selection process for filling those openings often yielded peculiar results. The five-member committee (in the case of public universities: two from the department offering the position, three drawn at random from a national pool of tenured professors in the relevant knowledge area) decided, in over 90% of cases, in favor of the local candidate. One who had typically pursued his or her doctoral work in that same department, often without any international experience, and with a substantially inferior (or even non-existent) publication record.

This unwritten *closed-doors* policy was also applied to those returning under the "reincorporation contracts". Under this government-sponsored scheme, Spanish postdocs working abroad could apply for a contract attached to an ongoing project. The maximum duration was for three years, during which time they were expected to find more stable employment. The reality proved harshly different as many of the "reincorporated" postdocs reached the end of their contracts without any academic job prospects. In spite of having applied, in some cases, for a dozen or more positions, they saw their academic qualifications summarily dismissed in favour of the *official* candidates.

As for the option of turning to a career in industry, the opportunities for doing so within the scope of R & D activities are still limited. Spanish companies have traditionally attached a low priority to the R & D function and multinational corporations typically keep their R & D centers well beyond our boundaries, focusing here instead on manufacturing or distribution.

It should not come as a surprise to know that many scientists are concerned with this state of affairs. The frustration at their lack of prospects was publicly expressed by one of the hardest hit groups, the "reincorporated" postdocs, with a major demonstration in Madrid in May 1998 (see "Spain's lack of career

prospects laid bare", Nature 14/5/98). More recently, Nature devoted an editorial to the topic of cronyism in Spanish academic selection processes (see "Spanish universities and the obstacles for development", Nature 24/12/98).

This concern about the loss of a golden opportunity to bring the Spanish scientific enterprise up to the level of the more advanced countries was a major driving force in the creation of the Spanish Association for the Advancement of Science and Technology (AACTE). The idea came among the exchanges in a digital forum set up by a major Spanish newspaper (El País), in late 1997. Some of the participants seized that opportunity, and articulated the idea of an association that would provide a permanent forum for exchanging ideas, and a means for coordinating initiatives. Given the geographical dispersion of our members, and the initial zero budget available, the Internet played a key role in the development of AACTE.

The objectives of AACTE are:

- to articulate initiatives to government and the media in order to promote standards of scientific excellence
- to promote an increasing level of public and private investment in R & D equivalent to that of the more advanced countries
- to monitor the selection/promotion procedures for academic positions in accordance with the principles of merit and equality of opportunity
- to serve as a forum of ideas for scientists interested in R & D issues in Spain.

The last objective is met by AACTE by maintaining a permanent digital forum, open to the scientific community at large, as well as a Web page (www.aacte.net). The AACTE has also monitored a number of academic selection procedures, collecting objective evidence that casts legitimate doubts about their fairness. Other activities have included publications in the national media, and communications with R & D policy-makers. Our membership is diverse, including not only

postdocs in unstable employment, but increasingly, senior academics and graduate students. Since our first anniversary, the AACTE has continued to grow steadily, and is poised to continue expanding both the scope and the impact of its activities.

José Niño-Mora
 jnimora@alum.mit.edu
 earned his PhD at the Massachusetts Institute of Technology, sponsored by a National R&D Program/Fulbright

Graduate Fellowship. After a postdoctoral year at MIT, he spent a second postdoctoral year at the Université Catholique de Louvain, as a Marie Curie fellow. Currently

he is a Visiting Professor in the Department of Economics and Business in the Universitat Pompeu Fabra, in Barcelona.

Research focus

The MC Fellows Workshops: Research Training in Progress

by **Christine Heller**

Marie Curie fellowships are awarded to European scientists for the purpose of supporting scientific research and development, through training, while improving further integration between the citizens of different EU member states. This integration is very important for the future, as mutual respect and knowledge of cultural differences is essential for community development: existing differences should be brought out to strengthen the whole.

The European Commission has initiated a scientific monitoring scheme that brings together the MC fellows working in the same region, with the objective to share their research work and experiences. These meetings are organised in the form of interdisciplinary workshops, where fellows can demonstrate their various technical skills in an informal and comfortable environment. Raising public awareness for scientific work is an important issue. Consequently the event focuses on the development of communication

skills and abilities, that awaken curiosity in others, and stimulates the creation of new bridges between disciplines. Hence, an important aspect is the advancement of science through knowledge of, and interest in, its parts. The 1st Workshop of MC fellows was held in Grenoble, France on 22-23 April at the European Synchrotron Radiation Facility (ESRF). The presence of large research centres in Grenoble resulted in the dominance of the Physics discipline in the talks of the 17 fellows who presented their work at the event.

The 2nd Workshop of MC fellows took place in Oxford, U.K. on the 26-28 May. This was a much larger event covering a wider range of disciplines, and included a total of 25 presentations by fellows. With a slight majority of research from the Life panel, the workshop illustrated results from Physics,

Mathematics, Chemistry, Life and Earth Sciences and Economics. Future workshops will be announced to a wider audience. The MCFA will increase its participation and support so as to further enhance its interdisciplinary character, develop communication and improve public awareness of science.

Christine Heller
 cheller@upco.es
 is a Lecturer of Electric Machines at the Escuela Técnica Superior de Ingeniería (ICAI), Universidad Pontificia Comillas (UPCO) Madrid, Spain. She is the MCFA Board Member responsible for the Committee on Scientific Excellence. She spent her MC fellowship at l'Université Pierre et Marie Curie (Paris VI).

MCFA local groups

Setting up the Italian National Group

a personal report by **Sabine Kröner**

At the beginning it was a tax issue. On my first pay slip in April 1998 I found my salary was taxed at over 26 percent but no deductions were made for social insurance. This seemed to me not in accordance with the general contract guidelines. But neither the University Administration, which was dealing for the first time with such a fellowship, nor the national contact point could clear up this question. So I tried to get information on the situation of other Marie Curie fellows in Italy. I contacted Angelo Casertano as the contact person mentioned on

the MCFA web pages for the Italian group. However, it turned out that an Italian group did not really exist yet. Bureaucratic problems and lack of time and motivation, from people generally interested in an Italian MCFA group, had so far prevented its foundation.

When I was asked if I would like to set up the Italian group I at first hesitated, due to the expected workload. But my personal experience as the only Marie Curie fellow at the Host University finally convinced me that an Italian group was defi-

nately necessary. As a first step I became a member of the MCFA. Then I gathered information: from the Web pages of the UK group about the history of the MCFA; from the co-ordinator of the Austrian group on how to set up a group plus substantial encouragement; from Angelo Casertano an address list of all Marie Curie fellows and the e-mail addresses of the official people in Brussels, etc.

After directly contacting many fellows with blind e-mails, I found three other interested fellows. Tax issues had also been a major problem for them. Taking advantage of the fact that we worked in the same city, I met with Ralf Hendrik Menk who had already started to solve the taxation problems for the fellows at his Host Institute. The result of the discussion was the start of the Italian group. We set up a mailing list and a homepage, and announced the creation of the

Italian group to the MCFA at the end of June 1998.

Then the summer break interrupted the activities.

Towards the end of September we started planning a meeting to launch the Italian group. Since we both felt a discrepancy existed between what was officially announced about the MCFA and our personal experiences as Marie Curie fellows, we went to the first AGM of the MCFA in Brussels in order to bridge this gap. We came home with a more complete understanding of the goals of the MCFA, a lot of contacts, information and impressions. Soon after we sent out invitations to the mailing lists for the first national meeting of the Italian group for early December. The feedback was very discouraging especially when the representative from the national contact point finally cancelled her participation, despite a large effort to attract her. We did not