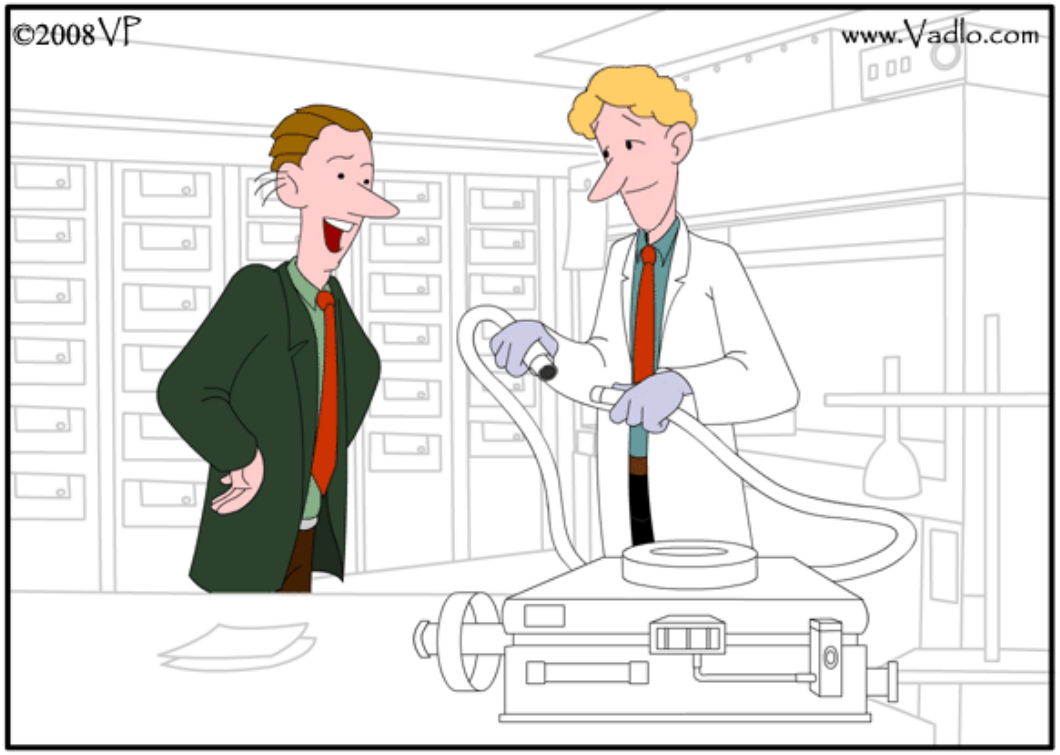
Woman in Science and UK Careers

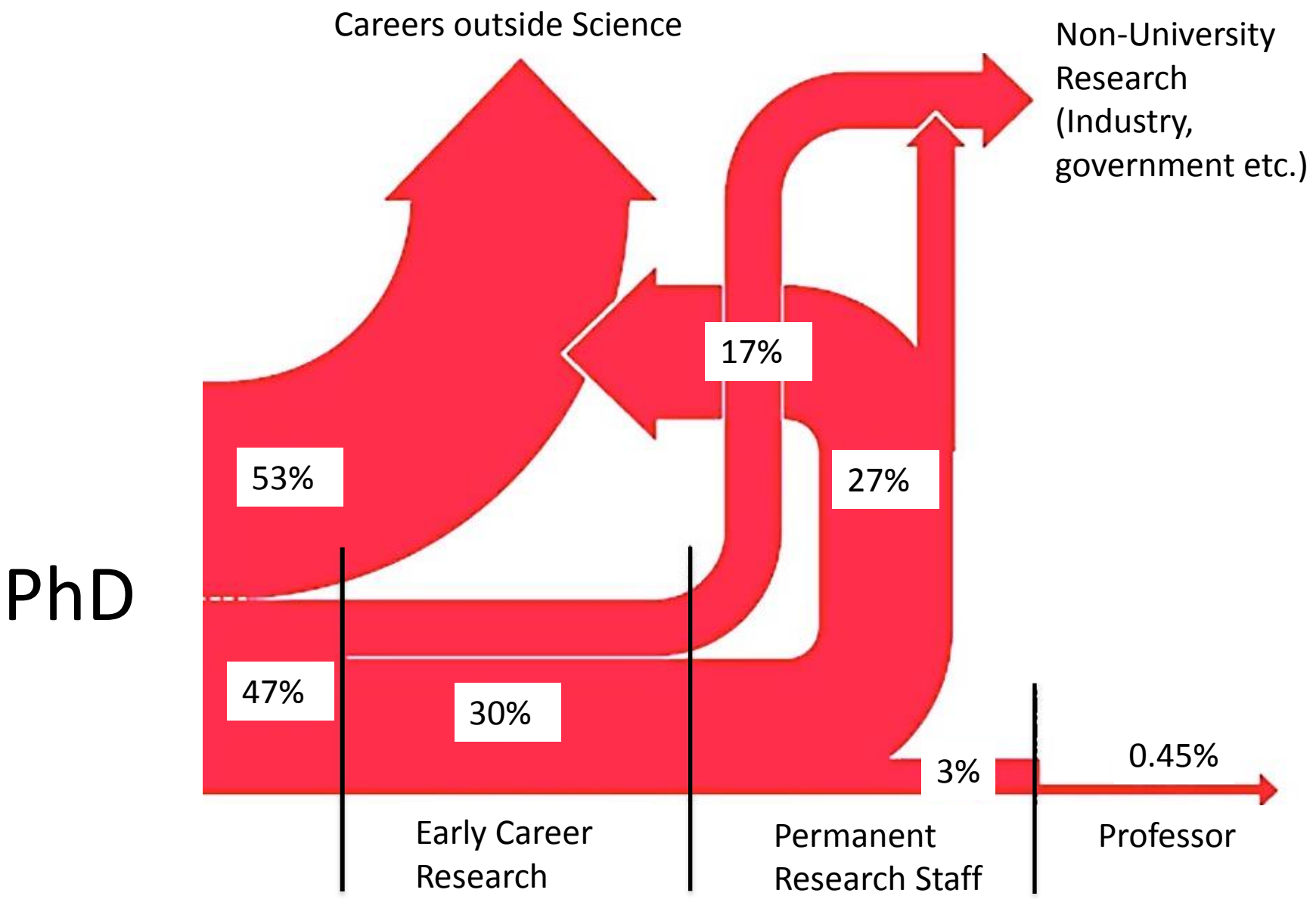
The National Postdoctoral Association defines a postdoc as:-

"an individual holding **a doctoral degree** who is engaged in **a temporary** period of **mentored** research and/or scholarly **training** for the purpose of acquiring the professional skills needed to **pursue a career path** of his or her **choosing**."



*You are the Postdoc. You should know how to **make ends meet**!*

The Scientific Century: securing our future prosperity.
Royal Society Policy 2010.



The harsh truths about pursuing an independent career (and maybe how to succeed)

- **There is no academic career ladder;** It's a pyramid and it's crowded at the top.

- **Being smart and working hard is *not enough;*** lots of other people are as smart as you and just as hard-working.

Set yourself apart !

Contacts are the lifeblood of your career…….

