The 2010
Athena ASSET Survey
Summary Report

This report was funded by a grant (Project Number 181) from HEFCE under the Leadership, Governance and Management scheme.

The project was undertaken by Imperial College London in collaboration with the Royal Society. The Project Leader was Professor Dorothy Griffiths from Imperial College London; the Project Managers were Caroline Fox and Erica Halvorsen.

Acknowledgements

Our thanks go to the many university scientists who gave their time to complete the survey and to all those who encouraged them to do so. We hope that those who contributed to the survey will find this summary report and the UK national results (www.athenasurvey.org.uk/results.htm) useful in interpreting their local results and considering what action is needed and will feel the time they invested was worthwhile.

Peter Cotgreave	The Royal Society
Dorothy Griffiths	Imperial College London
Caroline Fox and Erica Halvorsen	Athena Survey

The Athena Project

The Athena Survey of Science, Engineering and Technology (ASSET) was established in 2003 by the Athena Project in support of its aims – the advancement of women in science, engineering, and technology in higher education and research and a corresponding significant increase in the number of women in top posts. Information on the project, including headline findings from the first two surveys can be found on the website of the Athena Forum, which succeeded the project in 2008 (www.athenaforum.org.uk).

The ASSET Survey

ASSET is a web based survey of scientists working in UK universities. It explores areas identified by the Athena Project as important to career progression and how far the apparent differences in men's and women's progression can be related to the organisation and culture of science in universities. It is designed to:

- capture information on science career pathways, and the experiences, expectations and perceptions of academics of what contributes to successful career progression;
- raise awareness of the issues of career progression for women in science;
- illuminate the differences - real and perceived - in men's and women's experiences of science in universities;
- develop the evidence base to underpin action planning, implementation and evaluation;
- enable universities to measure their progress and benchmark it against the UK position.

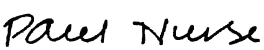
FOREWORD

As the UK seeks to use its scientific capabilities to help rebuild the economy, it is more important than ever that we ensure the best scientists can flourish. This obviously requires adequate funding, but it also requires that we organise our research efforts in such a way that no groups are disenfranchised. All groups should be able participate to the full extent of their abilities.

The 2010 Athena ASSET survey, which builds on the previous surveys, covers women in science. Their experiences are improving, with the gap between men's careers and women's closing, and with women becoming more ambitious in their scientific aspirations.

But the survey shows that although it is narrowing, the gap between men and women remains. Women typically report that they understand less about promotion criteria than men, and on average, they attribute their success to different factors than men do. Many women still feel invisible to their bosses, and many believe that their job choices are limited by external factors rather than options within their own control.

Women now make up around ten per cent of the senior ranks of British science. That figure is increasing annually – five of this year's crop of 44 new Fellows of the Royal Society are women – but there is a long way to go before we can be confident that the nation is drawing as heavily as it could on the talents of women scientists. Good decisions need to be based on evidence, and the latest Athena ASSET survey provides new data on which to build. Individual universities could usefully compare their own results with those of other institutions and emulate those with the most impressive records. It would be good to think that the next Athena ASSET survey will show real steps forward.



Paul Nurse
President, Royal Society

THE 2010 ATHENA ASSET SURVEY: The Key Findings

While some elements of women's experiences in STEMM (Science, Technology; Engineering, Mathematics and Medicine) have improved since the 2003/04 survey, much has not. Women continue to feel disadvantaged and excluded in a number of ways.

The US National Academies Report 'Beyond Bias and Barriers' (2006) noted that 'small but consistent differences in evaluation, often caused by gender bias, can have a sustained and substantial impact in career outcomes'. The 2010 ASSET data suggests a parallel phenomenon. Many of the differences we report are not numerically large but are statistically significant. The data indicate that at every stage of their career women either still perceive disadvantage, or there remain differences, relative to men. These differences accumulate over the course of an individual career to create differences in opportunity and experience.

i. Promotion and career development remain a challenge. Women understand less about both the promotion process and criteria; they continue to feel themselves disadvantaged and identify a number of factors which have had a detrimental impact on their careers. They remain more likely to work part time and to be on temporary contracts.

ii. Men and women academics attribute their success to different factors: men to their own efforts plus a bit of luck, women to the support they have received.

iii. Men report a more positive working environment. They feel more valued and socially integrated in their departments. Women still do not feel that they are visible to senior managers.

iv. Men have greater external visibility and predominate in external activities.

v. Men are more in control of their employment choice. Their choice is influenced by factors such as the intellectual challenge, autonomy and reputation of the Department. Women are more likely to report that their job choice was limited by location and availability.

vi. Male academics still predominate in positions of power and influence.

vii. Women are becoming more ambitious.

viii. Women and Science initiatives are being noticed. Women, of course predominate in these activities. Interestingly whilst women report benefit at University level it is their male colleagues who report benefit at Departmental level.

ix. Looking ahead, academic men are more likely to want to continue their career in academic science although the overall numbers wishing to leave are small.

