


**Improving gender equality in Science**  
***– a personal perspective from Biology@York***

**Prof Jane K Hill**

Department of Biology

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 @janehillYork

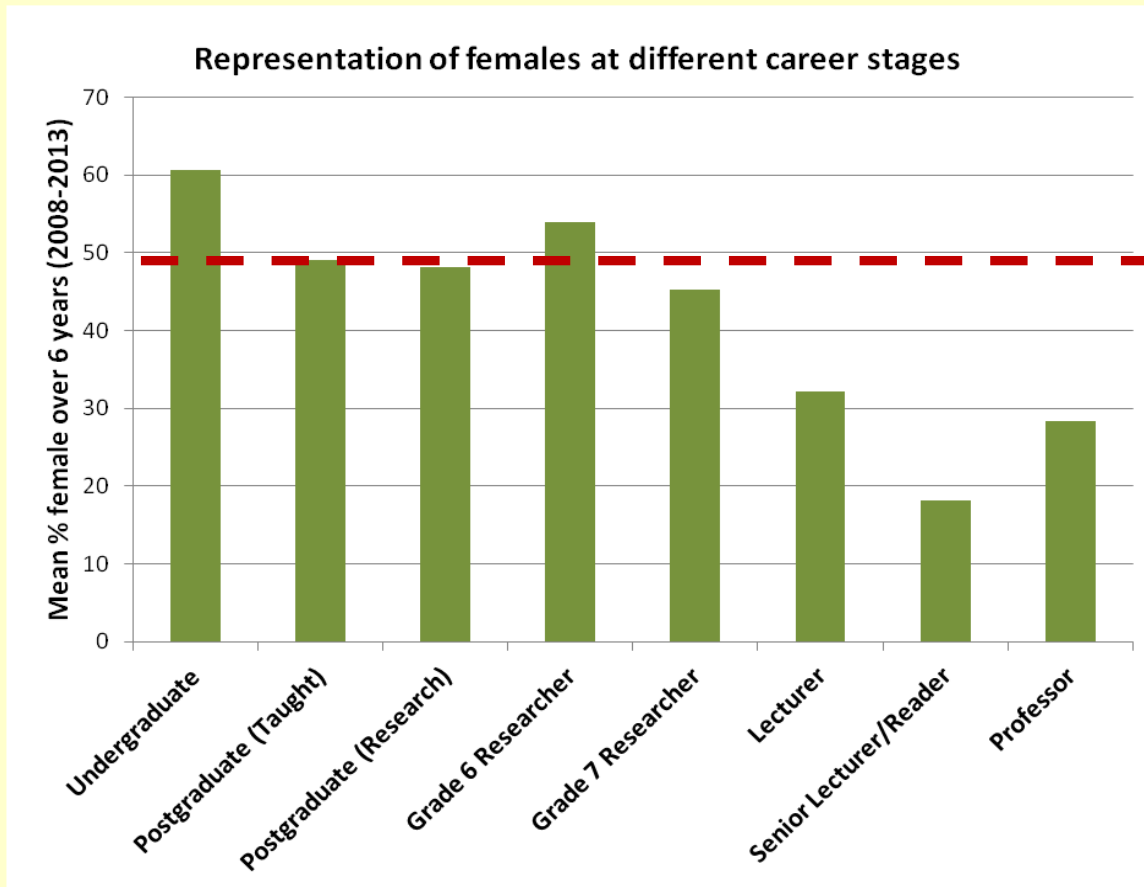
# UNIVERSITY *of York*

## Department of Biology

***Bad working practices  
detrimentally affect  
women, good working  
practices benefit all.***



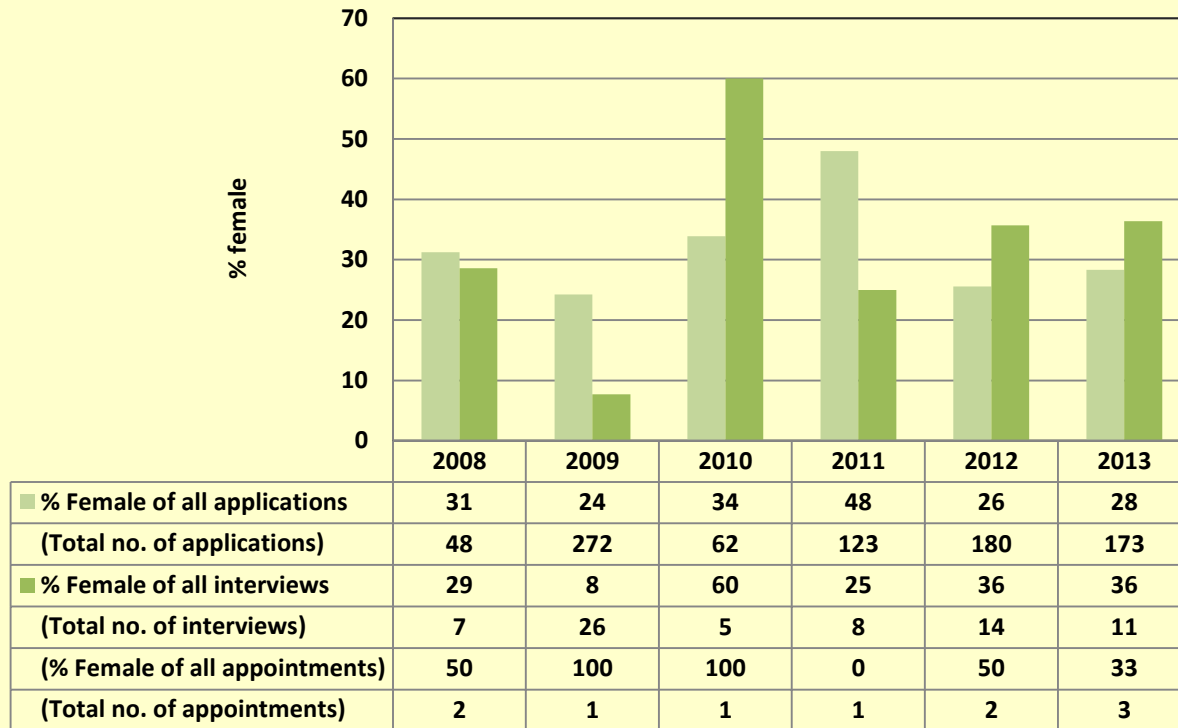
**% of females at different career stages in Biology at York.**



**50%**

Overall gender parity in appointments, but only ~33% of applicants are female.

