

Career strategies for young European scientists (IX)

Swiss Fraenkli

Switzerland doesn't only produce world-class cheese; it also harbours a couple of highly distinguished universities and research institutions. So there are certainly a couple of places and programmes that might be of interest to you.

With a population of 7.5 million people, Switzerland is one of the smaller countries in Europe. At about 20%, the proportion of resident foreigners and temporary foreign workers is quite high. This is also seen at non-academic or academic research institutions. For example, about a quarter of the students and more than half the doctoral students, scientific personnel and professors at the ETH Zurich do not have Swiss citizenship. Global leading pharmaceutical companies are investing about CHF 4.5 billion (about 2.7 billion) for research and development in Switzerland each year. Moreover, Switzerland has the highest density of biotech companies worldwide with an annual business volume of roughly CHF 6 billion and 14,000 employees. Therefore, it is no surprise that private industry covers about 70% of the gross domestic expenditure on R&D.

Even if the higher cost of living is taken into account, Swiss scientists are among the best-paid researchers worldwide. But how are young foreign researchers treated in Switzerland and what are their career prospects? In the following I am going to introduce to you the most important Swiss funding agency, the Swiss National Science Foundation (SNSF), as well as provide a few examples of local funding possibilities by universities and foundations.

The Swiss National Science Foundation (SNSF)

With the exception of the up-front financing of universities by federal agencies, the Swiss National Science Foundation (SNSF) is the most important source of funding for basic research in Switzerland (<http://www.snf.ch>). The SNSF was established in 1952 as a foundation under private law. Its initial annual budget of CHF 4 million rapidly increased to more than CHF 500 million by 2007. About 76% of this budget is currently spent on independent

research, meaning that you may apply for a fellowship or a research project with a topic of your choice. The remaining funds are among other things for national research programmes and national centres of competence in research.

Each year about 7,000 scientists are supported by the SNSF. About 43% of the budget is used to foster research in biology and medicine. The **Foundation Council** is the highest policy decision-making organ of the SNSF and includes up to 50 members, not only from Swiss universities but also representatives from industries and politics.



The SNSF **National Research Council** evaluates the research proposals and decides on the award of grants after external evaluation of the proposals in most cases. It has up to 100 members and is divided into four sections: (I) Humanities and Social Sciences, (II) Mathematics, Natural and Engineering Sciences, (III) Biology and Medicine, and (IV) National Targeted Research Programmes and Centres. Starting in 2008 there will be additional intersectional committees on interdisciplinary research, international cooperation and individual funding.

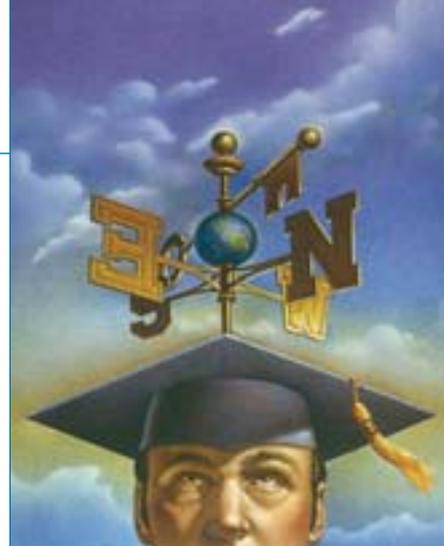
To counter one of the major criticisms of the SNSF, which is the all-dominant position of the individual Research Council member, the term in office was recently reduced from ten to eight years. Based at the local universities are **Research Com-**

missions which function as mediators between the SNSF and the particular university. They usually coordinate the research strategies of their university, provide support for potential SNSF applicants, give additional details for evaluations to the SNSF and award a limited number of SNSF international fellowships for career entry researchers. The SNSF **administration** is based in Bern with approximately 130 staff members.