THE 2010 SURVEY

- The survey took place between 19 January and 26 February 2010. All UK STEMM departments were invited to participate.
- 7093 people responded: 4501 Academics (Professors, Readers, Senior Lecturers and Lecturers) and 2592 Post docs from 420 departments in 84 universities. This represents 8% of the eligible population in the participating universities.

Cost Centre	Female %	Male %	All %
Biosciences	14	11	12.5
Chemistry	18	17	17.5
Clinical Medicine	8	6	7
Engineering	13	8	9
Mathematics	10.5	13.5	13
Psychology	8	10.5	9.5
Physics	24	36	26
Other	4	3.5	4
All STEMM Cost Centres	8	8.5	8

Proportions of respondents (% of eligible population) from selected Cost Centres in participating universities.

THE RESULTS

Interpretation

Details of the methodology used are provided on the inside back cover. In the following text data are described only where differences between female and male respondents are statistically significant. Where the report says, for example, 'men and women' it means 'on average, men and women' rather than all men and all women.

i. Promotion and career development remain a challenge for women

- Women are still more likely to work part-time and to be on temporary contracts. In every age group women are more likely to be on fixed term contracts than men.
- Overall, while male and female academics are now equally likely to have held a Research Fellowship, male post docs are more likely to be Fellowship holders than female post docs. And male academics are still more likely to have a doctorate; to be research active; to have won a prize or medal, and to have been included in the 2008 RAE.
- Women academics and post docs both report that they have little or no knowledge of
  - Departmental promotion criteria
  - The department promotion process
  - University promotion criteria
  - The university promotion process

  The gap between women and men is greater at the department than the university level.
- As in the 2003/04 survey, women remain strongly of the view that women are disadvantaged by their treatment in relation to promotion. Approximately a quarter of women respondents attribute part of this disadvantage to a lack of positive feedback and career progression advice compared to a negligible number of men. Although almost 80% of respondents reported appraisal as a matter of course, men were statistically more likely to have been routinely appraised (but were less likely to find appraisal useful).
- Women academics and post docs continue to report a number of factors which they believe have or have had a detrimental effect on their career development. The lack of role models and an absence of mentoring both feature strongly, and there is a large numerical gap between the proportions of women and men in both cases. Equal numbers complain about the adverse effect of over heavy admin and teaching loads.

- There are also substantial numerical as well as statistically significant differences between women and men in relation to each of the following factors all of which were cited as having a detrimental effect on women's careers:
  - An interrupted career
  - Periods of part-time working
  - Limited job opportunities
  - An inability to move location easily
  - The long hours culture appears to affect women more than men
  - While a majority of both women and men academics report being encouraged to undertake activities that contribute to their career development, men are more likely to receive this encouragement. Similarly, male academics were statistically more likely than their female peers to have been invited to apply for a higher level post.
- More positively, women believe that the availability of flexible working has had a positive effect on their career. Academic women are more likely than academic men to report positively about the opportunity to take time off at a short notice.

Female post docs are more positive about aspects of their career success to date than female academics. They report the positive effect of hard work and the opportunity to work on high profile projects as well as acknowledging the contribution the support of managers and colleagues has made to their success to date. They are also more likely than their male post doc counterparts to believe the department values successes in their working lives.

Women are more likely to have taken a career break (apart from maternity leave) than men.

Most academics believe that the allocation of resources and facilities are fair but a small group of women academics and post docs believe that they are disadvantaged by their treatment in respect of:
- The allocation of office and lab space
- The distribution of resources
- Access to IT support and equipment

Interestingly, given what is commonly reported about women being disadvantaged by too much teaching, in this survey men academics are more likely to report that they were undertaking undergraduate teaching, whilst women academics report insufficient teaching experience as detrimental to their careers.

Women at every level (Professor, Reader, Senior Lecturer, Lecturer and Post Doc) and in every age group (under 35, 35-54, 55+) are more likely to feel disadvantaged in relation to promotion and in relation to the quality of feedback that they receive.