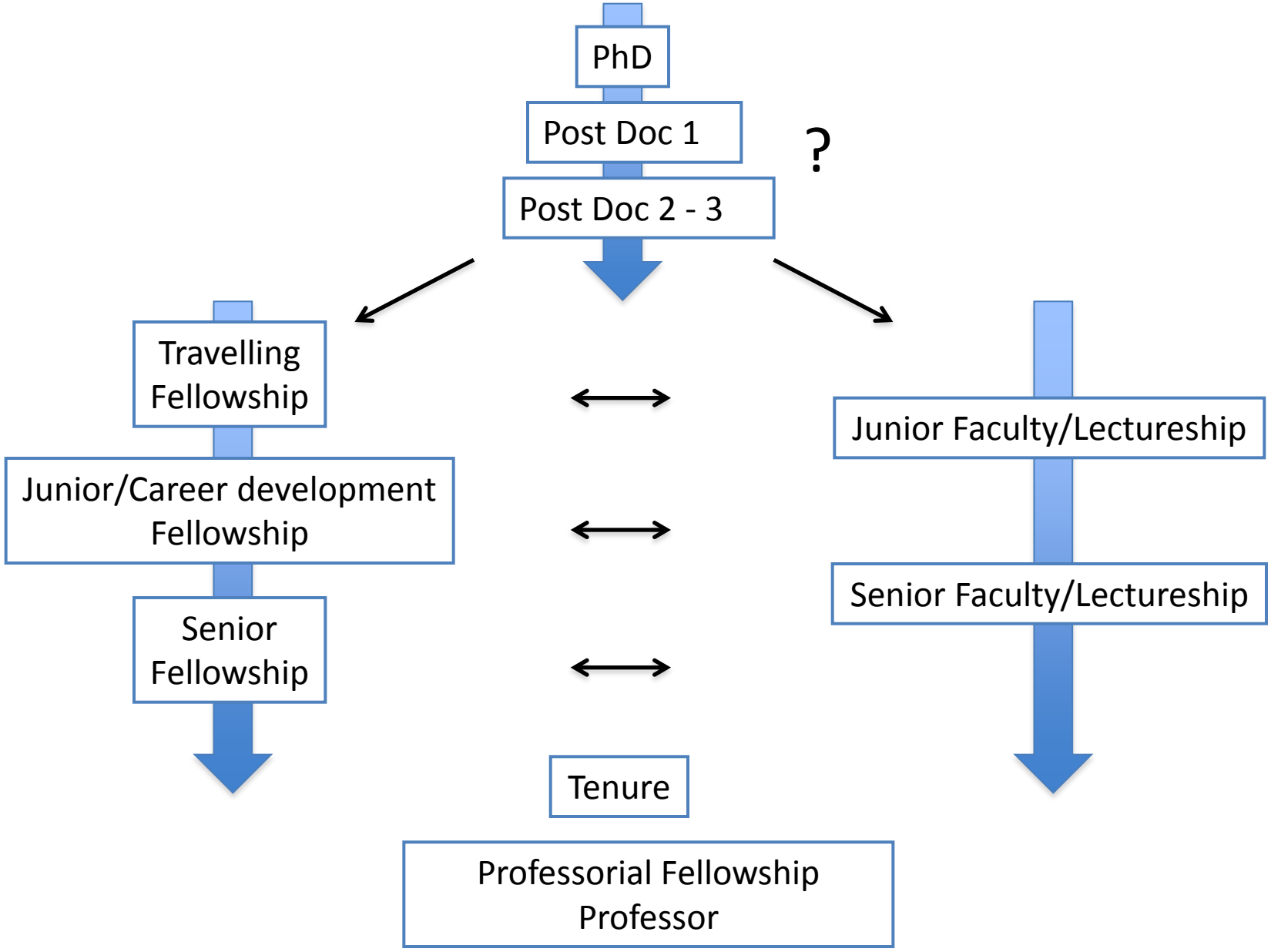
•It's vital to find people to work with who are interested in your long-term career, people you can learn from and people you can trust.

•The best way to do this is to use conferences/seminars as networking events, rather than expenses-paid jolly trips (or stress when you have to present!).

•If you go to a conference and don't introduce yourself to at least **10 people** then you are wasting your time!

Do you ever wake up early on a Monday morning because you are excited by doing an experiment?

Idealised academic career structure



Every post-doc position is different

2005 Sigma XI Postdoc Survey (USA)

7600 postdoctoral scientist questioned:-

- For 35% the PI controlled their projects ‘mostly or completely’.
- 38% ‘shared responsibility’ for their project with the PI.
- 25% were ‘mostly independent’.

The key for postdocs is to know when to leave…….

…….and that's nobody's decision but yours.

How to gain early independence

Learn research skills and publish PAPERs, papers, papers……

Become **THE** expert on your project.

Negotiate some autonomy with your PI to pursue a ‘side-line’ project

- Must fit within the overall scope of the lab
- Doesn’t take too much time or resource (produces some preliminary data)

Apply for small grants such as travel, small grants and fellowships.

Volunteer to look after students and/or take on other responsibilities.

Start writing a grant proposal ASAP – help your PI with applications.

Visit other Institutions and offer to give seminars.

Expand your network of colleagues (they may be your future reviewers!).

Ask to be a co-corresponding author (particularly if you have been mentoring/supervising a PhD student).

Key Pointers for Gaining Independence

Plan and execute. Be active in the planning and performance of *all* aspects of your research project:-

- experimental planning, design and execution
- data analysis and management
- manuscript writing

It's **your** research, so take responsibility for it.

