

Claudio Bordignon

is Professor of Haematology at the Università Vita-Salute San Raffaele, Milano. He is a member of the newly established European Research Council (ERC).

Roberto Sitia

is Professor of Cell and Molecular Biology at the Medical School, Università Vita-Salute San Raffaele, Milano. He is a member of EMBO and cofounder of European Life Scientist Organization (ELSO).

The status of women in the European life sciences

Grounds for Optimism

by Karla M. Neugebauer



Approximately half of the graduate students in the molecular life sciences in Europe are women. These students are selected for their academic achievements and their potential to perform well as scientists; clearly, selection committees and PhD supervisors believe that men and women are equal in their intellectual and research capabilities.

Nevertheless, when we plot the percentage of women holding predoctoral, postdoctoral, junior group leader and professor positions we see a steady and dramatic decline in the proportion of women at the more advanced career stages. Women made up only 11.3% of senior faculty positions in natural sciences in the European Union in 2004. Inextricably related to this, women are under-

represented in elite national and international scientific societies, they receive less grant support and fewer merit awards than men, and they are in the minority among speakers at conferences.

Governments and scientific organizations are concerned about the loss of women from science because they provide the resources for scientific education and train-

ing; they expect that this investment will provide returns in the form of discovery and technological innovation. If most women with PhDs eventually leave the system, this is a huge waste of education and training, not to mention talent. As women are also underrepresented in business and industry, it is clear that the loss of female talent is not specific to academia alone. More long-term studies are needed to answer the important and nagging question: what happens to the women who leave science?

Beyond the fates of individuals, new studies demonstrate other reasons to pursue gender equity in science: research productivity increases in labs when there is a good balance of gender, and gender-balanced teams are more able to find solutions to problems than are single-gender teams. Business and industry are also starting to realise that identifying the right work-life balance for their employees will enable them to recruit and retain productive men and women researchers.

So, Europeans are asking, "Why do women drop out of academia?" And, "What can be done?" In May 2007, a conference

entitled "Women in Science: The Way Forward" – sponsored by the European Commission's SET-Routes network – took place in Heidelberg to examine these issues. It is clearly difficult to answer the 'why' question. Employment conditions (salaries, the availability and cost of child-care, maternity and paternity leave policies, flexibility of working hours, attitudes towards both women and science) play a role, although they vary among

countries. In Sweden, for example, employment conditions are very family-friendly;

even so, the gender gap remains at the level of top positions in academia. Many other important factors are less tangible (early childhood education and upbringing, unconscious bias). Exciting talks by social scientists at the conference explored how very young children are socialised to believe that girls are less interested in or good at maths and science and how both men and women unconsciously associate men with careers and science and women with family. On the other hand, there is compel-

ling evidence that few differences between the sexes exist when it comes to performance in verbal and mathematical tests, consistent with the fact that men and women are accepted in equal numbers as undergraduates and PhD students. Women and men seem to begin their careers with equal potential for success.

The practical discussion now focuses largely on the 'leaky pipeline', in which

fewer female PhDs in maths and science progress to the highest positions compared to their male

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peers. Some believe that the leaky pipeline is self-correcting, assuming that women currently in training phases will move into senior positions over time. Longitudinal data show that this is clearly a fallacy. Many believe that women leave science, because having children compromises their ability to succeed on a competitive career track. Isabel Beuter of the Centre of Excellence Women in Science (CEWS) cited a study by Inken Lind, analysing research on successful women with and without chil-

dren. Having children produced no measurable delays in career stage progression and no difference in publication productivity. This shows that successful women are not hindered by motherhood. More studies are needed, however, to determine whether women who failed to progress did so because they had or planned to have children. A related possibility is that women scientists in dual-career families may move (more often than men) due to their partners' careers and to the detriment of their own. Beuter and others conclude that the relative value society and individuals place on women's careers compared to men's and inherent stereotypes about men's and women's interests and abilities may be the most pertinent factors hindering women's progress within academic structures.

What can we do? The main thrust is to avoid the accumulation of small disadvantages that seems to plague women's progress up the career ladder.

The first strategy is financial; it aims to retain women at the postdoctoral level. A number of fellowships specifically for women are now available; for instance, a variety of awards are sponsored by L'Oreal-UNESCO (<http://www.forwomeninscience.com>).

Several programs aim to support women returning to science from a career break; examples are the Daphne Jackson Trust (<http://www.daphne-jackson.org/>) and the Marie Heim-Vögtlin Program of the Swiss National Foundation (<http://www.snf.ch>). An

unusual award made through the Nüsslein-Volhard Stiftung (<http://www.cny-stiftung.de/>) provides funds for home help for women graduate students with young children; it aims to minimise their time doing household chores in favour of time in the lab and quality time with their kids.

