

Summary report

Wellcome Trust Basic Science Career Tracker

Results of wave 4 (2012)



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Introduction

1. One of the Wellcome Trust's key aims is to support individuals in achieving their potential and delivering benefits to science; therefore, to understand what the people we support do next is crucial.

In summer 2012, the Evaluation Team at the Wellcome Trust launched the fourth wave of the Basic Science Career Tracker, a longitudinal cohort study that allows us to follow the careers of key cohorts of Wellcome Trust-funded researchers.

2. The Basic Science Career Tracker gives an understanding of the career choices made by those we fund and helps to inform the Trust's provision of research and career support.
3. The Basic Science Career Tracker currently includes a range of Wellcome Trust-funded researchers in the UK and internationally, although we intend to add recipients of different types of grant as the study continues to grow. We are currently tracking former and current grantholders of the following schemes:
 - **Basic Science PhD Studentships (PhD)**, in which students are funded through structured four-year PhD programmes
 - **Sir Henry Wellcome Postdoctoral Fellowships (SHWPF)**, early career fellowships for the most promising newly qualified postdoctoral researchers
 - **Research Career Development Fellowships (RCDF)**, intermediate career fellowships allowing postdoctoral researchers to become independent
 - **International Senior Research Fellowships (ISRF)**, senior fellowships for outstanding researchers working in Central Europe and India.

Methodology

4. Respondents are analysed by Award, Cohort and Wave.
 - The 'Award' refers to the type of Wellcome Trust grant received.
 - The 'Cohort' refers to the financial year in which the researcher received their award.
 - The 'Wave' refers to the survey from which the data have been taken.
5. Each year, members of the cohorts receive a short online survey asking about their career intentions and development. New cohorts are added to the tracker each year as grantholders enter their final year, while former grantholders continue to receive the survey annually.
6. In Wave 4, in addition to sending out the annual survey, we used web-based research to find information about people who did not respond. This was done to ensure we have the fullest picture possible of the career destinations of our cohorts. As a result of this, the data reported in this Career Tracker might differ slightly from previous years, although emerging trends remain the same. In any charts or tables in which mixed methods of locating individuals have been used, this is clearly noted.
7. The data yielded by the Basic Science Career Tracker are proving highly valuable to the Trust. As a result, we now intend to track early career scientists beyond the original five years post-PhD, for up to ten years. As the cohorts build over time and our information on their career paths grows, we hope to understand the challenges and opportunities that former funding recipients face and consider potential implications and actions for the Wellcome Trust and other research funders.
8. In Wave 4 of the Basic Science Career Tracker (summer 2012), overall participation was high, with a total response of 80 per cent across all the cohorts; response rates among the most recent cohorts are typically higher than for earlier cohorts.

Table 1

Response across all cohorts in wave 4, 2012

Cohort	Number approached	Number of responses from the survey in W4	Results from web research	Total response
PhD 2003/04	n = 59	n = 39 (66%)	n = 3	n = 42 (71%)
PhD 2004/05	n = 72	n = 56 (78%)	n = 7	n = 63 (88%)
PhD 2005/06	n = 69	n = 52 (75%)	n = 9	n = 61 (88%)
PhD 2006/07	n = 68	n = 54 (79%)	N/A	n = 54 (79%)
PhD 2007/08	n = 115	n = 98 (85%)	N/A	n = 98 (85%)
SHWPF 2006/07	n = 19	n = 15 (79%)	n = 3	n = 18 (95%)
SHWPF 2007/08	n = 16	n = 16 (100%)	N/A	n = 16 (100%)
RCDF 2002/03	n = 19	n = 14 (70%)	n = 3	n = 17 (89%)
RCDF 2003/04	n = 14	n = 12 (86%)	n = 2	n = 14 (100%)
RCDF 2004/05	n = 17	n = 13 (76%)	n = 4	n = 17 (100%)
RCDF 2005/06	n = 22	n = 20 (91%)	n = 1	n = 21 (95%)
RCDF 2006/07	n = 20	n = 19 (95%)	n = 1	n = 20 (100%)
RCDF 2007/08	n = 23	n = 22 (96%)	n = 1	n = 23 (100%)
ISRF 2001/02	n = 21	n = 13 (62%)	n = 7	n = 20 (95%)
ISRF 2002/03	n = 15	n = 11 (73%)	n = 4	n = 15 (100%)
ISRF 2003/04	n = 11	n = 8 (73%)	n = 3	n = 11 (100%)
ISRF 2004/05	n = 7	n = 6 (86%)	n = 1	n = 7 (100%)
ISRF 2005/06	n = 4	n = 4 (100%)	N/A	n = 4 (100%)
Total	n = 591	n = 472 (80%)	n = 49	n = 521 (88%)

