Career strategies for young European scientists (X)

Austrian Euros

After countless negative evaluations, Austria has recognised its problems and seems to be motivated to initiate and support necessary reforms.

In a recent report the Austrian Science Fund (FWF), pointed out how far Austria lags behind the world's leading research nations. According to the FWF the shortage of competitive third party funding and the lack of quality-based recruitment at Austrian research institutions is responsible for the poor performance. Furthermore, the FWF was alarmed by scarce funding, financial and personnel structures that don't reward achievement and the ageing infrastructures of many universities.

Earlier this year the Austrian Science Council, a governmental policy advisory body for research, technology and innovation, criticised serious deficiencies at medical universities. These included the improper use of federal funds provided for research and teaching, a limited to non existent time budget for clinicians to do research and research priorities chosen to increase the dominance of local interest groups and not aimed at scientific excellence.

Given this, would you choose to go to Austria for the most critical period of your scientific career? However, after countless internal and external evaluations, Austria has recognised its problems and seems to be motivated to initiate and support necessary reforms. To prove its commitment the Austrian government recently decided to invest an additional €1 billion into research programmes and infrastructure by 2010 although this may be too late for you.

The Austrian Science Fund (FWF)

The Austrian equivalent of the German DFG and the Swiss SNSF is the FWF, established 40 years ago. The FWF has matured over the years into a modern organisation and is offering (at least when it comes to diversity) a rich mixture of funding possibilities for individual and group projects. Its annual budget of approximately €150 million is distributed either autonomously or on behalf of ministries such as the Federal Ministry of Science and Research (BMWF) or the Federal Ministry of Transport, Innovation and Technology (BMVIT). Each year the FWF funds about 700 postdocs and 1,300 PhD students. Approximately 60 percent of its annual budget goes to 400 individual or so-called standalone projects, which receive on average €84,000 for three years. One of the major criticisms of the FWF is that it tends to give everyone an equal slice of the cake without taking into account a project's specific needs. Decisions on funding are made by the FWF board, which consists of the Executive Board, including the FWF's President, Christoph Kratky, three vice-presidents and two academic subject specialists per thematic area. Almost all applications are subjected to international peer review.

Outgoing – incoming

The FWF offers Erwin Schrödinger fellowships for postdocs to do research abroad and lures them back to Austria using the Lise Meitner Programme. **Erwin Schrödinger fellowships** are for early-stage postdocs below the age 34, or with four years postdoctoral experience at the most. Other criteria for funding include international publications and an invitation from the future host institute. You do not need Austrian citizenship but the principle of territoriality applies and requires that you have lived for at least three of the last ten years in Austria. The fellowship is for research, covers between 10 and 24 months and pays between €26,800 and €33,300 per year depending on the host country. Applications can be submitted at any time. In 2007, 67 fellowships were in all disciplines, with an application success rate of approximately 60 percent.

The **Lise Meitner Programme** is for scientists from abroad who want to do research in Austria. Lise Meitner, also re-

Interview

"Excellent, but..."

Barry Dickson is an Australian-born neurobiologist and Scientific Director of the Research Institute of Molecular Pathology (IMP) in Vienna, a subsidiary of the Boehringer Ingelheim Group.

What are the career perspectives for young scientists at IMP?

Dickson: We offer three different types of independent junior faculty positions: group leaders, IMP fellows and staff scientists. Group leaders have a five plus three years contract, meaning that there is an external evaluation after approximately four years that forms the basis for a decision to extend the initial contract to eight years or terminate after five years. These positions come along with salaries for the group leader, one postdoc, two PhD students, one diploma student and one technician. Start-up and ongoing equipment costs are according to needs. The budget for consumables is €16,000 per person per year but it is important to note that we have extensive core facilities that are not charged to group budgets (mouse facilities, mass spec, imaging, DNA sequencing, etc). The effective running budget is therefore much higher. IMP fellows are offered a five-year contract, which includes one PhD and one diploma student position. The rest of the package is as for group leaders. Staff scientists are somewhat varied positions, primarily financed through external funds. They may, for example, be for more technology-oriented research done in collaboration with other groups. There is no formal tenure system. Senior scientists only have permanent positions, though still subject to five-year reviews. There is no formal mechanism for promoting group leaders to senior scientists, but this can happen. Fellows will be considered for promotion to group leaders. We have no formal affiliation with the University, although group leaders and fellows are welcome to participate in undergraduate teaching if they wish.