In the following I shall give you a short overview on the activities of the SNSF, which are most pertinent to any individual researcher's early career. Be aware that the SNSF web pages, forms and publications are not always completely available in English. Nevertheless, you may, and sometimes you have to, submit your application in English by using the SNSF web platform (www.mysnf.ch), which in future will be made available for all funding lines. For individual researchers the SNSF offers various programmes, which – if you do not have Swiss citizenship – require almost all applicants to have, at some point in time, lived or worked in Switzerland for a period of at least two years!

Swiss only

The so-called **Fellowships for Prospective Researchers** are stipends for Swiss researchers to work abroad for a period of 6 to 24 months (doctoral students) or a period of 12 to 36 months (post-docs). It is available for doctoral students at the end of their thesis, who are often from humanities or the social sciences, and for post-docs up to three years after obtaining their doctoral degree. If you are not a Swiss national but hold a Swiss residence or work permit, you may also apply for a stay abroad, which must not be in your home country. In this case, you have to declare that you intend to pursue an academic career in Switzerland afterwards. The stipend pays the usual allowances for living, travel, family and children. In addition, you may apply



for additional money for going to conferences and visits back to Switzerland. If your future host institute is not able to provide all necessary consumables and equipment, you may request additional money from the SNSF. Depending on the place where you got your university degree, your proposal goes either direct to the SNSF (non-Swiss researchers, Swiss scientists without a Swiss university degree) or to the local Research Commission of your university. Other restrictions apply. In 2006, 126 or 61% of submitted proposals in biology and medicine were funded.

To obtain one of the **Fellowships for Advanced Researchers**, which in half of the cases are used to go to the USA, you have to prove at least one year of research experience as a post-doctoral fellow. The fellowship must commence five years, at the latest, after obtaining your doctorate. The duration abroad is expected to last between 12 and 36 months and, with the exception of proposals related to experimental medicine, clinical medicine or biology, which are handled by the Swiss Foundation for Grants in Biology and Medicine (SFGBM; fmarti@pki.unibe.ch), the proposals are sent direct to the SNSF. In 2006, 44 or 49% of all proposals in biology and medicine were funded. There are several deadlines for both fellowships each year. For more information contact: fellowships@snf.ch.

Women only

To increase the number of female researchers in Switzerland the SNSF awards **Marie Heim-Vögtlin subsidies**. Marie Heim-Vögtlin (1845-1916) was the first Swiss female doctor in Medical Sciences. In 2006, 38 female researchers in biology and medicine applied to the two-step selection procedure and about one-third were finally successful. The subsidies support well-qualified female doctoral students or post-docs, who have interrupted or reduced their research activities due to family obligations or as a result of their partner's career development. It pays part of your salary, social contributions, childcare, travel expenses and consumables up to CHF 12.000 per year. The post-doc salary is dependent on age and research experience and also on the specific rates for people financed by the SNSF at your host institution. It is usually a one-year plus one-year subsidy and the hosting institution has to provide additional support including an outlook on what will happen after the subsidy has been terminated. To obtain the subsidy you must already have a part-time job (50% occupa-

tion). Starting in 2008 the programme will be expanded to include doctoral and post-doctoral candidates from all disciplines and now already includes the possibility of getting an extension for a 3rd year. The next call for applications has been published in January 2008 with a submission deadline of April 1, 2008. For more details contact mhv@snf.ch.

University only

Starting this year, the SNSF is also offering a new funding line for junior researchers called **Ambizione**. It is available to post-doctoral researchers from all disciplines and is intended for those who want to pursue a research project independently at the university. Sounds good! Financing includes your own salary at the level of research associate and additional money for support personnel (but no doctoral students), consumables, instrumentation, etc. for three years with the option of a one-year extension. Foreign junior researchers and Swiss researchers returning to Switzerland are also welcome to apply. The plan is to fund 40 to 50 projects each year with a proportion of female researchers in the range of 35%. Requirements are a doctorate, which may not be older than five years at the point of submission of your proposal, publications in top journals and a research stay of at least twelve months at an institution, which is different from the university where you received your doctorate. Your host institution has to confirm that you will be supported for the duration of your project by additional money and possibly personnel. The evaluation process has two steps. Firstly, the SNSF National Research Council selects candidates based on the submitted proposals. The next step invites the short-listed candidates to present their projects at an interview. The first call was published in November 2007 with a submission deadline of 15 February 2008. Funding will not be available before October 2008. More information is available via ambizione@snf.ch.