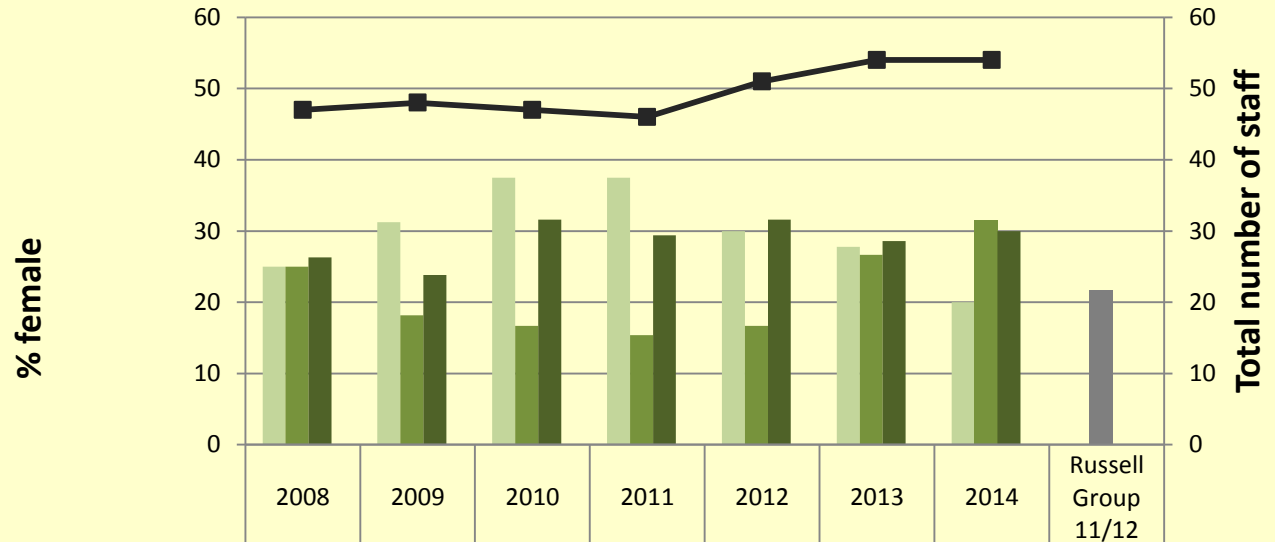
Academic recruitment



Maintained gender parity in recent appointments 2014-15: 6M, 4F

Increase in number of female academics overtime, and higher % of female academics than UK average.

Academic Staff by Grade



% female Lecturers	25	31	38	38	30	28	20	
Total no. of Lecturers	16	16	16	16	20	18	15	
% female Senior Lecturers/Readers	25	18	17	15	17	27	32	--
Total no. of Senior Lecturers/Readers	12	11	12	13	12	15	19	
% female Professors	26	24	32	29	32	29	30	
Total no. of Professors	19	21	19	17	19	21	20	
Total number of staff	47	48	47	46	51	54	54	

- Enhanced female representation in the Department.  
(#female professors increased from 5 to 7, #female lecturers from 3 to 7 during our Silver period).
- Embedded Athena SWAN principles in the Department.  
(Dedicated resource/budget, larger SAT, ToRs, web site, better data collection/analysis).
- Improved promotions processes.  
(part of annual PR discussions)
- Instigated a sabbatical system for academics.  
(1 term off in 9, also after return from period of leave or onerous job).
- New workload model for academics.  
(Information on teaching available for all to see, more transparency mechanism to help equalise loads).

Equality and Diversity - x GCRF Form - jane.hill@y... x University of York - Cale... x Cheap Train Tickets, No... x BBC - Home

www.york.ac.uk/biology/equality-diversity/

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UNIVERSITY *of* York

Department of Biology

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## ATHENA SWAN - GOLD FOR BIOLOGY



The Biology Department at York has been awarded Gold by Athena SWAN, and is one of only 3 Departments to have achieved this highest level in the recent round of assessments. It is the first Biology Department in Britain to have received a Gold award.


The Athena SWAN Awards recognise success in supporting the careers of women in science.

For information about Athena SWAN go to:  
<http://www.athenaswan.org.uk/>



Activities Documents Case Studies BioEDG Resources

### 2016: Biology employee nominated for an award



Biology PA Jenny Purcell was nominated in the prestigious Yorkshire PA Awards for best Social Media PA.

Jenny got through to the final but unfortunately lost out to Leeds Beckett University.

Jenny said "It was really good to be around so many other talented Yorkshire PAs! It's a great annual

**Prof Ian Graham, Head of Department says** "We are proud to have received this award. It reflects our continuing commitment to Athena SWAN principles, which have become embedded in all aspects of Departmental life. But we are also aware that there is still more to be done and we have new actions that will allow us to continue making progress in future."

**Prof Jane Hill, Athena SWAN champion in Biology** says, "We are delighted that our actions have resulted in gender parity in academic appointments over the past few years. Approximately 30% of our professors are women, a proportion that is rarely exceeded in science."

GCRF Grow GC Cal...pdf UoYdemandmanag...rtf

Show all

14:34 14/09/2016

**Biology Department student survey**

1. In the Biology Department, male and female students are given equal opportunities to contribute in tutorials.

Response	Count
Yes - male and female students are given equal opportunities to contribute	10
No - female students are given more opportunities to contribute	1
No - male students are given more opportunities to contribute	0
Don't know	1

**Biology Staff Survey for Athena SWAN**

1. In the Biology Department, staff are treated on their merits irrespective of their gender (e.g. both women and men are actively encouraged to apply for promotion and take up training opportunities).

Response	Response Percent	Response Count
Strongly disagree	3.2%	2
Disagree	1.6%	1
Slightly disagree	3.2%	2
Neither agree nor disagree	9.7%	6
Slightly agree	3.2%	2

Surveys provide honest feedback about how staff and students view the Department, and ideas for new actions.

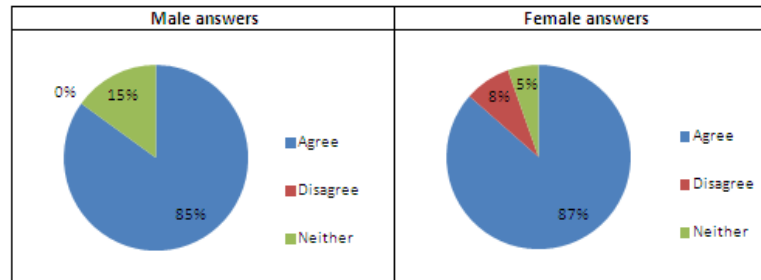
Currently surveyed academic staff (twice), 2<sup>nd</sup> year under-grads, PhDs and PS staff. Will keep repeating these.