How does the IMP contribute to the career development of its young scientists?

ferred to as "the woman behind the bomb", was the second female physicist to receive a doctorate at the university of Vienna. You do not need to have spent any time in Austria to get onto this programme. In contrast to previous years, the age limit has been abandoned. On offer is funding for up to 24 months, a salary of between €52,790 (early postdocs) and €59,670 (senior postdocs) plus €8,000 per year for research expenses. Applications must be submitted together with an Austrian co-applicant and there are no deadlines. In 2007, 28 scientists from 16 different countries survived the quality check. The success rate was close to 50%. Furthermore, being in the Lise Meitner Programme also qualifies you to apply for a regular stand-alone FWF project, which, upon approval, may be used to cover your own salary once funding by the Meitner programme has ended.

Women only

For female scientists pursuing an academic career the FWF offers a two-stage funding scheme: the Hertha Firnberg Programme for early postdocs and the Elise Richter Programme for senior postdocs. Briefly, the principle of territoriality (above) applies to both programmes, meaning you may not apply if you have never lived or worked in Austria. The **Hertha Firnberg Programme** is for female scientists of any scientific discipline after the completion of their doctoral studies, either at the start of their postdoctoral training or returning from maternity leave. To apply, you must be 40 or younger at the time of application, you need international publications and must have had no more than four years of postdoctoral experience. The programme covers about €54,180 salary costs and an additional €8,000 for consumables or travel per year, for a period of 36 months. There are two application rounds every year. In 2007, 14 out of 36 applications were successful.

The **Elise Richter Programme** is named after the first Austrian woman to become an assistant professor. It targets highly qualified female scientists of any discipline and provides them with sufficient resources to qualify for a local or foreign professorship (meaning obtain a *habilitation* or equivalent qualification). The requirements are appropriate postdoctoral experience, international scientific publications and preparatory work related to the proposed research project. There is no age limit. The duration of funding is between 12 and 48 months. Covered are your salary of approximately €61,000 and project-specific costs of up to €15,000 per year. For each of your children you receive a lump sum of €1,950. Out of 30 applications from all disciplines, 13 were approved in 2007. There are two application rounds each year and the next round for both programmes will be published in spring 2008.

START for starters

Since 1996 the FWF has been in charge of the **START programme** on behalf of the BMWF. The good thing about it is that this is one of very few programmes in Austria ,which provides sufficient funds to set up your own independent research group and keep it running. Up to €200,000 per year is awarded for a maximum of six years. Usually your project is evaluated after three years and in most cases funding is extended. The downside is that, depending on the money made available to the programme, on average only five awards in all scientific disciplines are made each year. And competition is stiff! In the last three years the chance of success has been around 13,5%. The participation of female scientists is extremely low and only four out of all 61 START awards made so far went to women. The START programme is for scientists with a doctorate and at least two and at most ten years of postdoctoral experience. A research post abroad for more than one year is a clear benefit. Full professors may not apply and applicants without a permanent position are preferred, in case two applicants have the same qualifications. If you are not or are only partially employed at an Austrian research institution, you may request your own salary at the level of a senior postdoc or ask for supplementary income.

All applications are made in English. The core of the application is a text of up to 25 pages, where you have to describe your past and future research and prove (or at least give the impression) that you are ready to do independent work. You may also provide a reviewer wish list with five good guys to be included and three bad guys to be excluded from the review process. After submission, your proposal is checked for completeness and conformity with the FWF's guidelines and assigned to two scientists from the local FWF committee and to one of the international START jury. They will contact reviewers until at least four full reviews per application have been received. Based on these reviews a short list of the most promising candidates is made. These are invited to give a short presentation at

Dickson: Primarily we provide exceptional scientific support and a dynamic environment for the young scientists to focus entirely on their research, as well as the encouragement and long-term support they need to embark on more ambitious projects. Additionally, all junior faculty members are encouraged to attend management courses, for which funds are provided. Usually, they attend the lab management course organised by EMBO. We regularly arrange in-house workshops with external experts on topics such as scientific writing and publishing, grant-writing and career opportunities.

How do you rate the funding situation in Austria for young Austrian and non-Austrian scientists in general?

Dickson: The funding of science in Austria in general is excellent at present. The success rate for individual project grants is high and the quality of international peer review by and large excellent. Funding for research infrastructure is more varied and not always optimal (note that I have only very limited experience of the university system in Austria).

"There is a tendency to give too little to too many, to recruit internally and to give too little independence to young scientists"

Which steps must Austria take to improve the advancement of young scientists in future?