9. A key challenge in any kind of panel (cohort)-based tracking is to ensure that the response rate at each investigation point remains high. We are working to secure high levels of participation by raising awareness of the value of the Career Tracker to the Wellcome Trust and by ensuring that the results are easily accessible for those curious to find out more about the cohort of which they are part.

10. Owing to relatively small cohort sizes, from this year all charts and tables reporting survey data show raw numbers unless otherwise stated.

11. When appropriate, and for illustrative purposes, participants' comments have been included in this report to support the data and illustrate emerging themes and issues; these are anonymised and referenced according to the type of grant received by the individual.

Key findings

12. In the fourth year of the Basic Science Career Tracker, we can now begin to identify trends in the careers data.

- As in previous years, academia is the main employment destination for former Wellcome Trust-funded PhD students at the immediate post-PhD and early career stage. However, its proportion decreases over time. In the 2003/04 cohort (the earliest cohort being tracked), more women than men left academia during their early postdoctoral years.
- Former PhD students continue to report high levels of mobility. Among those working in academia in the 2003/04 cohort (n = 27), 13 remained in the UK and 14 are overseas. Other tracked PhD cohorts are showing a similar pattern.
- All of the first cohort of Sir Henry Wellcome Postdoctoral Fellows who reported that they had finished their award funding period were employed in academia; the majority were employed on fixed-term contracts. The majority of those still on their award expressed a desire to continue their career in academia.
- As in previous waves, no major patterns of career destination changes have been observed in former RCDF holders; a large majority are employed in academia (107 out of 115). A high proportion of those who answered the survey (46 out of 61) are receiving further funding in their own right as a principal investigator.
- Former ISRFs have also tended to remain in academia. The majority are employed in academic positions (48 out of 58) and receiving funding as a principal investigator (26 out of 34 who answered the survey).

PhD studentship holders

13. Basic Science Career Tracker data show that a large proportion of former Wellcome Trust-funded PhD students remain in academia in the immediate post-PhD and early career stages. 158 former PhD students out of 220 who completed their award (72 per cent) are pursuing a career in academia.^{1,2}

Table 2
Employment and sector overview by PhD cohorts,
Wave 4, 2012

Cohort	Total PhDs in cohort	Total finished award	In academia post-award	Outside academia post-award	Not working post-award	Unknown	Still on award
PhD 2003/04	59	42	27	13	2	17	0
PhD 2004/05	72	63	44	19	0	9	0
PhD 2005/06	69	61	45	14	2	8	0
PhD 2006/07	68	53	41	9	3	14	1
PhD 2007/08	115	1	1	0	0	17	97
Total	383	220	158	55	7	65	98

14. In the 2003/04 cohort, for which we have four years' data, a higher proportion of women than men had left academia during the early postdoctoral years. As illustrated in Figure 1 and Figure 2, 11 (out of 36) women had left academic research four years post-PhD, in comparison with two (out of 23) men. Interestingly, for later cohorts, gender differences in the exit from academia seemed to be less marked, although we intend to track this trend over time.