The flagship

The **SNSF-Professorship** is one of the flagships of the SNSF. If you get one of these you have really brought home the bacon! About three-quarters of the SNSF Professors from the first application rounds in 2000 and 2001 have already gained appointments for full professorships in Switzerland (80%) or abroad (20%). More than a third of the successful scientists use the SNSF Professorships to return to Switzer-

land. Approximately one third of SNSF professors do not have Swiss citizenship. Usually, the funding received is in the range of CHF 1.3 million for four years with the possibility of a two-year extension. It covers the salary of the applicant at the level of an assistant professor and provides money for additional personnel, equipment and consumables. In the last application rounds about 70 researchers in the sector biology and medicine applied each year and about 15 professorships with a success rate of approximately 20% were granted. To get one of these prestigious professorships you must have a doctorate, several years of research experience in Switzerland or abroad, publications in journals with a high impact factor, be no older than 40 years, have Swiss citizenship or a Swiss university degree or at least have been working for two or more years at a Swiss university. Additional plus points are experiences in teaching and/or

project management and active collaborations in Switzerland and abroad.

The first six years of the programme (2000-2005) were extensively evaluated by the research centre Observatoire EPFL Science, Politique et Société (OSPS). Overall, the programme received a positive evaluation with respect to scientific excellence but a couple of weak points were also mentioned. For example, the fact that the integration of SNSF professors completely depends on the host institution, that the SNSF professors are not allowed to independently direct doctoral students or that the professorships per se are not associated with a tenure track programme. The 9th call for the two-step application process will be published in February 2008 with a submission deadline of 1 May 2008 and funding starting no sooner than 1 April 2009. At stage I proposals will be evaluated by the SNSF Research Council, short-listed candidates are invited to submit a more detailed application and to give a presentation of their research proposal (stage II). For more details contact the division for individual funding at interdiv@snf.ch.

External review

Three-quarters of the annual budget is used for **SNSF project funding** and more than 40% of it is used for projects in the biology and medicine sections. In 2006, this meant CHF 134 million for more than 400 projects. In these sections the success rate was quite high at 57% but, at the same time, the requested amount of money was reduced in more than 75% of all projects. SNSF grants cover all direct research costs (salaries, consumables, travel etc.) for three years. You may apply, if you work in Switzerland. Your application, which includes a research proposal of maximum 20 pages, has to be sent direct to Division III where projects from biology or medicine (div3@snf.ch) are considered. A copy also goes to the local research commissions. Several external reviewers, primarily from abroad, evaluate each proposal. You are allowed to write a list of experts you would like or not like to have. Based on the reviews and the opinion of your local Research Commission, the expert consultant from the National Research Council responsible for your research topic makes a recommendation to your division of the National Research Council, which in turn writes a request for ratification to its Presidential Board. The two deadlines each year for project funding are 1st March and 1st October.

Bits and Pieces

There are lots of other funding opportunities available, although in general they do not offer the possibility of starting an independent research group. They provide you with extra cash to subsidise your salary or boost limited funds for a research project. Often, they are limited to a specific university or research institute or are restricted to a particular scientific discipline or career



stage. You may find detailed information and links on the web pages of the respective department or research commission, responsible for career and research development at the university of your interest. At all Swiss universities special mentoring programmes for female and junior scientists have also been recently established and may provide additional hints for funding (e.g. www.mentoring.unibe.ch or www.mentoring.uzh.ch).