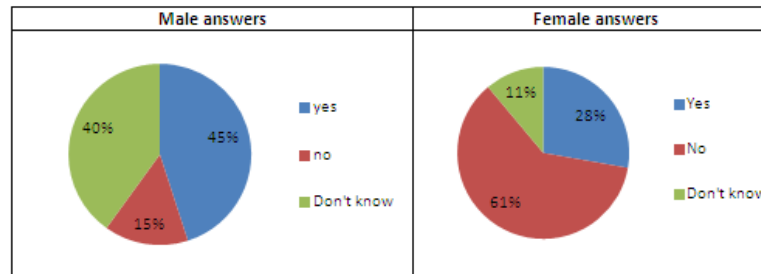
■ **98% of PhD students think Biology at York is a great place to study for females and males;**

**BUT:** >60%F do not think females are equally likely to have a successful career in STEM as males (versus 15%M); **AND:** 17%F have experienced a situation where they have felt uncomfortable because of their gender (versus 0% M).

- Q.9. After I complete my PhD, I intend to pursue a career in STEM (science, technology, engineering and mathematics)



- Q.11. I think that males and females are equally likely to have a successful career in STEM (science, technology, engineering and mathematics)



*“Principal investigators are particularly well positioned to influence workplace culture at their field sites.”*

The screenshot shows the University of York website. The main headline is "Study calls for new approach to tackle student 'lad culture' in higher education". Below the headline is a purple box with the text "JUSTICE AND EQUALITY". The article text reads: "Our education experts are calling for a new approach to tackle so-called 'lad-culture' in UK higher education following a pioneering study which explored the attitudes of university staff to the problem." At the bottom of the article is an image of a hand with the words "STOP SEXISM" written in red on the palm.

OPEN ACCESS Freely available online



## Survey of Academic Field Experiences (SAFE): Trainees Report Harassment and Assault

Kathryn B. H. Clancy<sup>1\*</sup>, Robin G. Nelson<sup>2</sup>, Julienne N. Rutherford<sup>3</sup>, Katie Hinde<sup>4</sup>

<sup>1</sup> University of Illinois, Urbana-Champaign, Department of Anthropology, Urbana, Illinois, United States of America, <sup>2</sup> Skidmore College, Department of Anthropology, Saratoga Springs, New York, United States of America, <sup>3</sup> University of Illinois, Chicago, Department of Women, Children, and Family Health Science, Chicago, Illinois, United States of America, <sup>4</sup> Harvard University, Department of Human Evolutionary Biology, Cambridge, Massachusetts, United States of America

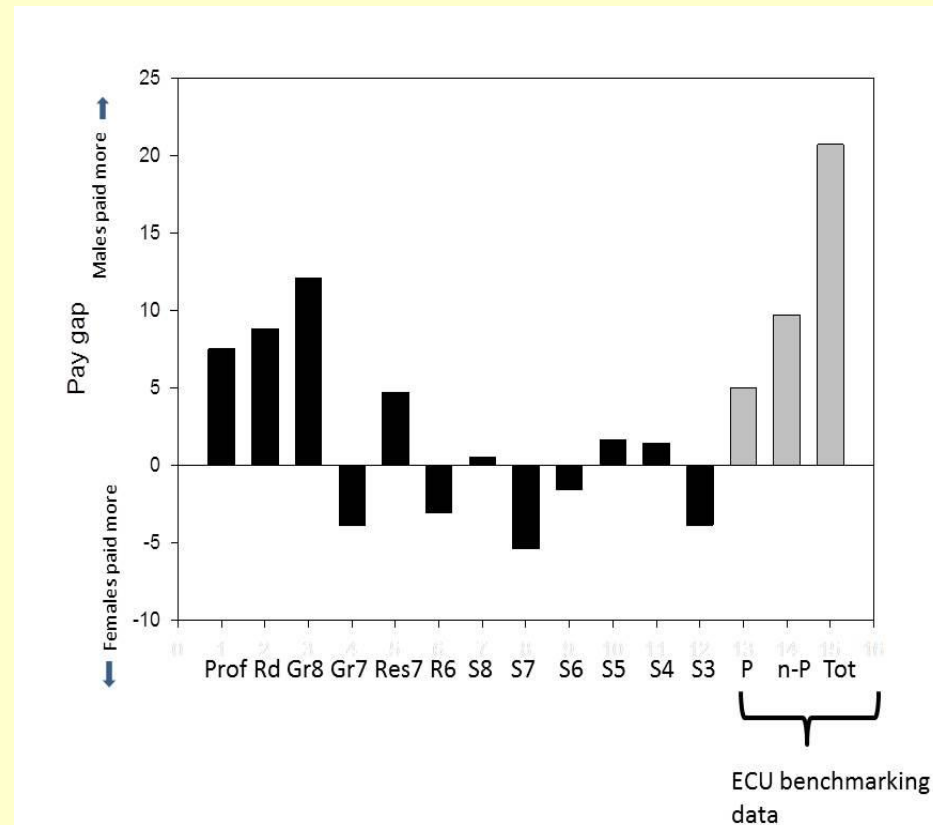
### Abstract

Little is known about the climate of the scientific fieldwork setting as it relates to gendered experiences, sexual harassment, and sexual assault. We conducted an internet-based survey of field scientists (N = 666) to characterize these experiences. Codes of conduct and sexual harassment policies were not regularly encountered by respondents, while harassment and assault were commonly experienced by respondents during trainee career stages. Women trainees were the primary targets; their perpetrators were predominantly senior to them professionally within the research team. Male trainees were more often targeted by their peers at the research site. Few respondents were aware of mechanisms to report incidents; most who did report were unsatisfied with the outcome. These findings suggest that policies emphasizing safety, inclusivity, and collegiality have the potential to improve field experiences of a diversity of researchers, especially during early career stages. These include better awareness of mechanisms for direct and oblique reporting of harassment and assault and the implementation of productive response mechanisms when such behaviors are reported. Principal investigators are particularly well positioned to influence workplace culture at their field sites.