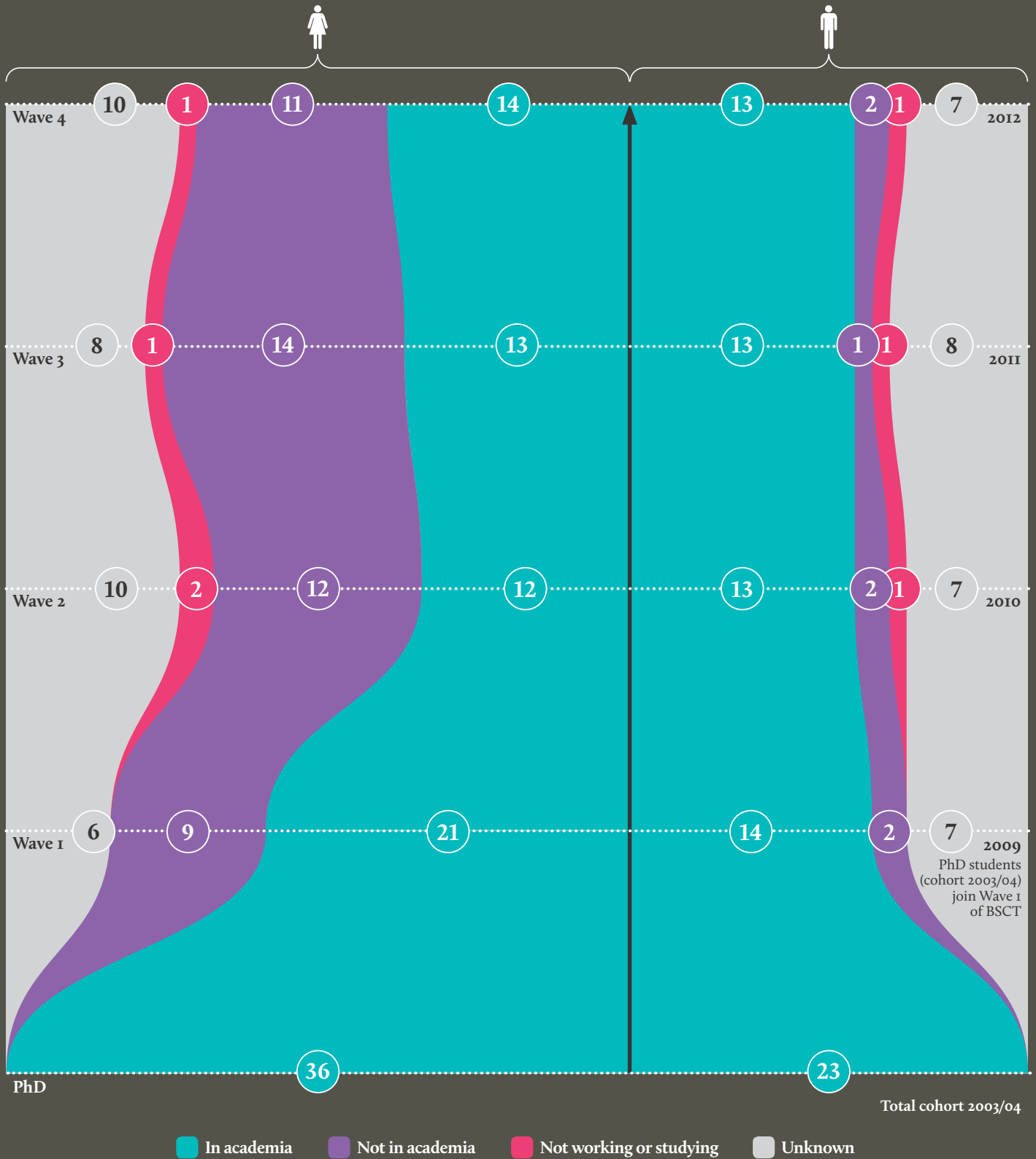
15. To explore attitudes to career choices among former Wellcome Trust-funded PhD students, in particular the differences in why men and women might leave academia, we commissioned a qualitative in-depth analysis in late 2012. The report *Risks and Rewards – How PhD Students Choose Their Careers*, which presents the findings from the study, will be available on the Wellcome Trust Career Tracker website.³

¹ Reported via Basic Science Career Tracker survey or located via web research.

² We do not know the career destinations of 65 former PhD students.