See the bigger picture.

- Develop a sense of the entire spectrum of the research process.
- Keep asking yourself what it takes to go from an idea to the final paper.

Be proactive.

- Be the first one with the idea.
- Initiate discussions in lab meetings and organize activities (journal clubs and inviting seminar speakers).

The Fellowship Route

Fellows are usually very attractive to universities because the fellowship gives you a chance to build an independent funding and publication record as well as a research group.

Numerous Funding agencies offer Fellowship opportunities of varying **lengths**, **seniority** and for work **overseas**.

Universities may offer incentives such as an additional 2-3 years of funding *after* the end of the Fellowship.

Protected research time (limited teaching/administration).

A good time to start applying for a fellowship is between your 4th and 6th year of postdoc.

1981
1985
PhD Student, Genetic Department, University of Adelaide, Australia

Need to get more experience in Molecular Biology

1986
1990
Research Scientist, CSIRO Animal Production, Sydney, Australia

Transferable Skills, Medical Research, Apply for jobs overseas!

1990
1994
Post-doc, Department of Biochemistry, University of Cambridge, UK

Lab dysfunctional - time to move.

Post-doc, Department of Medicine, University of Cambridge, UK

Mentor suggests - Apply for Personal Lectureship

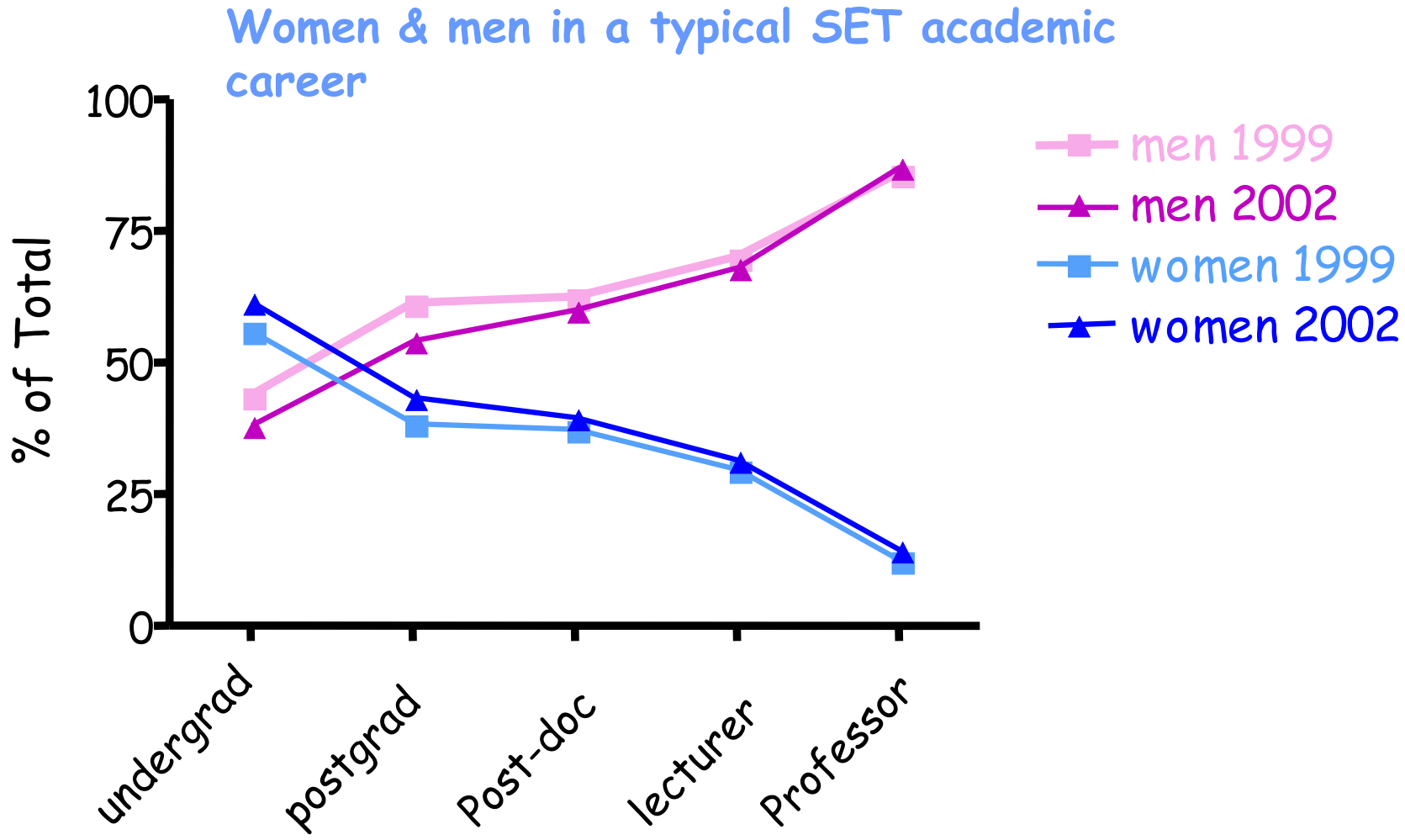
1995
2005
BHF Basic Science Lectureship, University of Cambridge, UK

