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Incorporating the UK GRAD Programme and UKHERD

What do researchers do?

Career profiles of doctoral graduates

A collection of 40 career profiles and around 1000 first destination job titles of doctoral graduates

‘My doctorate changed my life. It opened doors, and it also opened my mind. I take on challenges now, in my life and my career, because I have faith in my own abilities.’

‘My doctorate taught me not only about science but also about dealing with people and situations.’

Vitae is supported by Research Councils UK (RCUK), managed by CRAC: The Career Development Organisation and delivered in partnership with regional Hub host universities

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'What do researchers do? Career profiles of doctoral graduates'
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Glossary

A&H – arts and humanities
AGCAS – Association of Graduate Careers Advisory Services
BBC – British Broadcasting Corporation
BBSRC – Biotechnology and Biological Sciences Research Council
BS – biological sciences
BMS – biomedical sciences
BSE – bovine spongiform encephalopathy
CAD – computer-aided design
CEO – chief executive officer
CV – curriculum vitae
DLHE – 'Destinations of Leavers from Higher Education' survey by HESA
EPSRC – Engineering and Physical Sciences Research Council
ESOL – English for speakers of other languages
ESRC – Economic and Social Research Council
GIS – geographic information system
GRADschool – an experiential learning course designed to develop the transferable skills of postgraduate researchers, further information at www.vitae.ac.uk/gradschools.
HE – higher education
HIV – human immunodeficiency virus
HNC – higher national certificate
HND – higher national diploma
IT – information technology
LSE – London School of Economics
MA – Master of Arts
MBA – Master of Business Administration
MORI – Market and Opinion Research International
MP – Member of Parliament
MPhil – Master of Philosophy
MRC – Medical Research Council
MS – multiple sclerosis
MSc – Master of Sciences
NGO – non-governmental organisation
OU – Open University
PGCE – postgraduate certificate in education
PGCHE – postgraduate certificate in higher education
PhD – Doctor of Philosophy
PS&E – physical sciences and engineering
RAE – Research Assessment Exercise
RAF – Royal Air Force
R&D – research and development
RSC – Royal Society of Chemistry
SS – social sciences
TB – tuberculosis
TV – television
UCL – University College London
UK-domiciled – normal residence is in the UK, including the Channel Islands and Isle of Man
UN – United Nations
US – United States
USA – United States of America
WDPD? series – publications of the What Do PhDs Do? series, published by the UK GRAD Programme
WDPD? – What Do PhDs Do? (2004)
WDPDR – What Do PhDs Do? - A Regional Analysis (2006)
WDPDT – What Do PhDs Do? - Trends (2007)
WDRD? series – publications of the What do researchers do? series, published by Vitae
WDRDCS – What do researchers do? Career profiles of doctoral graduates (2009, current publication)
WDRDS – What do researchers do? First destinations of doctoral graduates by subject
WiSETI – Women in Science, Engineering and Technology Initiative

Contents

Foreword

It gives me great pleasure to provide the foreword for this collection of career stories of doctoral holders. The storytellers in this publication provide powerful evidence of the impact of doctoral graduates on the UK economy. The stories describe how the doctorate helps to develop a mix of high level subject knowledge, strong transferable skills and demonstrate impressive strength of character, determination and resolve.

As an employer we have a long track record of interest in doctoral graduates. We typically recruit doctoral graduates for a wide range of roles across our organisation. It is not just specialist knowledge and skills that makes this group of graduates so attractive but also the drive and commitment that they have illustrated in successfully achieving their doctorate.

Recent years have seen a strong commitment by UK higher education to the development of transferable skills amongst the researchers that they train and employ. As employers we have welcomed this and worked closely with higher education institutions to encourage researcher to consider a range of career paths within which to apply their skills.

The movement of people between academia and industry provides a key conduit for the transfer of knowledge and ideas. Harnessing talent of the kind described in this publication is a crucial task for all employers and one that can make a major impact on the productivity of the UK economy.

I hope that you find this publication an inspirational collection of personal reflections on both the skills of researchers and the possibilities that await them after the completion of a doctorate.

Jackie Wilbraham
Director of Research and Development Science Policy
AstraZeneca

What do researchers do?

Career profiles of doctoral graduates

Background

'What do researchers do? Careers profiles of doctoral graduates' provides forty career stories of researchers who have completed their doctorate. Told largely in their own words the stories illustrate the skills and knowledge of this talented and well-qualified body of people. They offer is real insight into the careers of the tellers illustrating what they consider important and providing an opportunity to learn about the decisions they have made and why they made them. The influence of the doctorate is clear in all of these stories: as a grounding in specialist knowledge; a chance to experience research hands-on; and as an active development of many skills and competencies that have subsequently been used in a range of employment roles.