Partnered men are more likely than partnered women to report that high teaching and admin loads have been detrimental to their careers while partnered women are more likely to refer to the lack of mentoring, role models, a lack of teaching and admin experience as detrimental.

ii. Women and men attribute success to different factors

- Looking at the factors that have contributed to their success to date, women tend to emphasise the support that they have received from their partner/family and the role of a good reference from a previous supervisor/project leader, their male academic peers attribute their past success to their own efforts This effort is reflected in:
  - Their publications
  - Their work on high profile/successful projects
  - The size of their grant income
  - Their ability to attract PhD students

  And the men are more likely to cite the positive impact of luck!

iii. Male academics feel more valued and socially integrated in the working environment

- Male academics are more likely than women to report that they perceive that their:
  - External professional activities
  - Successes
  - Research
  - Teaching and admin

  are valued.
- They are more likely to report feeling socially integrated in their department and to feel that their working environment is friendly and their colleagues are co-operative. They also believe that workloads are allocated fairly and openly. And they are more likely to believe that departmental communication is good.
- Academic men are also more likely to report supportive senior colleagues and line managers. Both academic women and men report supportive peers.
- Importantly, while almost all the male academics believe that they are visible to senior managers, about one third of women academics feel disadvantaged in respect of their visibility. Women are also less likely to feel that senior departmental colleagues are accessible to them.

iv. Men have greater external visibility

- Male academics are still more likely to be:
  - A journal editor or member of a journal editorial board
  - A Research Council Assessor
  - A member of a grant awarding panel
  - A member of an international advisory or expert group
- In contrast, the equivalent women academics, as in 2003/04, are more likely to be involved in their professional society as a senior office holder of some kind.
- The passage of time may change this as, with the important exception of editorial board membership, there are no differences in the participation rates for external professional activities between women and men academics under 35.
- The greater male participation in national and international collaborations referred to earlier also increases their visibility.
- While both women and men engage in national/international research collaborations, doctoral supervision and interdisciplinary research, again men are more likely to do so.

Single women are more likely to be engaged in external activities than partnered women.

v. Men are more in control of their employment choice

- Both women and men were influenced in their current employment choice by the area of work/interest/ research and the flexibility of working hours which an academic career can provide. Beyond this, while both listed each of the following men were – once again – statistically more likely also to report the influence of:
  - The reputation of the Department /group
  - The supportive environment it offered
  - The intellectual challenge presented
  - The opportunity for autonomy and self direction
- In contrast, women were more likely to cite
  - The geographical location
  - It being the only post available/no reasonable alternative

Geographical location is a constraint on women. Both single women and women with partners report 'inability to move location easily'.

Comparing the responses of women and men with children, children have a greater impact on women's careers in STEMM than they do on men's. Women with children are more likely to perceive themselves as disadvantaged in relation to a number of factors: lack of mentoring; lack of role models; ability to get admin and teaching experience; the long hour's culture.

- Women with children are more likely to work part-time than their childless female peers and to report the detrimental effect of a career break.
- Women with children are more likely than those without children to value autonomy, flexible hours and geographical location in their choice of job. This difference is not apparent between men with and without children.

vi. Male academics still occupy more positions of power and influence

- Men are still numerically dominant in science. So, not unexpectedly, they still predominate on key departmental committees and roles. While women do occupy these roles, men were more likely to have been:
  - A member of their Department's Management team and Promotion Committee
  - A member or chair of a Departmental Management team; Appointment Committee; Finance/Planning Committee and Research Committee
  - A Group Head, Head of Department, Institute Director, Director of Undergraduate or Postgraduate Admissions
- Importantly, women are as likely as men to hold posts as Head of Research; Director of Undergraduate Studies, and Director of Post Graduate Studies.
- Men and women are equally likely to have served/serve on Health and Safety and Teaching Committees. Women academics are more likely to be a member or chair of Equal Opportunities and Women and Science Committees
- Academic men are more aware of training opportunities – even if they don't take them up – than their female colleagues. Where they take up training it is in support of the roles described above. They found training in finance/planning and in research team leadership useful. Academic women, in contrast, are more likely to have participated in grant application and professional development activity training and found them useful.

From the age of 35 onwards men predominate on Finance and Planning and Promotions Committees in departments, regardless of seniority or position.

vii. Women are becoming more ambitious

- Women academics at all levels are more likely than they were in 2003/04 to express a desire to become a senior department manager or a senior university manager. And female academics are more likely than their male peers to report that they expect to become a senior department manager. Almost half of the female respondents compared to two fifths of the men want to become a senior departmental manager.

viii. Women and Science initiatives are being noticed

- Not unexpectedly women academics are more likely to report contributing to or active engagement with Women and Science initiatives Their male peers however, report awareness of these activities.
- Numbers reporting personal benefit are small. But in this group women are more likely to report benefit at the university level and men to report benefit at the departmental level.

ix. Looking ahead

- Almost all the respondents (96%) expressed the wish to continue working in academic science, although male academics did so significantly more than their female peers.
- Of those planning to leave, women in Chemistry and Biosciences were most likely to want to leave academic science.