2005
2010
2007
BHF Senior Fellowship, University of Cambridge, UK

2007 time to move on

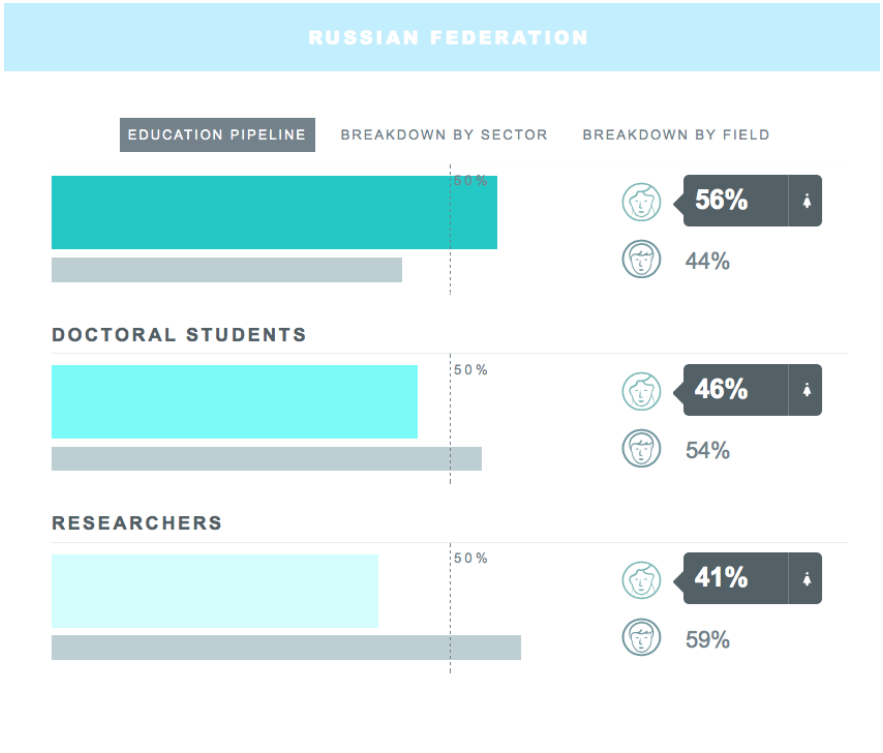
Professor of Cellular Signalling, King's College London, UK