It is being launched with a companion publication, 'What do researchers do? First destinations of doctoral graduates by subject', which explores the initial jobs of doctoral graduates just after graduation. The invaluable data collected as part of the Destinations of Leavers from Higher Education survey enables us to take a snapshot of where in the labour market doctoral graduates work first, however the stories in this publication demonstrate that first destination is only a small part of the story.

WDRD series is designed to help:

- doctoral researchers and prospective researchers make well-informed career choices
- careers advisors and supervisors be aware of the breadth of potential careers
- employers better appreciate what doctoral graduates can offer them.

Introduction

‘Talent is only the starting point.’

Irving Berlin

Careers stories offer a way to access the experiences and decisions of those who tell them. They are personal narratives and are focused on the things that the tellers found significant. Careers stories offer neither a detailed CV nor an easily analysable set of structured responses. What they do offer is real insight into the careers of the tellers, illustrating what they consider important and providing an opportunity to learn about the decisions they have made and why they made them.

This publication provides forty career stories of researchers who have completed their doctorate. Told largely in their own words the stories illustrate the skills and knowledge of this talented and well-qualified body of people. The influence of the doctorate is clear in all of these stories: as a grounding in specialist knowledge; a chance to experience research hands-on; and as an active development of many skills and competencies that have subsequently been used in a range of employment roles. The personal qualities of the storytellers are also evident as they demonstrate how they have applied their doctoral training in a wide range of personal and professional contexts.

Through their stories the researchers in this publication provide us with insights into the relationship between their doctorates and the career journey that they have taken. Some of the storytellers completed their doctorate early on in their career, while for others it was undertaken mid or even late career. The doctorate provides opportunities to develop skills and expertise, facilitates personal and professional development and opens up access to new networks and opportunities. Yet, the doctorate is just one part of the journey that people take, and it is this journey that this publication explores.

A companion publication, ‘What do researchers do? First destinations of doctoral graduates by subject’ (WDRDS), explores the initial jobs of doctoral graduates[1] just after graduation. The invaluable data collected as part of the Destinations of Leavers of Higher Education (DLHE) survey enables us to take a snapshot of where in the labour market doctoral graduates work first. However the stories in this publication demonstrate that first destination is only a small part of the story.

In the first ‘What Do PhDs Do?’ (WDPD)[2] publication in 2004, we combined quantitative analysis of destination data with some qualitative interviews to provide insight into both what was happening and why. The qualitative career stories that were produced proved popular with researchers and as a resource for use in careers education[3]. The opportunity to use real career stories and to look at the experiences and decisions of researchers is powerful. At the same time, there are growing calls from research funders to be able to better understand the longer term and wider benefits of investing in doctoral training.

This project aimed to extend the number and range of these types of narratives. Stories were collected to illustrate the careers of doctoral graduates from all five disciplines identified in WDRDS. Within these discipline areas, storytellers were selected to provide a diversity of both the subject of the doctorate (point of origin) and destination or current role. However, we found that both subject and destination were frequently fuzzier than the categories used in WDRDS. Many of our storytellers had undertaken inter-disciplinary doctorates that straddled subject boundaries. Similarly we found high numbers of people who had moved between different employment sectors during their career or whose current role straddled different areas.

The storytellers are highly diverse in their demographics. They represent a range of ethnicities, genders and nationalities. They also present a wide range of experience in terms of age and time elapsed since the completion of the doctorate. They are a mix of recent and longstanding graduates, people in their twenties, thirties, forties and fifties and those in their first job as well as those who have moved through many jobs and sectors after graduation.

Some participants were identified through follow-up from responses to a previous online questionnaire. However most were recruited to the study through the Vitae networks. An initial phase of general recruitment was followed by more targeted requests looking for particular origin or destination points that were missing from the sample. We aimed to provide a collection of stories illustrative of the most common subjects and destinations identified in WDRDS analysis.

The storytellers in this publication are drawn from the following five disciplines:

- **arts and humanities (seven stories)**
- **biological sciences (nine stories)**
- **biomedical sciences (six stories)**
- **physical sciences and engineering (eleven stories)**
- **social sciences (seven stories).**

A number of stories were collected or identified that we have not been able to include in this publication; an expanded range of career stories will be made available on the Vitae website.