Dickson: Improving research infrastructure and, above all, being able to identify and recruit the very best young scientists from abroad and give them the independence, funding and long-term perspective they need to follow a really innovative research programme. There is a tendency to give too little to too many, to recruit internally and to give too little independence to young scientists – all of which are recipes for mediocrity. These are all symptoms of a risk-averse scientific culture (which is by no means unique to Austria). The positions for young scientists need to be made more attractive to be internationally competitive, even if this means that there will necessarily be fewer such positions. This is starting to happen in Austria now, within the new Academy institutes, the new Institute of Science and Technology and even within the University system. I like to think that this is, in part, inspired by the model the IMP has provided over the past 20 years.

the November FWF jury meeting. Finally, the international jury decides in a closed session whether you get funded or not. You also have to sign a commitment that you will submit an identical application to the ERC's Starting Independent Researcher Grant programme before the next available deadline. If your ERC application is successful, you must abandon the START money. Unfortunately, by the time you read this article you will have to wait another year to apply for a START award. The submission deadline for the 2008 selection round was February 22nd, 2008. Extending this programme in future to 10 or 15 awards per year would definitely underscore the commitment of the FWF and the BMWF to the promotion of young talent in Austria without damaging its reputation as a programme that supports excellence.

The Austrian Academy of Sciences (ÖAW)

The Austrian Academy of Sciences (ÖAW) takes care of basic non university-related research by setting up and supporting novel research units or institutes, managing national and international research programmes, awarding fellowships and awards and by national and international networking. The overall budget in 2006 was close to €80 million. Three quarters of the ÖAW budget are used to support its own 64 research units and three recently established limited liability research companies: the Institute of Molecular Biotechnology (IMBA), the Gregor Mendel Institute of Molecular Plant Biology (GMI) and the Center for Molecular Medicine Institute (CE-M-M). These three (from Vienna), along with the Institute for Biomedical Ageing Research in Innsbruck and the Institute of Biophysics and Nanosystems Research in Graz, are the ÖAW's primary biomedical research institutes. Amongst its 1,100 employees the ÖAW supports the depressingly low number of 32 scientists at the junior group leader level. For example, at the Gregor Mendel Institute, which receives an annual budget of about €6 million, there are currently (besides tenured senior groups) two junior principal investigator groups, with a five plus three year contract for the group leader, and three young investigator groups, which are funded for five years.

For Austrian junior scientists the ÖAW provides a couple of fellowship programmes and prizes. Noteworthy for postdocs in the biomedicine is the fellowship programme APART, the Austrian Programme for Advanced Research and Technology. It is aimed at scientists below the age of 35 with at least two years of postdoctoral experience. You need to have Austrian citizenship or at least be involved in a qualification programme to become a professor in Austria. The fellowship is awarded for a maximum of three years and pays about €50,000 per year. In addition, you may ask for child support of up to €1,900 and for consumables and travel expenses of up to €18,000. Part of the money may also be used for doing research abroad. In 2006, 19 of 139 applications were funded. The next application deadline is May 31st, 2008.

Private only

Private research and technology organisations and institutes in Austria are highly heterogeneous and are at least partially co-financed by the public sector. For example, the Ludwig Boltzmann Research Society (LBG) was founded in 1961 as a private non-profit organisation and currently has about 250 employees. The annual budget of €6 million seems quite low but is used as a catalyst to attract more money. The LBG operates mainly through the financing of institutes or research clusters with long-term programmes, which are conducted and financed in co-operation with academic and non-academic partners. The high number of 134 "small" LBG research institutes, mostly located in Vienna, has been dramatically reduced over the last five years. Approximately 50 of the older institutes are still in operation. Novel initiatives include the establishment of the Ludwig Boltzmann Institute for Cancer Research in 2005 and the launch of LBG Tissue Regeneration research cluster in 2007.

Highly creative work was already proven to be possible in Austria.

More than 2,000 companies in Austria conduct their research and development in-house, but there are two prominent examples of companies that have created dedicated research spinoffs: the Novartis Institutes for Biomedical Research (NIBR) and the Research Institute of Molecular Pathology (IMP), both located in Vienna. The origins of the NIBR go back to 1970, when the Sandoz research institute, searching for cures for infectious diseases, was launched. Since 2004, research has been focussed on autoimmune diseases and transplantation with the NIBR Vienna being part of the NIBR, headquartered in Massachusetts. The NIBR has about 250 employees and invests around €40 million each year in research and development.

The Research Institute of Molecular Pathology (IMP) is Austria's top-notch, privately funded research institute and is devoted to basic biomedical research. The IMP was established by Boehringer Ingelheim and Genentech in 1988 as playground or "life science think tank" for outstanding scientists. Currently, there are 16 research groups working at the IMP. Only recently, an IMP junior faculty member, Stefan Westermann of Germany, received one of the European Research Council's prestigious starting grants. The IMP provides several opportunities for young investigators, which are outlined below by Barry Dickson, Managing Scientific Director of the IMP.