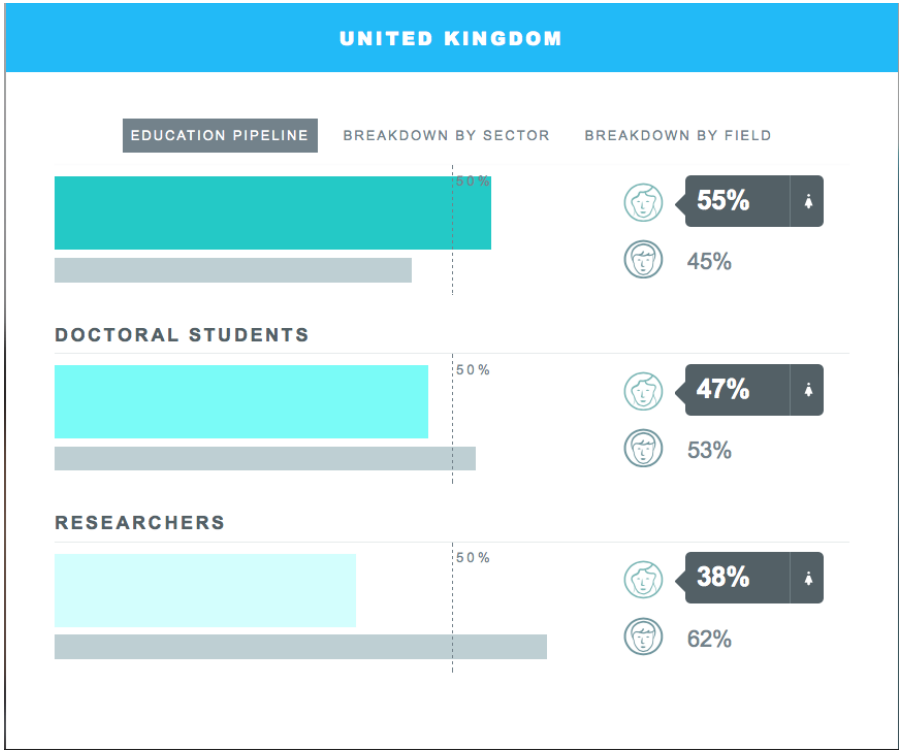
Where have all the Women Gone?



EU commission Community Research statistics Helga Ebeling

Women are More than Equal as Undergraduates





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< 20% Professors

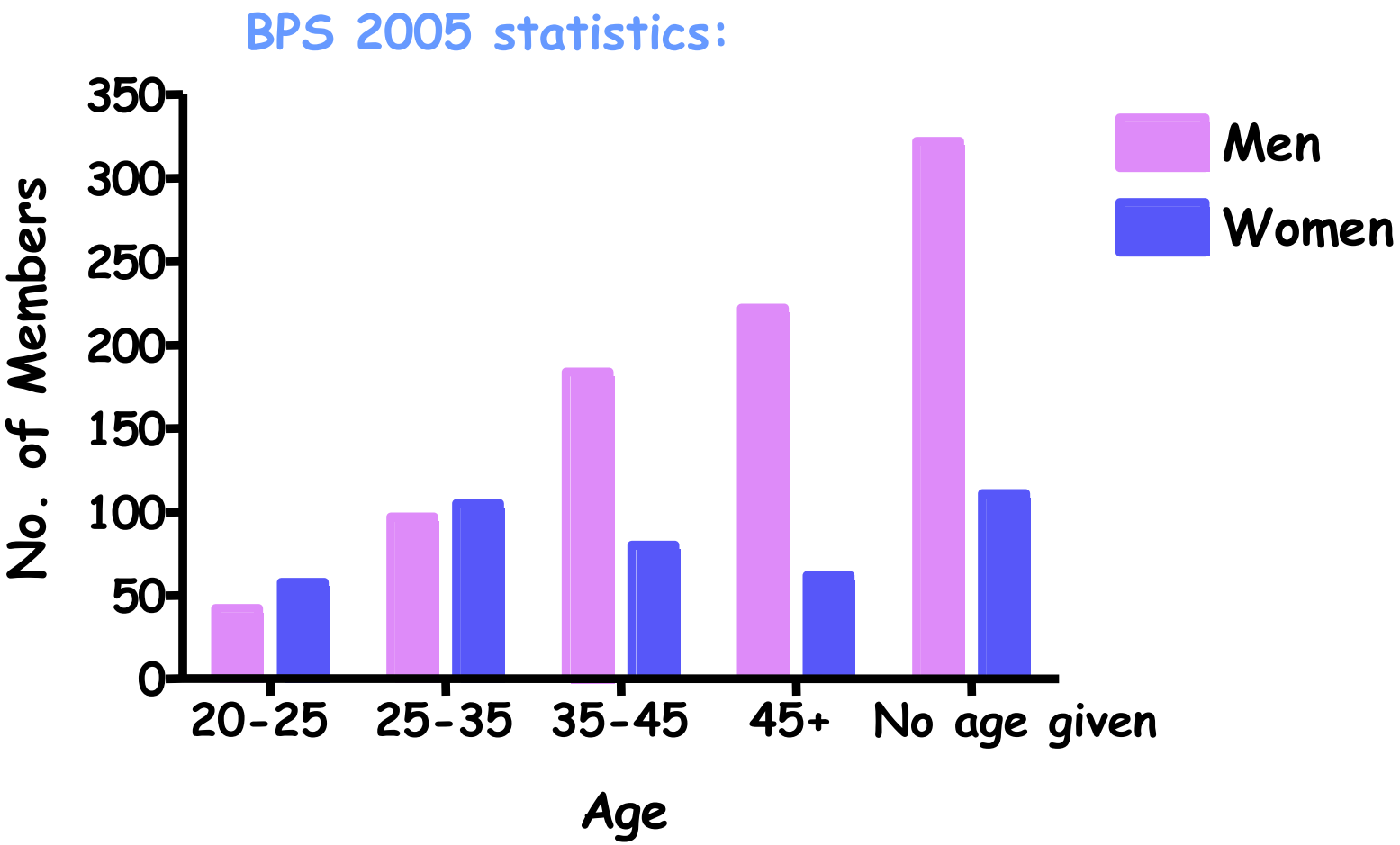
http://www.uis.unesco.org/_LAYOUTS/UNESCO/women-in-science/index.html#overview!lang=en