Clancy et al. 2014 *PLoS ONE* 9(7): e102172

Issue of 'lad culture' Dr Vanita Sundaram,  
Centre for Education & Social Justice, UoY

- Research grants (*similar success rates?*)
- UCAS tariff vs final u/g degree mark (*similar chance of 1<sup>st</sup> class degree?*)
- REF (*equally likely to be returned?*)
- Pay gap analysis (*similar pay?*)
- Teaching feedback scores (*valued similarly by students?*)
- Age at promotion (*longer in previous grade?*)



**Data for Biology staff UoY**

- The proportion of grants submitted by female academic staff in Biology at York is in line with the Department's gender ratio (~30%), and success rate of women (32%) is similar to men (33%).
- **But** women apply for less funding than men, resulting in men being awarded >£100k more than women on average over the past 6 years in the Biology Dept.

systems<sup>8</sup>. Social scientists are examining the connections between wealth, population size or density and carbon emissions<sup>9</sup>, but not within realistic, economically constrained, engineered landscapes.

Translating urban carbon science into solutions requires two key steps. First, it must become 'operational'. Like weather stations, data and forecasting, the measurement, monitoring and modelling of urban carbon flows is a global need that is best accomplished collectively. This requires long-term collaborative funding and institutional support beyond the typical three-year research-grant cycle.

Second, an independent intergovernmental centre (with regional representation) is needed to ensure standardization and priority. This could be funded jointly by governments, foundations and inter-governmental institutions. Such an 'urban carbon solutions centre' must generate practical results, tools and carbon-mitigation options with the involvement of community groups, mayoral staff and energy providers. Cities could pay the solutions centre to provide information tailored to their locale. Some work could be undertaken by the private sector.

With detailed knowledge of carbon flows, cities might succeed in reducing global emissions where nations have failed. ■

Kevin Robert Gurney is associate professor in the School of Life Sciences and the Global Institute of Sustainability, Arizona State University, Tempe, Arizona, USA. Paty Romero-Lankao, Karen C. Seto, Lucy R. Hutyra, Riley Duren, Christopher Kennedy, Nancy B. Grimm, Jim R. Ehleringer, Peter Marcotullin, Sara Hughes, Stephanie Pincock, Mikhail V. Chepur, Daniel M. Ruedola, Johannes J. Feddes, Joshua Sperling.  
e-mail: kevin.gurney@asu.edu

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Full author affiliations accompany this article online at [go.nature.com/vq9qtb](http://go.nature.com/vq9qtb)

COMMENT



Women are funded more fairly in social science

UK data hold lessons for how to close the gender gap in bioscience grant applications, success and size, argue Paul Boyle and colleagues. |

Despite the increasing commentary and debate on gender disparities in science<sup>1</sup>, equality will not be achieved without proactive support from key institutions.

One of the key drivers of competitive inequality is the receipt of academic grant funding. In the biomedical sciences, women get smaller grants than men in the United States<sup>2</sup> and the United Kingdom<sup>3</sup>.

Similarly, figures from the European Research Council (ERC) for 2007-13 show that women make only one-quarter of grant applications, and they receive just one-fifth of awards. This pattern is evident at different rates across disciplinary domains: in the physical sciences and engineering, women submit 17% of grant applications and receive 21%; in the life sciences, 30% and 21%; and in the social sciences and humanities, 36% and 31% (see [go.nature.com/nv6vc3](http://go.nature.com/nv6vc3)).

We find that UK social-science funding does not show such gender bias. When ▶

1. [NATURE.COM](http://go.nature.com/vq9qtb)  
For Nature's special issue on women in science, see [nature.com/women](http://go.nature.com/vq9qtb)

10 SEPTEMBER 2015 | VOL 525 | NATURE | 181

Boyle et al. *Nature* (2015) 525: 181

We raise awareness of the issue – but what is the solution?

Smith et al. *BioScience* (2015) 65: 1084-1087

Education

## Now Hiring! Empirically Testing a Three-Step Intervention to Increase Faculty Gender Diversity in STEM

JESSI L. SMITH, IAN M. HANDLEY, ALEXANDER V. ZALE, SARA RUSHING, AND MARTHA A. POTVIN

*Workforce homogeneity limits creativity, discovery, and job satisfaction; nonetheless, the vast majority of university faculty in science, technology, engineering, and mathematics (STEM) fields are men. We conducted a randomized and controlled three-step faculty search intervention based in self-determination theory aimed at increasing the number of women faculty in STEM at one US university where increasing diversity had historically proved elusive. Results show that the numbers of women candidates considered for and offered tenure-track positions were*

Downloaded f

*“The numbers of women candidates considered for and offered tenure-track positions were significantly higher in the intervention groups compared with those in controls.”*

Casadevall A. (2015) *mBio* 6(4):e01146-15.

OBSERVATION 

### Achieving Speaker Gender Equity at the American Society for Microbiology General Meeting

Arturo Casadevall  
Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland, USA

**ABSTRACT** In 2015, the American Society for Microbiology (ASM) General Meeting essentially achieved gender equity, with 48.5% of the oral presentations being given by women. The mechanisms associated with increased female participation were (i) making the Program Committee aware of gender statistics, (ii) increasing female representation among session convener teams, and (iii) direct instruction to try to avoid all-male sessions. The experience with the ASM General Meeting shows that it is possible to increase the participation of female speakers in a relatively short time and suggests concrete steps that may be taken to achieve this at other meetings.

**IMPORTANCE** Public speaking is very important for academic advancement in science. Historically women have been underrepresented as speakers in many scientific meetings. This article describes concrete steps that were associated with achieving gender equity at a major meeting.

Received 9 July 2015 Accepted 15 July 2015 Published 4 August 2015  
Citation Casadevall A. 2015. Achieving speaker gender equity at the American Society for Microbiology General Meeting. *mBio* 6(4):e01146-15. doi:10.1128/mBio.01146-15.  
Editor Michael J. Imperiale, University of Michigan  
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Address correspondence to Arturo Casadevall, [Acasade1@jh.u.edu](mailto:Acasade1@jh.u.edu).

nvitations to speak at major meetings are prized by scientists team has great latitude in speaker selection, with the shepherds

Downloaded from [mbo.asm.org](http://mbo.asm.org) on September 30, 2015 - Published by [mbo.asm.org](http://mbo.asm.org)

In Biology at York we have a commitment to gender equality of speakers in our seminars (6 different seminar series in the Department) during our AS Gold award period. **Currently ~37% female speakers overall (24/65 speakers).**



Gendered Language in Teaching Evaluations - Google Chrome

benschmidt.org/profGender/#%7B%22database%22%3A%22RMP%22%2C%22plotType%22%3A%22pointchart%22%2C%22method%22%3A%22return\_

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Gender and Teacher Reviews Made by Ben Schmidt using Bookworm February, 2015