[1] ‘What do researchers do? First destinations of doctoral graduates by subject’ (WDRDS). www.vitae.ac.uk/WDRDS

[2] Ball,C, Metcalfe, J, Pearce, E and Shinton, S (2004), ‘What Do PhDs Do?’. Retrieved 4 June 2009 from www.vitae.ac.uk/CMS/files/1.UKGRAD-WDPD-full-report-Sep-2004.pdf.

[3] Vitae, ‘What Do PhDs Do? Case studies. Retrieved 4 June 2009 from www.vitae.ac.uk/policy-practice/14773/What-Do-PhDs-Do-Case-Studies.html.

Once participants were identified, they were sent an email questionnaire which asked the following questions:

- Please tell us about your doctorate?
- What were you doing before your doctorate?
- What are you doing now?
- What was the route between your doctorate and what you are doing now?
- Since you completed your doctorate how (if at all!) have you drawn on your experience as a doctoral researcher?
- When you reflect on your doctorate, what stands out in terms of its contribution to your subsequent career development?
- What advice would you give to doctoral researchers considering a similar career path to your own?
- Anything else?

A minority of participants were interviewed face to face or via the telephone. In these cases the broad question schema was followed but with increased opportunity for follow-up questions. Also included in this publication are two stories from the original WDPD? publication, although these have been updated by the storytellers.

Storytellers' responses to these questions were edited into the versions published here. These versions were then returned to the storytellers for amendment and approval.

Emerging themes

This collection of stories illustrates that researchers who have undertaken doctoral training follow diverse and often surprising career pathways; but their roles are widely spread across the economy. It also explores how doctoral graduates contextualise the learning that they did during their research programme within their broader career development. The case for the long-term and profound influence of the doctorate on the skills, employability and character of graduates seems to be repeatedly borne out in these career stories.

Two overarching themes emerge from this collection of stories; firstly that the doctoral experience has had, in most cases, a significant influence on both the perceived employability and career decisions of our storytellers; and secondly that the career pathways that our storytellers describe are often serendipitous, opportunistic and wide-ranging. Being able and confident to seize and create opportunities is identified as a strength by many of our doctoral graduates.

The influence of the doctorate on employability

While the experience of doctoral study varies with discipline and other factors, the storytellers are almost universally positive about their doctoral experience and the influence that it has had on them, their skills and their career. Many of them found the doctorate itself challenging, but the opportunities that it gave them for personal development useful.

The doctorate is seen by many of the storytellers as a rigorous training which could at times be highly challenging. Charles Romito (engineering) said 'I found that the greatest challenge of a PhD is emotional not intellectual.' The emotional and personal challenges of doctoral study are also referred to by Lucy Grimshaw (archaeology) who said 'I loved and hated the experience of writing my doctorate in equal measure.' However while there is a wide recognition by the storytellers that a doctorate is personally testing, there is also a recognition that what it took to overcome the challenges provided huge opportunities for personal growth and development.

With hindsight, many storytellers feel that they could have utilised the opportunities presented by the doctorate more effectively. Cora Beth Knowles (classics) reflects on her engagement with extra-curricular activities saying 'I do wish I'd made the most of the opportunities I was given.' Conversely, others are satisfied with their doctoral experience. Ray Kent (geology) 'wouldn't change anything' and Louise Sullivan (sociology) says 'there is nothing I would change about my time as a doctoral researcher'. David Priest (plant science) pragmatically notes that 'I only wish now I had taken more advantage during my doctorate of the training courses that were offered. These were available free of charge. I soon discovered that in the world of work training opportunities are severely constrained by budgets!'

Most of the storytellers found that their doctorate has profoundly influenced their career and their abilities to pursue their career of choice. Andrew Hann (history) notes that he has 'drawn on my experience as a doctoral researcher in virtually all the jobs I have had since leaving university.' While Anna Upton (biochemistry) says that it was 'crucial to my career.' Storytellers often describe how their doctorate enabled them to develop skills, knowledge and personal qualities that they have used in a wide variety of contexts.

Most obviously the doctorate is a place where subject knowledge and skills are utilised. Those researchers who have gone on to academic positions particularly talk about drawing on the research and subject specialism that they built up during their doctorate. A wider group talk about the value of the broader research skills that they developed through their doctorate. Lucy Grimshaw (archaeology) perceives her value to employers as being that she is 'good at writing, at analysis, at statistics and managing data' and Anna Bee (geography) notes that she 'consistently used' her 'methodological training'. It is these transferable skills such as project management, arguing for an informed position and giving presentations that are repeatedly singled out as being the longer term contribution of the doctorate. For those that have not followed their subject specialism, it is these skills that 'have been much more useful than in-depth knowledge of my research area' Jennifer Houghton (environmental microbiology).