Under-represented on Editorial Boards and Committees.

BPS 2005 statistics:
women are a minority!

Children?
Networking?
Confidence?
Mentorship?
Stupidity?

Women Leave in their 30s



Unconscious Bias?

https://implicit.harvard.edu/implicit/

Science faculty's subtle gender biases favor male students

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Edited* by Shirley Tilghman, Princeton University, Princeton, NJ, and approved August 21, 2012 (received for review July 2, 2012)

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.

diversity | lifestyle choices | science education | science workforce

gender disparity in science (9–11), and that it "is not caused by discrimination in these domains" (10). This assertion has received substantial attention and generated significant debate among the scientific community, leading some to conclude that gender discrimination indeed does not exist nor contribute to the gender disparity within academic science (e.g., refs. 12 and 13).

Despite this controversy, experimental research testing for the presence and magnitude of gender discrimination in the biological and physical sciences has yet to be conducted. Although acknowledging that various lifestyle choices likely contribute to the gender imbalance in science (9–11), the present research is unique in investigating whether faculty gender bias exists within academic biological and physical sciences, and whether it might exert an independent effect on the gender disparity as students progress through the pipeline to careers in science. Specifically, the present experiment examined whether, given an equally qualified male and female student, science faculty members would show preferential evaluation and treatment of the male student to work in their laboratory. Although the correlational and related laboratory studies discussed below suggest that such bias is likely (contrary to previous arguments) (9–11), we know of no previous experiments that have tested for faculty bias against female students within academic science.

If faculty express gender biases, we are not suggesting that these biases are intentional or stem from a conscious desire to impede the progress of women in science. Past studies indicate that people's behavior is shaped by implicit or unintended biases,

Extends to All Levels

Nature's sexism

The editors of this publication need to improve how we reflect women's contributions to science. For this, we must inject an extra loop into our thinking.

Earlier this year, we published a Correspondence that rightly took *Nature* to task for publishing too few female authors in our News and Views section (D. Conley and J. Stadmark *Nature* **488,** 590; 2012). Specifically, in the period 2010–11, the proportions of women News and Views authors in life, physical and Earth sciences were 17%, 8% and 4%, respectively. The authors of the Correspondence had taken us to task in 2005 with a similar analysis for the authorship of our Insight overview articles, and gave us slight credit for having improved that position.

Our minds were further focused on the problem by a much-discussed paper published in September (C. A. Moss-Racusin *et al. Proc. Natl Acad. Sci. USA* http://doi.org/jkm; 2012). The disturbing message of this blinded, randomized study was that US academics discriminated in hiring decisions and in salary against women who applied for a lab-manager position. Notably, female faculty members were as significantly discriminatory as males.

So here is a fuller litany of facts about *Nature*'s performance in this arena, based on internal surveys.

Of the 70 editors and reporters around the globe who commission, select, write or oversee *Nature*'s daily and weekly content, 38 (54%) are women. This proportion is reflected among team leaders. We feel confident that there is no discrimination in the recruitment and hiring about who is doing interesting or relevant work, for all of the social factors already mentioned, and possibly for psychological reasons too, men most readily come to editorial minds. The September paper speculated about an unconscious assumption that women are less competent than men. A moment's reflection about past and present female colleagues should lead most researchers to correct any such assumption.