## Gendered Language in Teacher Reviews

This interactive chart lets you explore

We found no overall difference in student feedback scores to male and female staff in Biology at York

funny

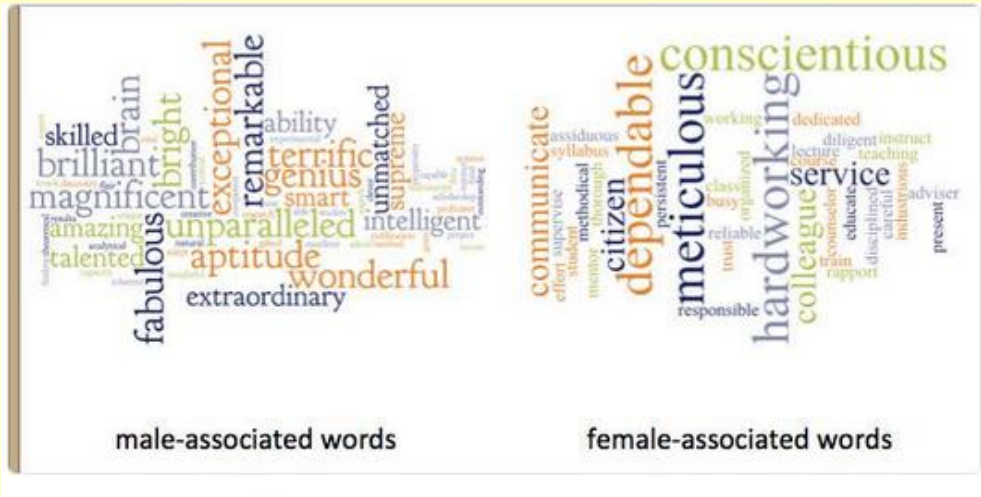
gender  
■ female  
■ male

You can enter any other word (or two-word phrase) into the box below to see how it is split across gender and discipline: the x-axis gives how many times your term is used per million words of text (normalized against gender and field). You can also limit to just negative or positive reviews (based on the numeric ratings on the site). For some more background, see [here](#).

Not all words have gender splits, but a surprising number do. Even things like pronouns are used quite differently by gender.

Reference text nihms....pdf ExploringColorGlass.pdf Acad Management J....pdf York Chemistry gold ....pdf annurev-psych-gend....pdf Show all downloads...

References for our students probably demonstrate our unconscious biases



NATIONAL INSTITUTES OF HEALTH

NIH Public Access  
**Author Manuscript**  
*Sex Roles*. Author manuscript; available in PMC 2008 October 23

Published in final edited form as:  
*Sex Roles*. 2007 ; 57(7-8): 509-514. doi:10.1007/s11199-007-9291-4.

**A Linguistic Comparison of Letters of Recommendation for Male and Female Chemistry and Biochemistry Job Applicants**

**Toni Schmader,**  
*Department of Psychology, University of Arizona, Tucson, AZ 85721, USA, e-mail: schmader@u.arizona.edu*

**Jessica Whitehead, and**  
*Department of Psychology, University of Arizona, Tucson, AZ 85721, USA*

**Vicki H. Wysocki**  
*Department of Chemistry, University of Arizona, Tucson, AZ 85721, USA*

**Abstract**

Letters of recommendation are central to the hiring process. However, gender stereotypes could bias how recommenders describe female compared to male applicants. In the current study, text analysis software was used to examine 886 letters of recommendation written on behalf of 235 male and 42 female applicants for either a chemistry or biochemistry faculty position at a large U.S. research university. Results revealed more similarities than differences in letters written for male and female

NIH-PA Author Manuscript

<https://pastspeaks.com/2015/03/31/male-vs-female-academic-reference-letters>



“I don’t think they were consciously discriminating,” says Wennerås (author)

“but there’s a tendency to over-value men’s achievements and undervalue women’s.”

commentary

## Nepotism and sexism in peer-review

**In the first-ever analysis of peer-review scores for postdoctoral fellowship applications, the system is revealed as being riddled with prejudice. The policy of secrecy in evaluation must be abandoned.**

**Christine Wennerås and Agnes Wold**

Throughout the world, women leave their academic careers to a far greater extent than their male colleagues<sup>1</sup>. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions and only 7 per cent of professorial positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s.

### Reasons for lack of success

Why do women face these difficulties? One view is that women tend to be less motivated and career-oriented than men, and therefore are not as assiduous in applying for positions and grants. Another is that women are less

between defined parameters of scientific productivity and competence scores.

In the peer-review system of the Swedish MRC, each applicant submits a curriculum vitae, a bibliography and a research proposal. The application is reviewed by one of 11 evaluation committees, each covering a specified research field. The individual applicant is rated by the five reviewers of the committee to which he or she has been assigned. Each reviewer gives the applicant a score between 0 and 4 for the following three parameters: scientific competence; relevance of the research proposal; and the quality of the proposed methodology. The three scores given by each reviewer are then multiplied with one another to yield a product score that can vary between 0 and 64. Finally, the average of the five product scores an applicant has received is computed, yielding a final score that is the basis on which the applicants to each committee are ranked.

The MRC board, which includes the chairmen of the 11 committees, ultimately decides to whom the fellowships will be awarded. Usually each committee chooses

male applicants on all three evaluation parameters: 0.25 fewer points for scientific competence (2.21 versus 2.46 points); 0.17 fewer points for quality of the proposed methodology (2.37 versus 2.54); and 0.13 fewer points for relevance of the research proposal (2.49 versus 2.62). Because these scores are multiplied with each other, female applicants received substantially lower final scores compared with male applicants (13.8 versus 17.0 points on average). That year, four women and 16 men were awarded postdoctoral fellowships.

As shown by these figures, the peer reviewers deemed women applicants to be particularly deficient in scientific competence. As it is generally regarded that this parameter is related to the number and quality of scientific publications<sup>2-5</sup>, it seemed reasonable to assume that women earned lower scores on this parameter than men because they were less productive. We explored this hypothesis by determining the scientific productivity of all 114 applicants and then comparing the peer-reviewer ratings of groups of male and female applicants with similar sci-

Analysis of Sweden’s MRC data revealed that when applying for grants, *women have to be 2.5 times more productive than men in order to get the same peer review ratings. Nature 387, 341-343 (22 May 1997)*

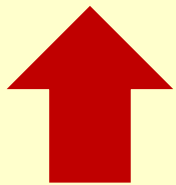
- *Better Web presence for E&D*
- *Standing item at staff meetings*
- *New gender analyses*
- *Flexible timetabling of teaching*
- *Unconscious bias training*
- *Extend Athena SWAN activities to reach to u/g*
- *Gender balance on all interview panels (incl. PGR, PDRAs)*
- *Discuss single gender shortlists*
- *'Beacon' activities and dissemination of good practise*
- *Repeat culture surveys & follow-up focus groups*



Department of  
Biology

2016

(~33% female)



1963

(11% female)



Pr of. M.H. Williamson.