Less tangibly many of the storytellers talk about the influence that their doctorate has had on developing their personal qualities and character. Catherine Martin (biochemistry and pharmacology) describes her doctorate as giving her 'an enormous sense of achievement and a tremendous boost in confidence'. While Steve Hutchinson (zoology) and Vikki Allen (chemistry) both talk about the 'independence' of thought and action that their doctorate developed in them. Julia Meek (engineering) feels that it gave her the 'necessary skills to become self-employed'.

The strong skills sets developed by the storytellers means that they have generally been able to make successful career moves and adapt to circumstances around them. In academia the possession of a doctorate is increasingly seen as an essential requirement and lecturers like Melanie Simms and Joan Smith found that gaining a doctorate was essential to promotion. Outside of higher education some storytellers identify that the qualification can open doors, for example Vicky Allen (chemistry) notes that 'having a doctorate isn't a requirement for my job, but it helps!' and Daryl Stewart (computer science) feels that 'the title can help to create instant respect, especially in the US.' Andrew Eaves (mathematics) says that 'having a doctorate…allows me to justify charging higher rates (as a consultant)'.

Overall a strong picture emerges from these stories that suggests that researchers prize their doctoral experience. The doctorate is seen as an important moment in their professional development, one where they developed skills and personal qualities and made contacts that would provide capital throughout their career.

The influence of the doctorate on career journeys

The forty career stories presented in this publication cover a range of points of origin across five disciplines and a wide range of destination points. We acknowledge that the destination is just the current step in a journey still to be borne out. Twenty nine of our storytellers describe more than one job that they have held along their journey and eight describe five or more jobs. Fifteen have pursued their careers exclusively in the higher education sector, although in three cases this has not only been in research and lecturing roles.

Thirteen of storytellers moved outside of higher education immediately after the completion of their doctorate. While twelve remained in higher education initially but moved into other sectors later on in their career. Interestingly, four moved from their doctorate to another sector and then returned to higher education later in their career.

Some storytellers, such as Alastair Wilkins (clinical neuroscience), feel that their career took a 'pretty standard' path. More often, however, the choices and decisions that are made through a career seem, in Cora Beth Knowles' (classics) words, to be 'a convoluted path'. As Martin Maudsley (ecology) notes, the doctorate was a powerful starting point. For him 'the career path from science doctorate to becoming a professional storyteller is probably not usual nor was it predictable, but it undoubtedly draws on many aspects of my earlier work and is immensely enjoyable and fulfilling.'

The fact that the storytellers' careers are rarely straightforward journeys is attributable to a wide range of factors. For many, family or caring responsibilities have driven career decisions. While for some a desire for a better or different work/life balance has motivated decisions to switch jobs or sectors or to investigate self-employment or part-time working. For others the ebb and flow of funding, opportunities or job stability has encouraged a rethink. Ray Kent (geology) notes that 'a change of career direction became necessary because of an absence of employment opportunities in my field'. Often switching job or sector has enabled the storytellers to discover new and fulfilling opportunities.

Some storytellers are more comfortable with the idea of career change than others. Anna Bee (geography) notes that 'after five years as a lecturer I felt it was time for a change' and that on seeing a job in government research she 'fancied something different' and 'applied and got the job.' Joan Smith (education) also agrees that openness and flexibility are important saying that 'it is fine to plan a career, but you need to keep yourself open.' Nonetheless, change also brings its own challenges, Anna Bee notes that projects outside of academia 'tended to offer less sustained engagement than I was used to, which was sometimes frustrating.' For those who switch disciplines, roles or sectors there is inevitably a need to relearn professional cultures. However, storytellers repeatedly emphasise the way in which their doctoral experience has been useful to them in making transitions and moving into new areas.

A common motivation for career change is a desire to make a bigger and more positive impact on the world around. Andrea Fidgett (biology) who works as a zoo nutritionist and remains research active within a field related to her doctorate, notes that she has great 'satisfaction doing this in the not-for-profit sector, where I get rapid feedback that my work and research is useful.' For a minority of storytellers this desire to find a greater application for their research is a powerful motivator. Dave Priest (plant science) says that his 'motivation was to use plants to help feed the world' but that he discovered that he 'wouldn't do this from the laboratory'. Similarly Lucy Grimshaw (archaeology) 'wanted to do something where I could make more of a difference than in the academic world.'