"There is a need for every editor to ask themselves, 'Who are the five women I could ask?'"

We therefore believe that there is a need for every editor to work through a conscious loop before proceeding with commissioning: to ask themselves, "Who are the five women I could ask?"

Under no circumstances will this 'gender loop' involve a requirement to fulfil a quota or to select anyone whom we do not know to be fully appropriate for the job, although we will set ourselves internal targets to help us to focus on the task. It is not yet clear just what difference this workflow loop will make. But it seems to us to be a step towards appropriately reflecting in our pages the contributions of women to science. ■

R. TAYLOR/WWW.TAYLORPHOTO.CO.UK

Throw off the cloak of invisibility

Improving Wikipedia entries for notable women scientists should be only the start for a higher profile for women in science, says **Athene Donald.**

Take a look at Wikipedia this week and you will find that something has changed. The online reference tool now includes an entry for Eleanor Maguire, the cognitive neuroscientist at University College London who showed that the brains of London's taxi drivers change as the drivers develop their knowledge of the city's streets. And Louise Johnson, a molecular biophysicist at the University of Oxford, UK, from 1990 until her death last month, now has a longer entry more worthy of her achievements. The changes are welcome, but overdue.

Around this summer's Olympic and Paralympic Games I heard much discussion, some rather surprised, about the excitement and excellence of women's sports. Suddenly, people realized that women could excel at everything from football to cycling, from rowing to boxing — and be thrilling to watch. Despite years of work to address sexism, women in science tend to be the equivalent poor relation. Although we are known to lurk in there somewhere, on occasion women are still seen as add-ons who need to be patted on their pretty little heads, not always taken seriously and disadvantaged in pay and in other resources.

Indeed, a study published last month in the *Proceedings of the National Academy of Sciences* showed that for identical CVs submitted under a male or female name, the women were rated as significantly less competent and hireable than men — irrespective of the sex of the evaluator — and there were notable differences in the salary recommended (C. A. Moss-Racusin *et al. Proc. Natl Acad. Sci. USA* http://dx.doi.org/10.1073/pnas.1211286109; 2012). Unconscious bias is still prevalent, even if overt discrimination is rare.

DESPITE YEARS OF WORK TO ADDRESS SEXISM, WOMEN IN SCIENCE TEND TO BE THE POOR RELATION.

rather than as a mathematician who made important contributions to the field that would become computer science, including what could be considered the first computer program, to be used in conjunction with Charles Babbage's 'difference engine'. She does, at least, have a comprehensive Wikipedia entry.

By raising the profile of some women scientists and by training editors to be sensitive to the fact that such women are under-represented (in both number and length of entry) on Wikipedia, we can hope for a steady improvement in how women scientists are portrayed. Young aspiring scientists are very likely to use Wikipedia to gather information about past and present scientists. To help them to see what life might be like if they did pursue a career in science, we need realistic entries that provide valuable insight about living as well as dead scientists.

I sincerely hope that this edit-a-thon will encourage more people to overhaul the online portfolio of women scientists' entries. The number of female Fellows of the Royal Society is small, although growing, so it should be a reasonable aspiration for us in the United Kingdom to give each one a decent write-up. I'll put my hand up and admit that as one such female fellow, I do have a rudimentary entry, although it is not particularly informative or inspiring in its current state.

But we fellows are just one tiny band of largely academic scientists. We need entries for more women scientists, and for technologists too, with handsome photographs and some context for their work and lives. I have a long-standing interest in this issue. I sit on the Royal Society's Equality and Diversity Network and I chair the Athena Forum, a national group dedicated to improve the progression of women in science, technology and medi-

How to Redress the Imbalance?

Career development approaches used elsewhere that have proven successful at supporting women to progress have included:

- mentoring
- increased transparency in promotion
- competitive financial awards to assist those returning from a career break to become research active

BHF Career Re-Entry Research Fellowship

http://www.bhf.org.uk/research_health_professionals/apply_for_research_grants/grant_types__guidelines/crerf.aspx

KCL Women's Network: https://mailman.kcl.ac.uk/mailman/listinfo/womens-network

UK Athena Swan Initiative

- All BRC funded institutes must have at least a Silver Award to show improvement for women at work.

Financial Incentive?