Second, mentoring for women at all career stages is crucial. Women should seek senior mentors both within and outside their institutions who can provide them with the benefits of their experience, reputation and connections.

Third, women can profit from training in leadership, negotiation and presentation skills, which can enable them to navigate an environment that is not currently gender-neutral. Several American participants



at the SET-Routes meeting emphasised the importance of training all academics – male and female – in best practice, especially on committees carrying out the 'gate-keeping' functions of recruitment, evaluation, and promotion. Along these lines, leadership is clearly seen to be important: when heads of departments and institutes strive for gender balance, family-friendly policies are pursued and women are recruited.

When it comes to recruiting women into faculty positions, a common complaint is that the proportion of applications from women is too low. This reflects the current mechanism for soliciting applications in basic science: place an advertisement in *Nature* and *Science* and wait to see what arrives in the mail. If only 5–10% of applications are from women, it is unlikely that a woman will be hired unless gender is made a priority in the hiring process. Science is,

above all, driven by excellence, so no-one wants to select his or her next colleague solely because she is a woman. Prior evi-

dence suggests that this kind of affirmative action does not work in science. A viable alternative is to increase the number of female applicants for each job and then select the best person. When the proportion of women applicants increases, more women will rise to the top.

How can search committees identify qualified women in a desired field in order to solicit applications for faculty positions? Recently, ELSO created a Database of Expert Women in the Molecular Life Sciences. This database is unique, because it is for ex-

perts: molecular life scientists know what to expect from experts in their fields – publications in international journals, keywords we all understand, and career stages that are familiar to us. An expert woman can register if she is of European nationality or working in Europe, and she must be first or last author of at least one paper in a major international journal within the last three years. Over 400 women experts, from postdocs to senior group leaders, are currently registered in the data-

base. This is one resource scientists can use to find women with appropriate expertise.

The broad aim of the Database of Expert Women is to increase the visibility of European women who are already successful at various career stages. Thus, the database also helps organizers of scientific meetings to identify women to invite as speakers and chairs. It has become unacceptable to organize an international meeting without a reasonable number of women on the invited speaker list; ELSO recommends a target of 35% women. Indeed, sponsors of European meetings, such as EMBO and the Federation of European Biochemical Societies, stipulate that gender balance should be considered when assembling the speaker list. Nevertheless, it is still true today that too many European meetings feature no or amazingly few women speakers. (If you are frustrated by this, you can download a letter to conference organizers from the ELSO Career Development Committee web pages.) The database can draw attention to more junior women whose names may not at first spring to mind.

Moreover, our peer review system, by its very name, requires that gender balance be considered when assembling commissions, grant review panels, and editorial boards, as well as *ad hoc* reviewers contributing to all three. ELSO has received positive feedback from a number of granting organizations and journal editorial boards. The Human Frontiers Science Program, for example, uses the database to identify potential reviewers and aspires to have 30% women on its grant reviewing panels.

Scientific organizations can do a lot, and ELSO's Database of Expert Women in

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the Molecular Life Sciences is an example. Another important role of scientific organizations is simply to increase awareness by sponsoring events, providing information and links online, and creating a receptive environment where concerns can be raised and discussed. Working towards gender equity benefits both the women and the men in scientific organizations.

Further Reading:

- ▶ Neugebauer, K.M. 2006. *PLoS Biology*; and references therein.
- ▶ European Commission, 2006. She Figures 2006 - Women and Science Statistics and Indicators (EUR 22049).
http://ec.europa.eu/research/science-society/pdf/she_figures_2006_en.pdf
- ▶ European Commission, 2006. Women in Science and Technology - The business perspective. (EUR 22065).
http://ec.europa.eu/research/science-society/pdf/wist_report_final_en.pdf
- ▶ Hyde, J.S. and MC Linn. 2006. Diversity. Gender similarities in mathematics and science. *Science* 314:599-600.
- ▶ Barnett, R.C. and C. Rivers. 2004. Same Difference: How Gender Myths Are Hurting Our Relationships, Our Children, And Our Jobs. Basic Books (New York, NY).
- ▶ ELSO Career Development Committee pages and Database of Expert Women in the Molecular Life Sciences
<http://www.elseo-cdc.org/>
- ▶ EMBO Women in Science pages
<http://www.embo.org/gender/links.html>
- ▶ Eur. Commission (EC) Science & Society pages
http://europa.esn.be/comm/research/science-society/home_en.cfm
- ▶ SET-Routes
<http://www.set-routes.org>

Further Information...

...on women in science and links to mentoring and funding resources can be found on:

Karla Neugebauer
is a group leader at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden and a member of the Career Development Committee of ELSO. She currently manages ELSO's Database of Expert Women in the Molecular Life Sciences.