Many of the storytellers pursuing an academic career also characterise the motivation for their career choices in similar ways. Karina Lovell (clinical psychology) moved into lecturing to be in a 'position of influence to change patient care for the better'. While Jessica Barrett (physics) switched academic discipline in order 'to make a positive and valuable contribution to society through my research.'

What is clear from this collection of stories is that doctoral graduates are pursuing a wide variety of careers in a range of employment settings. Invariably their doctoral training has influenced their professional ambitions and career aspirations. And it is in this publication that we can hear how each of these individuals' career and personal choices have taken them on a journey from initially considering a doctorate, to completing and presenting their research and ultimately finding a job that draws on the skills and experiences gained along that journey.

Analysis of first destination job titles

The stories presented here are supplemented by an analysis of first destination job titles. The DLHE survey data, which forms the basis of WDRDS, provides granularity through 12 occupation classifications, based on Standard Occupational Classifications. In order to add more detail to this analysis, Vitae worked with the Association of Graduate Careers Advisory Services (AGCAS) to identify five UK universities who were willing to contribute the locally collected DLHE data including job titles for analysis. These five universities (University of Cambridge, Cardiff University, University of Glasgow, University of Leicester and University of Nottingham) provided data relating to the 2008 DLHE survey.

The data provided by the five universities was cleaned and coded to the disciplinary categories. The job titles (around 1000 in total) were then analysed and grouped. The job titles have been presented to ensure that it is not possible to link them to an individual. Because of this the university and subject of origin have been removed, a description of the company is given rather than the company name, and only when needed to contextualise the role. Finally a small number of job titles have been anonymised where they are unique eg Director of Museum Studies MA changed to director of postgraduate programme.

Arts and humanities

‘My doctorate changed my life. It opened doors, and it also opened my mind. I take on challenges now, in my life and my career, because I have faith in my own abilities.’

Cora Beth Knowles (doctorate in latin literature)

This chapter focuses on the career stories of doctoral graduates in the arts and humanities. Arts and humanities doctoral graduates made up over 13% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of arts and humanities is broad and covers the following subjects, of which the first five are analysed in ‘What do researchers do? First destinations of doctoral graduates by subject’ (WDRDS).

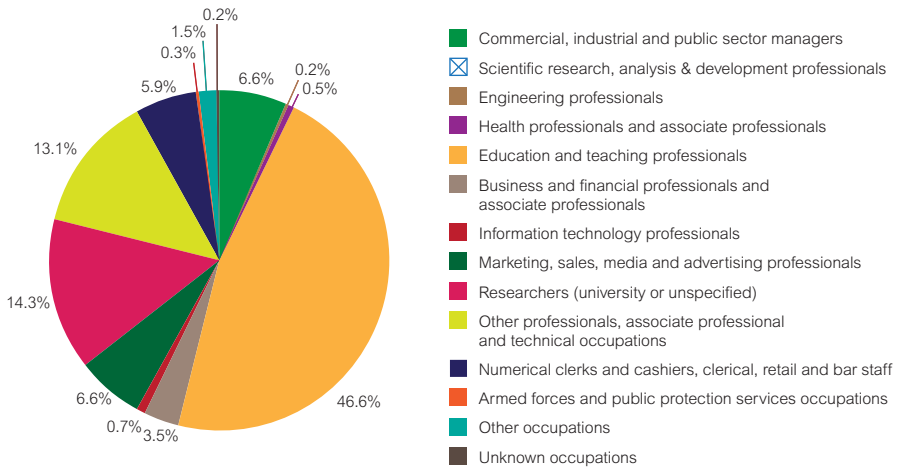
- **history**
- **English**
- **modern languages**
- **theology**
- **linguistics and classical and ancient languages**
- **American studies**
- **archaeology**
- **art and design**
- **cinematics**
- **communication studies**
- **comparative literature**
- **design studies**
- **drama**
- **fine art**
- **journalism**
- **media studies**
- **music**
- **philosophy**

This chapter presents the career stories of seven arts and humanities researchers. These stories cover a total of 27 different jobs, showcasing a range of doctoral subjects and a spread of career destinations.

Key messages from ‘What do researchers do? First destinations of doctoral graduates by subject’

The data analysed in WDRDS provides a good insight into the distribution of doctoral graduates immediately after graduation. Its results show that of UK-domiciled arts and humanities (A&H) doctoral graduates, graduating in 2003–2007 who responded to the survey:

- the education sector (both higher and other education, across occupations) was consistently the largest employment area for A&H respondents. It employed 67% of new doctoral graduates
- A&H doctoral graduates were more than twice as likely to enter ‘education and teaching’ occupations within the education sector (48%) than respondents across all disciplines (22%): higher than any other discipline group
- a subset of these, 27% of all A&H respondents in UK employment, entered HE lecturing roles, almost double the rate across all disciplines (14%)
- the percentage working in all research roles was 18%, well below the all discipline average (35%), with just 14% working as HE research staff (23% for all disciplines).