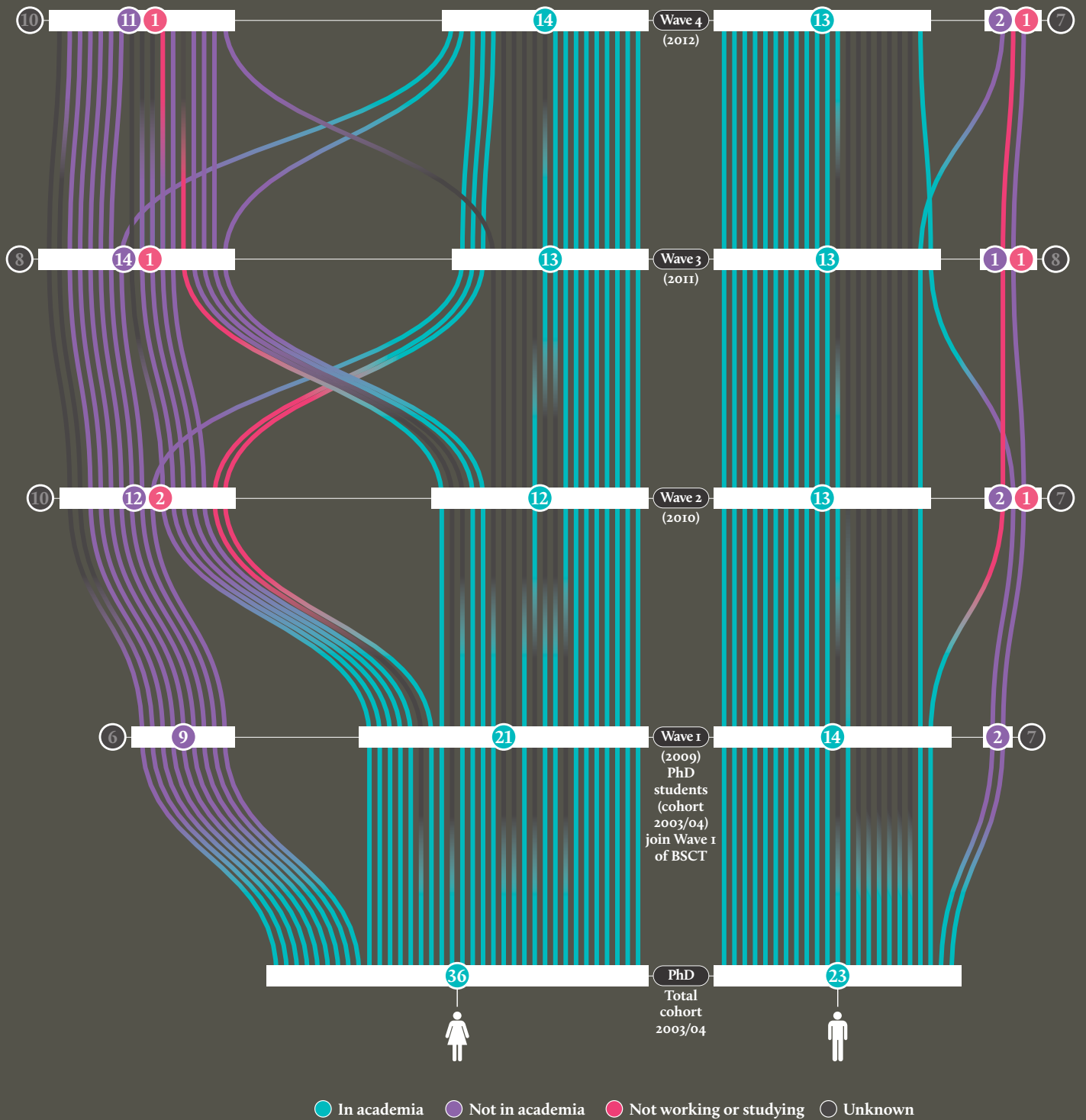
³ Ipsos MORI. 2013. *Risks and Rewards – How PhD Students Choose Their Careers*. London, UK.

Figure 1.
Former Wellcome Trust-funded PhD students (cohort 2003/04*) leaving/staying in academia post-funding



*PhD students received their award in financial year 2003/04.

Figure 2.
Former Wellcome Trust-funded PhD students (cohort 2003/04*) leaving/staying in academia post-funding