- While women are more likely to have already provided care for a parent, men are more likely to be caring for a partner or adult now.
- Women are more likely to expect to provide care for a parent in the future.

NOTES ON STATS

To adjust for non-response and over-representation of participants from some universities the data was weighted before being tested for significant difference within and between the sexes. The weights were derived by aligning the survey sample data to those supplied by the Higher Education Statistics Agency (HESA). The variables that were used to do this were Institution, Gender and Cost Centre. The unadjusted survey data provided Institution and Gender as those questions were explicitly asked and the survey could not be completed and submitted without responding to them. An additional Cost Centre field was added to the dataset prior to analysis. That field was derived using the information provided by survey participants, reference to their own universities' websites, and Higher Education Funding Council for England (HEFCE) publications C6/94 Cost Centres and 02/25 Assignment of Departments to Academic Cost Centres 2001-02. The Cost Centres used in the analysis are listed here.

1	Clinical Medicine
2	Clinical Dentistry
3	Veterinary Science
4	Anatomy & Physiology
5	Nursing & Paramedical Studies
6	Health & Community Studies
7	Psychology & Behavioural Studies
8	Pharmacy & Pharmacology
10	Biosciences
11	Chemistry
12	Physics
14	Earth, Marine & Environmental Sciences
16	General Engineering
17	Chemical Engineering

18	Mineral, Metallurgy & Materials Engineering
19	Civil Engineering
20	Electrical, Electronic & Computer Engineering
21	Mechanical, Aero & Production Engineering
23	Architecture, Built Environment & Planning
24	Mathematics
25	IT & Systems Sciences, Computer Software Engineering
28	Geography
37	Archaeology
38	Sports Science & Leisure Studies

The information provided by the participants used to determine Cost Centre allocation was Department and (self-defined) Discipline. The options the questionnaire provided for Discipline were Biosciences, Engineering, Maths & Computing, Medicine and Physical Sciences. Respondents could also specify 'Other'. This resulted in e.g. 21 different designations of Discipline from the 100 veterinary scientists who participated. According to HEFCE 02/25, each of the departments concerned is 100% in the Veterinary Science Cost Centre and therefore each record from those departments was assigned to the Veterinary Science Cost Centre in the dataset. Due to its age, HEFCE 02/25 does not provide an entirely reliable source for the allocation of all Cost Centres, and cross-referencing and discretion were exercised where there was uncertainty.

Tests for significance were conducted using a one tailed z-test.

Information on the future of national surveys, local use of the ASSET questionnaire, and access to survey data is available on www.athenasurvey.org.uk

Participating universities:

University of Aberdeen
Aberystwyth University
Aston University
Bangor University
University of Bath
University of Bedfordshire
Birkbeck, University of London
University of Birmingham
University of Bradford
University of Brighton
University of Bristol
Brunel University
University of Cambridge
Cardiff University
University of Central Lancashire
University of Chester
City University
Coventry University
Cranfield University
De Montfort University
University of Derby
University of Dundee
Durham University
University of East Anglia
The University of Edinburgh
University of Essex
University of Exeter
University of Glasgow
Glyndŵr University
University of Greenwich
Heriot-Watt University
University of Hertfordshire
University of Hull
Imperial College London
Institute of Cancer Research
King's College London
Keele University
University of Kent
Kingston University
Lancaster University
University of Leeds
University of Leicester
University of Lincoln
University of Liverpool
Liverpool John Moores University
London Metropolitan University
London South Bank University
Loughborough University
The University of Manchester
Manchester Metropolitan University
Newcastle University
The University of Northampton
The University of Nottingham
Nottingham Trent University
The Open University
University of Oxford
Oxford Brookes University
University of Plymouth
University of Portsmouth
Queen Mary, University of London
Queen's University, Belfast
University of Reading
Robert Gordon University
Royal Holloway, University of London
Royal Veterinary College
The University of Sheffield
Sheffield Hallam University
University of Southampton
University of St Andrews
University of Stirling
University of Strathclyde
University of Sunderland
University of Surrey
University of Sussex
Swansea University
University College London
University of Ulster
The University of Warwick
University of the West of England
University of the West of Scotland
University of Westminster
The University of Winchester
University of Wolverhampton
The University of York

Issued June 2011 DES2210