Prof. J.R. Bronk



Dr. M.J. Chadwick.



Dr. J.D. Currey.



Dr. M. Davies.



Mr. P.J. Hogarth.



Dr. R.M. Leech.



Dr. J.C. Marsden.



Dr. J.A. Metcalfe.



Dr. C.J.C. Rees.



Dr. R.A. Reid.



Dr. A.W. Robards.



Mr. C.F. Stoneman.



Dr. J.R.G. Turner.



Dr. M.B. Usher.

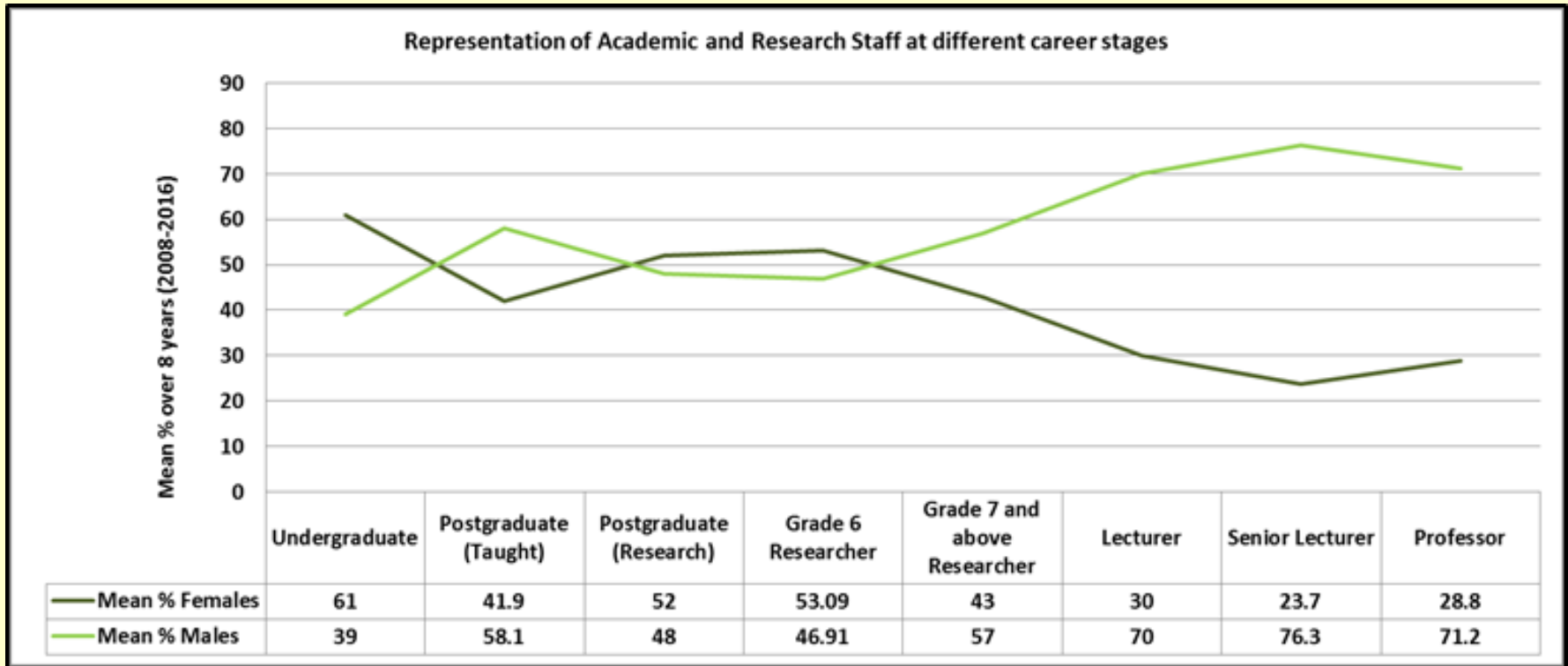


Dr. J.R. Warr.



Dr. R.A. Wilson.