In December 2007, the ETH Zurich announced that starting from 2008 several new grants and fellowships would become available (www.vpf.ethz.ch). Twenty **ETH fellowships** will be annually awarded to post-docs, who have obtained their doctoral degree outside the ETH within the last 24 months. They may not be employed at the ETH for more than six months. The application is done together with an ETH professor. The fellowship consists of a full ETH standard post-doctoral salary and an additional CHF 10,000, which might be used for travel, consumables or in the first year for moving expenses of the fellow. The duration of the fellowship is one to two years. In addition, there are three types of **ETH Research Grants**. ETH Independent Investigators' Research Awards (ETHIIRA) formerly called "TH-Gesuche", involve a sin-

gle or a small group of ETH principal investigators (with earned doctorate and at least a 50% ETHZ position) and support primarily highly innovative graduate student projects. Two types of collaborative, highly interdisciplinary research projects CHIRP1 and CHIRP2 will provide up to CHF 750,000 or CHF 2 million, respectively for three years. The ETH Research grants are not to be used to fund, for example, salaries for participating principal investigators or post-docs who received their doctoral degree from the ETH or University of Zurich immediately before the commencement of the project. The next submission deadline for all funding schemes is March 15, 2008.

The University of Zurich is the largest Swiss university boasting 24,000 students, 4,500 staff and more than 160 institutes. With the "**Forschungskredit**" (Funding for Individuals and Projects) it supports highly qualified young researchers, meaning doctoral students, post-docs and habilitation candidates. The maximum contribution per project is CHF 200,000 for one to two years. It may be used for your own salary or to gather preliminary data before applying to the SNSF. People not yet working at the University of Zurich must provide confirmation of their future employment at this institution. People already receiving SNSF money may not apply. In 2007, 240 applications with a funding volume of about CHF 27 million were submitted to the Research Committee and the Young Academics Support Committee. Finally, 99 applications with a volume of CHF 6.4 million were approved. In order to provide a high number of applicants with money, two-thirds of the successful applications did not receive the requested amount of cash. The 2008 deadline for submission of proposals has just passed on February 1, 2008. More information: kommision@forschung.uzh.ch.

Prizes and fellowships

Due to limited funds **Swiss academies**, such as the Swiss Academy of Medical Sciences (SAMS, www.samw.ch) or the Swiss Academy of Sciences (SCNAT, www.scnat.ch), are not able to provide support for research projects in general but award a small number of prizes. Cancer research in Switzerland is promoted by the three partner organisations Oncosuisse, the Swiss Cancer League and by the Foundation Cancer Research Switzerland, which annually spend more than CHF 10 million on independent project research and also for fellowships

(www.swisscancer.ch). About 20,000 foundations exist in Switzerland and the yearly funding volume for science and research is estimated at CHF 165 million. There is no publication duty for foundations but the Federal Department of Home Affairs provides an electronic searchable database on its web pages (www.edi.admin.ch) for about 2,600 non-profit foundations under federal survey in German, French and Italian language. For example, the **Louis-Jeantet Foundation** (www.jeantet.ch), which was established in 1983 in Geneva, is promoting biomedical research annually with CHF 4 million. This amount is equally split between European research projects and projects performed primarily at the University of Geneva. Each year, the foundation provides two PhD fellowships for the EMBL or up to three Louis-Jeantet Prizes for established European researchers with CHF 600,000 for ongoing research and CHF 100,000 ad personam. Starting in 2010, one to two Young Investigator Career Awards will be annually available. These Awards should further boost the career of researchers that have already received an ERC Starting Independent Research Grant and cover 400,000 for ongoing research and 50,000 as a personal prize. In Geneva, the foundation is supporting, for example, Louis-Jeantet Professors at the Faculty of Medicine by providing funds for their salary, infrastructure and staff and is also financing several tenure track positions for “next generation” researchers in the fields of medical imaging, neurosciences or cardiology.