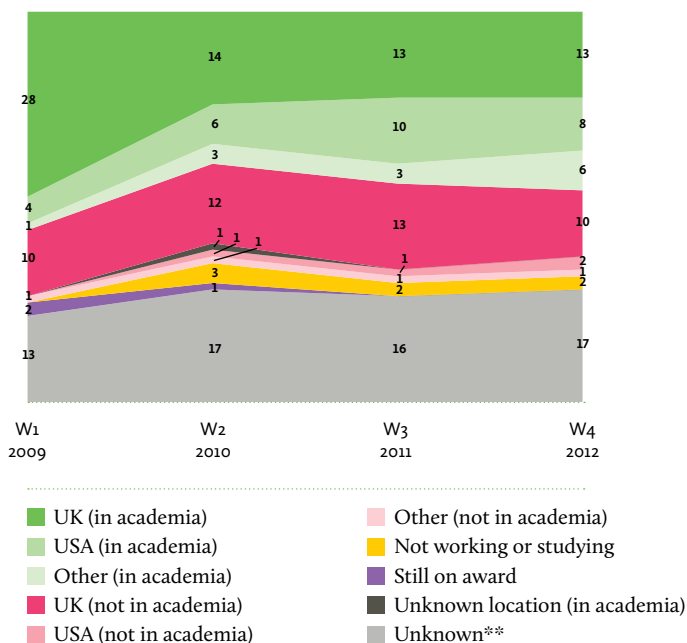


*PhD students received their award in financial year 2003/04.
Each line represents one person.

16. Of the former PhD students currently employed in academia among the 2003/04 cohort (n = 27), 13 were based in the UK, eight were based in the USA and six were based in other countries (Figure 3). For the 2004/05 cohort, we see similar proportions of researchers based in the UK and outside the UK: of 44 former students in academia, 21 are located in the UK, 15 are located in the USA and eight are located in other countries. Charts illustrating the mobility patterns of other Wellcome Trust-funded PhD cohorts are available on the Wellcome Trust Career Tracker website.

17. Some evidence suggests that the perceived imperative to move posts and institutions as an early career researcher can deter the pursuit of a career in academic research, particularly for women.⁴ In a current discussion on 'brain drain' versus 'brain gain' or 'brain circulation' when science becomes more international and virtual technologies are reducing the need for face-to-face contact, we might have to reconsider the long-term value of moving posts and institutions to gain experience and build networks.⁵

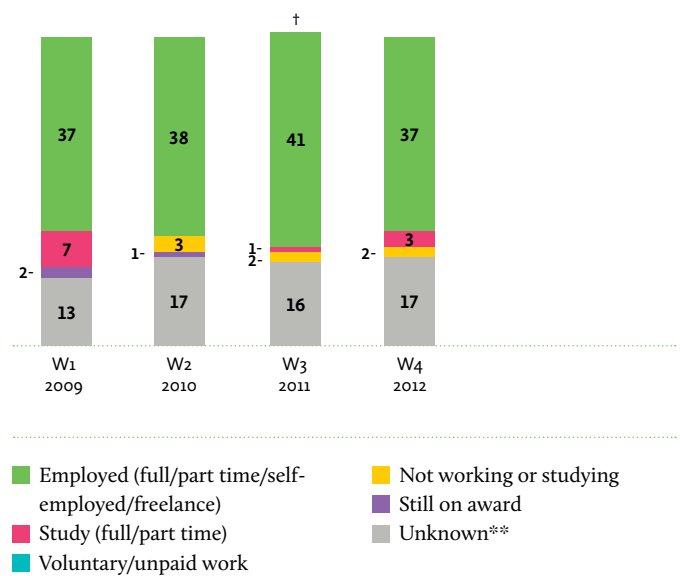
Figure 3
Basic Science PhD studentship (PhD), 2003/04 cohort* – country



Base: All PhDs cohort 2003/04 (n = 59)
 Q: Please tell us in which country you are currently based.
 *PhD students received their award in financial year 2003/04
 **Did not respond to survey and could not be located via web research
 NB Mixed methods used to locate individuals (online survey and web research)

18. Overall, former PhD students continue to report high levels of employability. As illustrated in the 2003/04 cohort (Figure 3) in 2012, the majority of tracked award holders (n = 37/59) are employed. For more data presenting the employment status of other Wellcome Trust-funded PhD cohorts, please refer to the Wellcome Trust Career Tracker website.

Figure 4
Basic Science PhD studentship (PhD), 2003/04 cohort* – employment status



Base: All PhDs cohort 2003/04 (n = 59)
 Q: Which of the following best describes your current employment status?
 *PhD students received their award in financial year 2003/04
 **Did not respond to survey and could not be located via web research
 NB Mixed methods used to locate individuals (online survey and web research)
 †One person works part-time and studies full time (included in both categories)

19. As in previous years, the most commonly cited reasons for pursuing a career outside academia were a lack of job security and the difficulty in obtaining grants. More information on the factors influencing career choices, and in particular what draws PhD students to a career outside science, is given in the report *Risks and Rewards – How PhD Students Choose Their Careers*.