Bits and pieces

Austria boasts numerous additional funding sources, but they are not usually aimed at the promotion of young research talent. A few examples are given below. The Vienna Science and Technology Fund (WWTF) allocates €7 million a year to promote research in Vienna. Application rounds with varying focal points are announced annually. Depending on the budget available, one or more endowed science chairs (Stiftungsprofessuren) are funded, each with €1.5 million made available over four to five years. Other WWTF funding instruments address the infrastructure of universities in Vienna or larger group research programmes. For example, in late 2007 the WWTF announced that six projects are to be funded by the life sciences programme, Linking Research and Patients' Needs, to the tune of €4.3 million. Establishing endowed chairs at universities is also a favourite funding instrument of the individual Austrian federal states and universities, which helps to attract Austrian scientists returning from abroad, who are then on standby for a tenured full professorship.

Genomic research in Austria is funded by a national programme: GEN-AU (GENome Research in AUstria). The programme

began in 2002, will run until 2010 and is distributing roughly €100 million from the BWMF. It is managed by the Austrian Research Promotion Agency (FFG). Funding is primarily intended for larger research consortia with several research teams. According to GEN-AU, there are no funds available for the establishment of independent young investigator groups, although the participation of younger scientists in directing subprojects is highly encouraged. In addition, there are women's advancement and mobility programmes providing additional funds for child care, training and research trips for staff involved in GEN-AU projects. Exploratory or pilot projects are available for one or two research teams and have a maximum budget of €100,000 for one year. These projects are especially aimed at women and younger scientists. Applications for the third and final phase of GEN-AU will start around March 2008.

Sparkling future?

Why Austria? If you are qualified enough to get an independent group leader position at the IMP or at one of the ÖAW research institutes, you will certainly find attractive opportunities in other leading European or US research institutions. Internationalisation at Austrian universities is often confined to participation in international or EU-funded projects, but is not intended to attract the best international scientists to Austrian institutions. Understanding the promotion of young talent is often limited to the education of graduates, for example, by establishing graduate schools. But career development plans for young independent investigators leading to a tenure-track or rolling tenure position are still lacking or are very limited. A collective bargaining agreement regulating uniform career pathways for scientists at the 21 Austrian universities is still under discussion. Whether the university bill of 2002 and upcoming changes in the university system lead to short or middle term improvements for young investigators remains to be seen.

Nevertheless, the overall position of research in Austria is clearly improving. In a recent series of publications by the Austrian government, the Austrian Science Council and Austrian funding agencies, the status quo and various future scenarios in Austrian research were examined. Although different views and solutions were presented, the common theme of these reports is that more money has to be spent on research and development in Austria, that the infrastructure for the best research and development performers has to be enhanced, that universities have to focus their activities and develop new career pathways for young scientists and that the tasks and funding portfolios of individual ministries, agencies and other funding organisations have to be streamlined in order to avoid the duplication of efforts.

To demonstrate its commitment to high-level basic research, Austria recently launched an excellence initiative. In 2006, the Austrian parliament decided to establish a new organisation, the Institute of Science and Technology Austria (IST Austria), in Klosterneuburg, 20 miles north west of Vienna (*www.ist-austria.ac.at*). The vision is to create a new leading basic research institute with an international spirit. Starting in 2011 about 400 to 500 researchers will resume their work in multidisciplinary thematic areas: cognition, brain function and neurobiology; theoretical and mathematical biology, systems biology and advanced material sciences. Search committees have already been established to identify head scientists for the respective areas. The renovation of old buildings and construction work for new buildings is underway. Funding has been secured for the first ten years of its existence and is estimated to be in the range of €570 million. Also, as part of the excellence programme, so-called clusters of excellence will be established. Although the financing of these clusters is not fixed at the moment, the clusters are estimated to have a lifetime of up to 12 years and an annual budget of between €3 and €10 million depending on the scientific discipline. The first funding round is expected in the middle of 2008.

Another positive process is the development and steady expansion of the Campus Vienna Biocenter, founded in 1992. It is a network of partnering associates located close to one another and includes leading research institutions such as the IMBA, GMI and IMP, biotech companies like Intercell, Axon Neuroscience and Bender MedSystems and the Max F. Perutz Laboratories GmbH, a new joint research institute run by the University of Vienna and the Medical University of Vienna, which harbours more than 50 research groups in molecular biology. The Campus Vienna Biocenter provides lab space covering an area of more than ten football fields and is the home of 1,600 scientists from 40 countries. You can safely bet that most of the millions distributed by Austria's funding mechanisms will end up here in coming years.

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