Types of work entered by UK-domiciled arts and humanities doctoral graduates (2007) employed in the UK, based on Standard Occupational Classifications (SOC) returned in the 2008 ‘Destinations of leavers of higher education’ survey. [4]

[4] These first destination data refer to the latest available data rather than the amalgamation over five years discussed in the text.

Cora Beth Knowles works as an associate lecturer at the Open University

'I jump at any and all opportunities because I love this job – it's varied and interesting, and I never know what's around the corner. I get to meet the most extraordinary people, some of whom have remained friends long after the end of their course.'

For my doctorate I studied latin literature in the Classics Department of the University of Newcastle. I researched the Roman writer Tacitus and his use of visual description.

I have just finished my two-year initial probationary period at the Open University (OU). I teach Roman history and latin to adult learners. Technically it is a temporary job, but every few months more work seems to come my way. For example, I have been taken on as a history examiner, I have also been asked to write the assignment questions that will be sent to every OU Roman history student across the world, and I have even been booked to run a residential course in Plymouth. I jump at any and all opportunities because I love this job – it's varied and interesting, and I never know what's around the corner. I get to meet the most extraordinary people, some of whom have remained friends long after the end of their course.

My doctorate led me here by a convoluted path. While I was a doctoral researcher, I was offered some undergraduate teaching work. No training was provided and I was very nervous about jumping into teaching with no preparation, so I went looking for a distance-learning course which would give me some grounding in the theory and practice of teaching – and found the Open University. I took one education course, then another. By that time I was hooked. I took some courses in subjects relevant to my doctorate, and almost accidentally ended up with an OU masters degree in education. When I finished my doctorate, it seemed like the most natural thing in the world to apply for work at the OU, particularly since lecturers get free courses!

My doctorate has been very useful to me – and not just because of the authority conferred by a title! The subject knowledge I developed during my doctorate has given me both the qualifications necessary to get this job and the ability to do it well. My doctoral research gave me a grounding in research skills, which I now find invaluable. I have just published my first article in a classics journal, and hope to finish my first book very soon.

My doctorate changed my life. It opened doors, and it also opened my mind. I take on challenges now, in my life and my career, because I have faith in my own abilities. I was the first person in my family to go to university, and I ended up with a doctorate in ancient languages – proof that anything is possible, if you want it strongly enough.

I would not change much about my time as a doctoral researcher, but I do wish I'd made the most of the opportunities I was given. I wish I had taken the modern language courses on offer, done more IT training and presented more papers at conferences. My doctorate taught me a lot about Tacitus' use of visual description, but that is a very narrow field, and of limited use to me now. The things I value most today are the skills I learned during my time as a doctoral researcher; if I had known that when I started, I would have developed my skills further.

First destination job titles

Teaching and lecturing

Doctoral graduates in arts and humanities subjects are highly likely to work in education and teaching roles as their first destination. There are a number of commonly found job titles within this discipline including:

- assistant, adjunct or associate lecturer/professor
- lecturer
- English/ESOL teacher
- teacher (various subjects).

There are also less common job titles that relate to this area such as senior educational psychologist.

Zoe Knox works as a lecturer at the University of Leicester

> 'The skills required to carry out all these duties, and to succeed in this competitive profession, were honed during my doctorate.'

I completed my doctorate at Monash University in Australia. My research focused on the history of church-state relations in Soviet and post-Soviet Russia.

When my PhD scholarship ran out, I worked as an administrator at the University of Melbourne. After I had submitted my doctoral thesis, I was unable to find research work for another year, until I was awarded a part-time postdoctoral fellowship at Monash University. To make ends meet, I also taught at a third university.

I was then awarded a Mellon postdoctoral fellowship at Rice University in the USA. After two years, I was appointed to a short-term post at the University of Leicester. When a permanent post opened up in the department, I applied for it and was appointed.

My current role includes administration, teaching and research. In terms of research, I conduct archival research, submit articles to academic journals, work on collaborative research projects, present at conferences and in other ways engage with the international community of researchers in Russian studies. The skills required to carry out all these duties, and to succeed in this competitive profession, were honed during my doctoral studies.