⁴ Wellcome Trust. 2013. Risk versus Reward: Early career scientist perspectives on careers in academic research. London, UK.
⁵ www.nature.com/news/global-mobility-science-on-the-move-1.11602

20. Across all PhD student cohorts included in Wave 4 of the Basic Science Career Tracker, 55 had left academia (26 men and 29 women). Most had a science-related career, such as:

- medicine or healthcare (n = 13)
- working for a biotechnology company (n = 9)
- science communication (n = 5)
- science administration/policy (n = 3)
- technology transfer (n = 2)
- scientific sales roles (n = 2)
- patent law (n = 1).

21. The majority of former PhD students pursuing a career outside academic research reported that they use skills and competencies acquired during their PhD award in their current job.

“Everything I learned during my PhD is useful in studying medicine, and I hope to continue to be involved in research throughout my career.”

Former PhD student

“Doing research quickly and effectively into the science I communicate comes from having read papers and been in an academic environment where you have to absorb information fast. I’m also excellent at time management and multitasking as a reflection on the requirement to do that during my PhD project.”

Former PhD student

Sir Henry Wellcome Postdoctoral Fellowship grantholders

22. At the time of Wave 4, 15 (out of 19) of the SHWPF 2006/07 cohort were employed in academia, and only one was outside academia.⁶ When asked about the key factors that influenced their career choices, SHWPFs mentioned their passion for research and the independence it affords them.

“I have found a niche within my research field in which I can develop my career.”

Former SHWPF grantholder

“I value freedom of research in academia versus industry.”

Former SHWPF grantholder

23. Of those in academia, ten (out of 15) were based in the UK, and five were based outside the UK (in the USA, Germany and the Netherlands). The majority (n = 8) reported that they were research fellows; others were associate professors/readers (n = 2) and lecturers (n = 2), and one was a junior group leader.⁷

24. Ten (out of 15) were employed on fixed-term contracts, with a mean length of four years. One was employed on a permanent contract, one was on a tenure track and one was not employed for a guaranteed period of time.⁸

25. The SHWPF cohort 2007/08 was added to the Basic Science Career Tracker study in Wave 4. All were still funded and working grantholders (n = 16, women n = 9, men n = 7) and were therefore asked about their career intentions. The majority (n = 14, women n = 8, men n = 6) expressed a desire to continue in academic research after finishing their fellowship.

“It’s a creative career that can potentially ‘serve humanity’, as well; it’s just what I want to do, for that reason.”

Current SHWPF grantholder

“Doing basic research doesn’t feel like work to me.”

Current SHWPF grantholder

“Despite the many frustrations and stresses, this is still a job I love and I feel very fortunate to be able to continue.”

Current SHWPF grantholder

⁶ Two SHWPFs were still on the grant, and the career destination of one SHWPF is unknown.

⁷ The academic level of two SHWPFs is unknown.

⁸ The contract length of two SHWPFs in academia is unknown.

26. All SHWPFs were asked about any research activities, achievements and outputs they had undertaken or produced in relation to their award within the past 12 months. The majority reported that they had been authors on peer-reviewed articles and had been peer reviewers, as illustrated below (Figure 5). The majority had also presented work at an international research conference or meeting (Figure 6). For more data presenting achievements and outputs of other Wellcome Trust-funded SHWPF cohorts, please refer to the Wellcome Trust Career Tracker website.

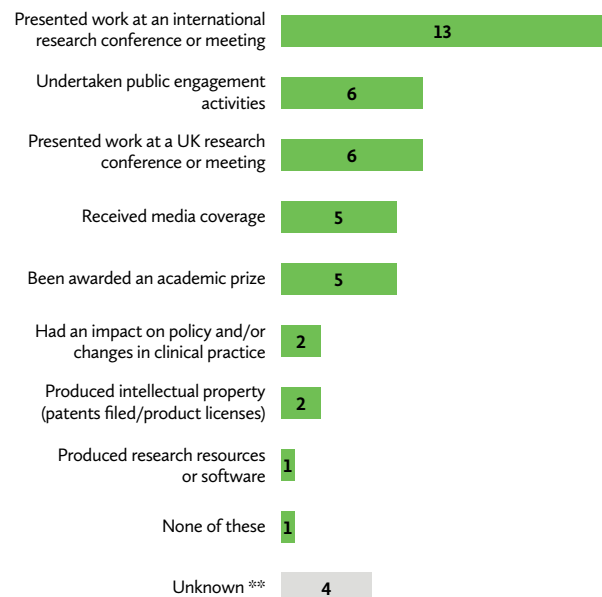
Figure 5
Sir Henry Wellcome Postdoctoral Fellowships (SHWPF), 2006/07 cohort* – research activities



Base: All SHWPFs cohort 2006/07 (n=19)
 Q: Within the last 12 months, have you undertaken any of the following in relation to your award.