Paying people

Another important foundation is the **Gebert Rüf Foundation** with an annual funding volume of CHF 10 million. It especially supports young scientists in various areas by providing their salary. A list of currently funded projects and the four-yearly deadlines for submission of a proposal can be found under www.grstiftung.ch. The **Max Cloetta Foundation** (www.cloetta-stiftung.ch) annually provides about CHF 1.5 million as a research prize and by financing salaries for fully trained and independent researchers below the age of 41. The **Novartis Foundation** (www.jubilaeumsstiftung.novartis.com) promotes young biomedical Swiss scientists in the form of personal grants to finance post-doctoral research abroad or with a contribution to personal salaries if the research project is conducted in Switzerland. No allowances for consumables, family allowances and travel expenses of the fellow-ship holder are given by the foundation.

Outlook

Switzerland as a nation, which is keen on regular internal and external evaluations, is certainly aware that there is a backlog demand when it comes to the promotion of young research talent. A few leading and well-funded research institutions have already done their homework and recognise that they will only be able to consolidate or improve their position if they can attract the best talent available on the market, irrespective of nationality. Despite their scientific excellence, the universities are one of the major stumbling blocks in Switzerland. Although they have taken some steps forward, for example, by establishing international graduate schools or starting to subsidise smaller post-doctoral projects, they continue to experience problems when it comes to the establishment, financing and integration of independent research structures, which fall outside of their traditional system.

New programmes in sight

In May 2006, the Swiss people voted for changes in their education system and committed themselves to the continued development of high-quality and pioneering education, research and innovation. As a direct consequence, the Federal Swiss Council released its research programme for the next four year period (2008-2011) under the title: “Sustainably securing and improving quality – Increasing competitiveness and growth.” Many of the recommendations that have been made, including an increase the overall budget, were finally ratified and in the following years, providing there are no budget cuts, the SNSF intends to distribute CHF 590 M (2008), 621 M (2009), 657 M (2010) and 747 M (2011) to the scientific community. Furthermore, the Federal Institutes of Technology were asked to actively pursue the promotion of

the next generation of young scientists and to the SNSF it was suggested that a new programme be developed for best-qualified young researchers, which is already in place with **Ambizione**. Switzerland is also expected to pass a new federal law in 2012, which, among other things, will regulate the financing and cooperation between federal, cantonal and technical universities. How and whether at all, these changes and reforms translate into an improvement when it comes to the promotion of young research talent, remains to be seen.

Willing to invest

What is my advice for a young researcher striving for independence? Switzerland definitely wants to attain a leading international position in certain areas of science and technology, and is willing to invest a substantial amount of its limited resources to reach this goal. Depending on your career stage you may benefit from this intention and the already established expertise and infrastructure. As a freshman post-doc, it will definitely do no harm to apply to one of the leading research institutions with or without Swiss money. It is success that will improve your chances of getting your own independent research team afterwards. At the next stage when it comes to proving your independence, the competition for one of the annually awarded 30 SNSF Professorships (all disciplines) is quite high and you might consider moving forward to other countries able to provide more opportunities. Join the leading Swiss research institutes as a junior faculty only if they offer you a real tenure track position with sufficient funding to establish your own group. Beyond this, I would recommend avoiding the Swiss universities at this present stage in time, especially if you are not in the position to immediately obtain a SNSF or a full professorship.

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Swiss Research Funding Resources

- General Swiss Portal for Research and Innovation: <http://www.myscience.ch>
- Swiss National Science Foundation (SNSF): <http://www.snf.ch>
- State Secretariat for Education and Research (SER): <http://www.sbf.admin.ch>
- CTI-The Innovation Promotion Agency: <http://www.bbt.admin.ch/kit>
- Swiss Science and Technology Council: <http://www.swtr.ch>
- Swiss Guide to European Research: <http://www.euresearch.ch>
- Erawatch: Information on Swiss Research Structures and Policies: <http://cordis.europa.eu/erawatch>
- Ranking Forum of Swiss Universities: <http://www.universityrankings.ch>
- Swiss Talents: <http://www.swisstalents.ch>