First destination job titles

HE research

There are a range of research based roles undertaken by arts and humanities doctoral graduates both inside and outside higher education. Within HE job titles include:

- postdoctoral researcher/fellow
- research assistant/associate
- senior/junior researcher.

Jennifer De Lillo prepares electronic editions of medieval manuscripts at the University of Birmingham

> 'I did not want to be an academic and to be honest it had not even crossed my mind.'

After my degree I got a job working at the British Library and went on to study librarianship first at the Vatican and then at UCL. This gave me an interest in medieval manuscripts, which I then pursued through a doctorate in the Italian department at Royal Holloway.

In the first week of my doctorate my supervisor sat me down and said, 'this degree won't guarantee you an academic job'. I was happy about this as I did not want to be an academic and to be honest it had not even crossed my mind; I wanted either to do research or go back to library work. My experience of teaching made me sure that I did not want to teach at university. Students were not motivated, most wouldn't apply themselves, especially to literature.

In the last year of my doctorate while I was writing up, I moved to Leicester as my partner was working here. I was interested in electronic editions of manuscripts and I found someone at the University of De Montfort to put in a grant application with. The grant was not successful but I got a job working on an electronic edition of Dante's Commedia as part of an international project. Funding ebbed and flowed around this project so I initially combined this work with working as an assistant librarian and with stints on other similar projects.

With medieval manuscripts there is often no definitive version. Our electronic versions enable scholars to access all of the different versions so that they can compare and analyse them. My experience of working with manuscripts through my librarian and doctoral training has been essential to doing this kind of work. In 2005 the project moved to the University of Birmingham, but the job was not full-time so I used to use Fridays to do my own research. Since having kids I have given up my own research, there just is not time. I have also gone down to three days a week, which fits in with my children well.

First destination job titles

Other HE

Arts and humanities doctoral graduates are fulfilling a range of other functions within the higher education sector such as:

- database manager
- executive assistant
- librarian
- PAYE administrator
- postgraduate skills training officer
- web marketing executive.

Andrew Hann works for English Heritage as a senior properties historian

'I have drawn on my experience as a doctoral researcher in virtually all the jobs I have had since leaving university. The research and writing skills…have proved invaluable, as has the ability to give clear presentations. Teaching experience I picked up whilst doing my doctorate has also proved useful when working with both students and volunteers.'

I studied for my doctorate at the University of Oxford. My thesis focused on the emergence of agrarian capitalism in England during the early eighteenth century, using the Ditchely estate in Oxfordshire as a case study.

I now work for English Heritage as a senior properties historian. I am part of a small team responsible for providing research to support the interpretation of properties. This involves writing reports, commissioning research from external experts, writing text for exhibitions and audio guides, and writing or assisting with the writing of guidebooks.

After submitting my doctorate and before my viva, I secured a post as research assistant on a two-year project at the University of Exeter. Having spent four and a half years working alone on a specific research question, it was refreshing to be working as part of a team, and within a far more structured timetable. Unfortunately following my viva I discovered that my thesis required revision, but I deferred this work until I had completed my contract in Exeter. I then returned to Oxford for a year to complete the corrections. Following this, I initially found it difficult to find a full-time job and survived for a further year in Oxford on causal teaching and short-term research commissions.

In 2000 I secured a one-year research post at the University of Leicester. This was followed by a two-and-a-half-year research position at Coventry University, gained through contacts I had built up whilst in Leicester. However, at this point I decided to move away from an academic research career. I had applied for quite a few lecturing posts without much success and I realised that I did not want to work as a research assistant for the rest of my career. So I applied for, and got, a job at the Victoria County History as a team leader on a new initiative which aimed to bring the research of the Victoria County History to a wider audience. This project bridged the gap between academia and community history and this seemed like an ideal career move as it opened up new avenues without closing off existing ones.

At the Victoria County History I was responsible for co-ordinating a team of volunteers whom I had to recruit and train. I was based in an academic department at the University of Greenwich, but managed to build up wider contacts with record offices, local councils, schools, community groups and bodies such as English Heritage. With the end of the contract approaching in 2007, I was prepared to explore other avenues within the heritage field as well as academic positions. My experience of writing for a general audience and working with volunteers and community groups stood me in good stead when I applied for the post at English Heritage.

I have drawn on my experience as a doctoral researcher in virtually all the jobs I have had since leaving university. The research and writing skills I learned as a doctoral researcher have proved invaluable, as has the ability to give clear presentations. Teaching experience I picked up whilst doing my doctorate has also proved useful when working with both students and volunteers. Underlying all of the career moves that I have made has been an interest in the interaction of people and places in the past. This I owe to the interest that was first generated in the Ditchely estate during my thesis research.