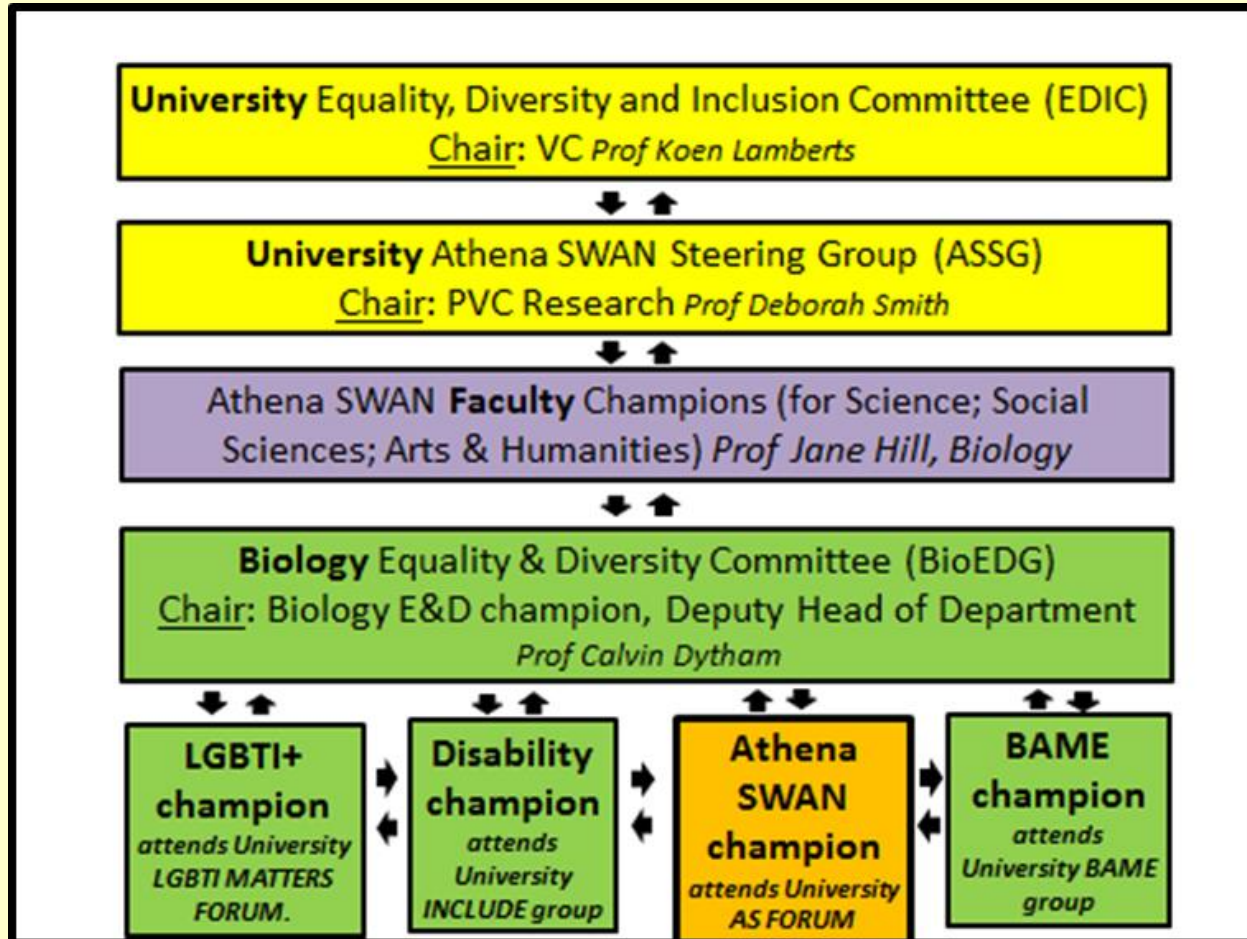




**Scissor-plot for staff and students in Biology@York**

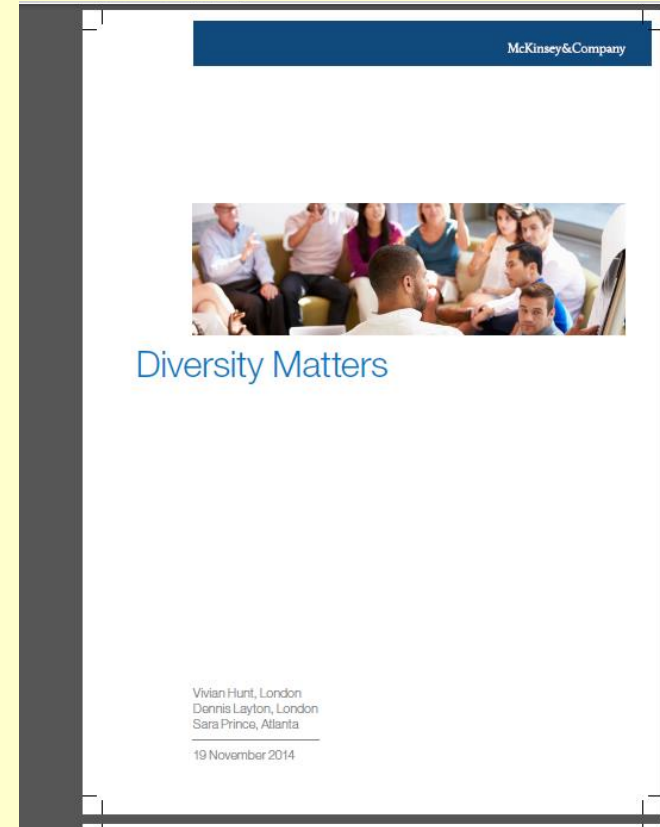
- Share/copy/steal good ideas from other Departments,
- Delegate and get others involved, and regularly feedback to staff on activities
- Obtain data & get analyses done to provide time to reflect on new actions
- Volunteer to sit on (or observe) Athena SWAN judging panels,
- Get resource to support E&D activities from University / Department & get HoD involvement,
- Pick a small number of initiatives to focus on and make progress, don't try to do too much at once,
- Not giving up...

University  
↕  
Faculty  
↕  
Department  
↕  
champions



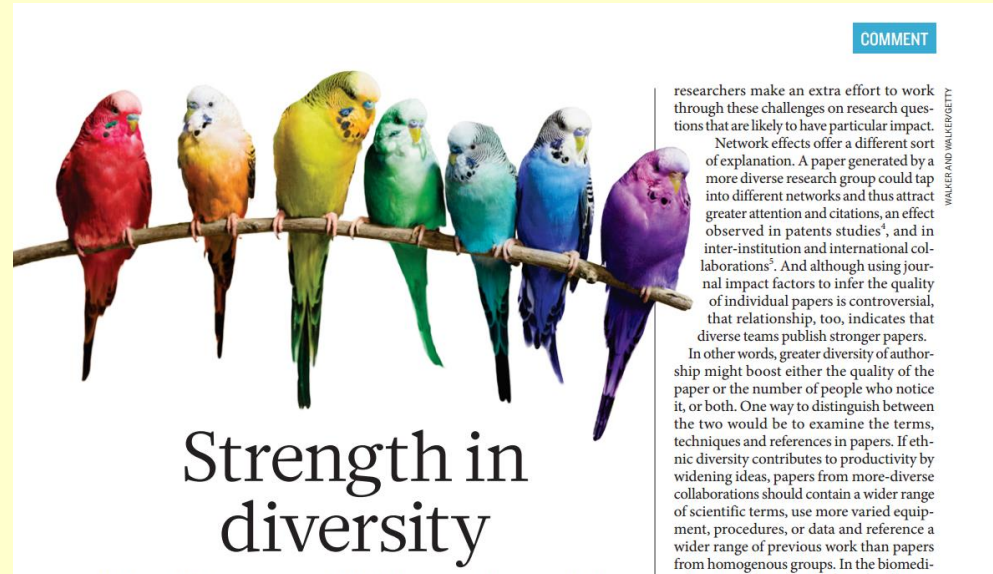
*“The companies in the top quartile of **gender diversity** were 15% more likely to have above median financial returns, relative to their national industry median. Companies in the top quartile of racial/**ethnic diversity** were 30% more likely to have above median financial returns relative to their national industry median.*

*Companies in the bottom quartile for both gender and ethnicity/ race were statistically less likely to achieve above average financial returns than the average companies in the dataset (e.g., they were not just not leading, **they were lagging**).”*



**McKinsey & Co. report**

*“Papers with four or five authors of multiple ethnicities have, on average, one to two more citations than those written by authors all of the same ethnicity.”*



**Freeman & Huang (2014) *Nature* 513, 305**

Analysis of 2.5 million research papers according to author surnames.