*SHWPF students received their award in financial year 2006/07
 **Did not respond to survey
 NB Results based on online survey only. Multiple-choice question.

Figure 6
Sir Henry Wellcome Postdoctoral Fellowships (SHWPF), 2006/07 cohort* – achievements and outputs



Base: All SHWPFs cohort 2006/07 (n = 19)
 Q: Within the last 12 months, have you achieved/produced any of the following outputs related to your award.

*SHWPF students received their award in financial year 2006/07
 **Did not respond to survey
 NB Results based on online survey only. Multiple-choice question.

Research Career Development Fellowship grant holders

27. Former RCDFs continue to enjoy established careers in academia: a large majority were in academia at the time of Wave 4 (107 out of 115). A total of 72 were in academia post-grant, and 35 were still on the grant. Two former RCDFs reported that they were employed in the biotechnology and pharma industry, and two were not currently working.⁹
28. The majority of former RCDFs in academia (39 out of 72) were employed on permanent contracts, and 18 were employed on fixed-term contracts, with a mean length of four years.^{10,11} The majority of former RCDFs (60 out of 72) continued to do research in the same area as their RCDF award or a similar area.¹²
29. The majority of those in academia (46 out of 61) were receiving funding as a lead applicant or a fellowship, 36 were receiving funding as a coapplicant and 18 were being funded through a grant held by someone else.¹³
30. For data presenting the employment sector of Wellcome Trust-funded RCDF cohorts, please refer to the Wellcome Trust Career Tracker website.

International Senior Research Fellowship grant holders

31. At the time of Wave 4, the former ISRFs were well established in their academic careers. The majority (48 out of 58) were employed in academia. One was self-employed in biomedical text processing.¹⁴ When asked which key factors had influenced their career choices, former ISRFs mentioned their scientific curiosity and the freedom afforded by academic research.

“I thought imparting the knowledge that I have gained to students is essential to make them experience the curiosity and joy that I feel while I do experiments. My hope is that some or all of the students would become excellent future scientists.”

Former ISRF grant holder

32. A large proportion of those known to be in academia were employed as a professor or head of department (20 out of 48), eight were employed as an associate professor or reader, and two were senior researchers.¹⁵ All who answered the survey (n = 34) were continuing to do research in the same area as their ISRF funded grant or in a similar area.
33. A large proportion of those in academia were employed on permanent contracts (26 out of 48). Eight were employed on fixed-term contracts, with a mean length of four years.¹⁶ The majority were receiving funding as a lead applicant or through a fellowship (26 out of 48), 14 were receiving funding as a coapplicant, and six were being funded through a grant held by someone else.¹⁷

⁹ The sector for three RCDFs is unknown; one former RCDF found through web research was a freelance artist.

¹⁰ Others were employed on a grant or on tenure track and employed for an unknown duration. One had a proleptic appointment.

¹¹ The contract for 11 RCDFs in academia is unknown.

¹² The research area for 11 RCDFs in academia is unknown.

¹³ Further funding information for 11 RCDFs in academia is unknown.

¹⁴ Seven ISRFs were still on the grant, and the career destination of two ISRFs is unknown.

Next steps

34. Participants will continue to be tracked annually, and new cohorts will be added over time as they approach the end of their grants. A new cohort of Career Re-entry Fellows will be added to Wave 5, which will take place in summer 2013. We are also exploring the possibility of including additional strategically important cohorts in Wave 5.
35. Drawing on the Basic Science Career Tracker findings and the findings in our qualitative study regarding the perceived requirement for a researcher to move institutions in their early career, we are keen to conduct further analysis of the broader value of scientific mobility in an academic career.

¹⁵ Others were senior professor and dean, professor and lab head, director, and head of school. The academic level of 14 ISRFs is unknown.

¹⁶ The contract of 14 ISRFs in academia is unknown.

¹⁷ Further funding information for 14 ISRFs is unknown.