*“the perspectives provided by both genders within a working group appear to play a fundamental role as authors in increasing the quality of publications produced.”*

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## Gender-Heterogeneous Working Groups Produce Higher Quality Science

Lesley G. Campbell<sup>1,2\*</sup>, Siya Mehtani<sup>1</sup>, Mary E. Dozier<sup>1</sup>, Janice Rinehart<sup>3</sup>

<sup>1</sup> Department of Ecology and Evolutionary Biology, Rice University, Houston, United States of America, <sup>2</sup> Department of Chemistry and Biology, Ryerson University, Toronto, Canada, <sup>3</sup> National Science Foundation ADVANCE Program, Rice University, Houston, United States of America

### Abstract

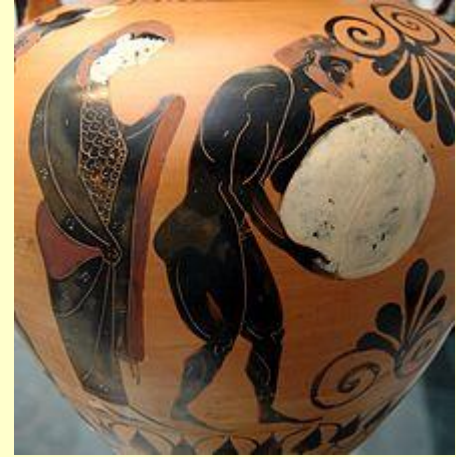
Here we present the first empirical evidence to support the hypothesis that a gender-heterogeneous problem-solving team generally produced journal articles perceived to be higher quality by peers than a team comprised of highly-performing individuals of the same gender. Although women were historically underrepresented as principal investigators of working groups, their frequency as PIs at the National Center for Ecological Analysis and Synthesis is now comparable to the national frequencies in biology and they are now equally qualified, in terms of their impact on the accumulation of ecological knowledge (as measured by the h-index). While women continue to be underrepresented as working group participants, peer-reviewed publications with gender-heterogeneous authorship teams received 34% more citations than publications produced by gender-uniform authorship teams. This suggests that peers citing these publications perceive publications that also happen to have gender-heterogeneous authorship teams as higher quality than publications with gender uniform authorship teams. Promoting diversity not only promotes representation and fairness but may lead to higher quality science.

Citation: Campbell LG, Mehtani S, Dozier ME, Rinehart J (2013) Gender-Heterogeneous Working Groups Produce Higher Quality Science. PLoS ONE 8(10): e79147.

Campbell et al (2013) *PLoS ONE* 8(10): e79147

Analysis of NCEAS (National Center for Ecological Analysis and Synthesis) outputs from Working Groups

- Focus on a few initiatives, and know what success will look like
- Progress is often slow
- Changes that are made may not be permanent



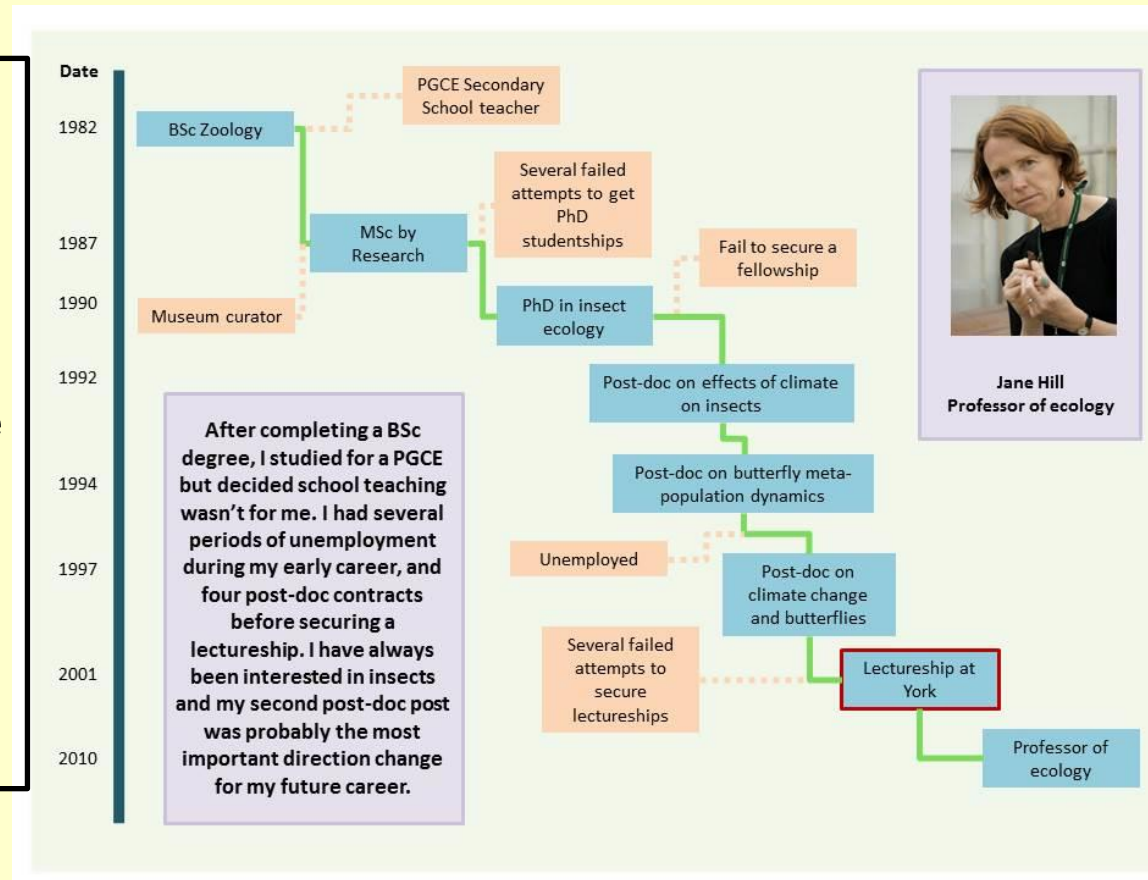
*Sisyphus & his rock*

- Not everyone is supportive

*'There is not a problem' (alternatively 'it's all been solved')*

*'Things have gone too far – the Biology department is now dominated by women'*

We are producing career trees of academics to illustrate a successful career includes many setbacks, that career trajectories may take “the scenic route” to the same goals, that they may not necessarily follow a direct route, and may not necessarily have a pre-determined end point.



We hope this will boost confidence in researcher career choices and provide reassurance. Occasional (or regular) failure is part of a successful career.

***We foster a supportive culture that helps all Biology staff and students reach their full potential.***

## **Department of Biology**