First destination job titles

Non-HE research

There are a number of research roles undertaken by arts and humanities doctoral graduates outside of higher education. Job titles include:

- archaeologist
- cultural resources advisor (for a national heritage organisation)
- diocesan archaeological advisor.

Ian Lyne works as the head of skills and careers at the Biotechnology and Biological Sciences Research Council (BBSRC)

> 'My doctorate gave me the opportunity to hone my abilities to think critically and systematically through a complex set of issues, learning how to persevere even when faced with baffling and challenging questions.'

I undertook my doctorate in Philosophy at the University of Warwick and then was lucky enough to be awarded a British Academy Postdoctoral Fellowship. The topic of my fellowship built on issues which I had uncovered as part of my doctorate - looking more closely at the historical constellation of ideas in German philosophy in the early part of the twentieth century. I feel that I published some useful work as part of my fellowship, and made a lasting (small!) contribution to scholarship and philosophical thinking in this area.

While I found my fellowship to be an unforgettable experience, I found the teaching very challenging. An academic research career is also very competitive and I was beginning to fear that I was not going to enjoy the constant pressure to keep publishing new work. There was also a growing feeling that it would be nice to have a job where one could feel one could see more concrete results, and get involved in more concrete activities.

Making the transition from academic study to management was not easy, and I was very fortunate that the University of Durham took a chance on employing me! I think that if I had been encouraged to think more broadly about my career development, the transition would have been far easier. I then moved to the University of Exeter where I became head of the Graduate School Office and oversaw the University's postgraduate work and policy.

I now work as the head of skills and careers at the BBSRC where I am involved in policy and strategy work. While the subject of my doctorate is not relevant to my current work directly, the experience of undertaking a period of research is vital in my work and understanding of the issues facing researchers in the biological sciences. Knowing as well how research can become an all-consuming passion helps me, I think, understand the issues facing early-career researchers and some of the challenges of academic life.

My doctorate gave me the opportunity to hone my abilities to think critically and systematically through a complex set of issues, learning how to persevere even when faced with baffling and challenging questions. It is natural in a doctorate to be very focused on the research, and certainly I thought very little about the future; the question of what people would do after a doctorate was never really talked about. I think universities are doing much more now to help people think about their future career options as well as simply enjoying the intrinsic intellectual and personal value of their period of doctorate research.

First destination job titles

Other

Doctoral graduates also employ their research and generic skills in a range of other contexts across the economy. Job titles include:

- advisor to the Minister of Transport and Communication
- analyst/business analyst
- bishop's chaplain
- development officer (for a national language organisation)
- head agent (for a political party)
- librarian
- management trainee
- personal advisor (Civil Service)
- policy advisor (government)
- senior development editor (publishing)
- translator
- writer/freelance writer.

Helen Lawrence works as a freelance training consultant

> 'This experience confirmed that my passion was for training and development rather than research.'

I left university and took the first job I was offered: a sales assistant in a clothes shop. This quickly became a management position, and I was responsible for recruiting and managing staff, liaising with head office, and basic accounts. I liked learning new things, however, this wasn't where I was meant to be and I left after ten months to do an MA, then PhD, in linguistics at the University of York.

After my PhD I did three years of postdoctoral research, where I was responsible for managing a project. This involved fieldwork and analysis. I was also responsible for project management and administration and informally for supervising the researchers on the project.

While I was doing both postgraduate and postdoctoral research, I did a substantial amount of teaching, which gave me valuable experience for my next career move to work as a graduate training officer. This role involved the design and delivery of development opportunities for postgraduate researchers and postdoctoral research staff. This experience confirmed that my passion was for training and development rather than research. After five years I was looking for new challenges and decided to set up my own training consultancy.

This is working out better than I could have hoped. The challenges are different from those I had expected – never underestimate the value of a helpful accountant! – and I love working with a wide variety of interesting people in different professional contexts.

Lucy Grimshaw works as a public affairs officer at the British Library

> 'I took some time out and thought about my life and what I wanted to do. I decided that I was good at writing, at analysis, at statistics and managing data, all of the research skills that I had learnt from my doctorate. I also realised that I didn't have any experience outside of academia and that I would need to build some up.'

I studied for my doctorate in Palaeolithic Archaeology at the University of Durham. I was hugely motivated by this topic and by a career as an academic archaeologist. But, I guess, like a lot of people, I loved and hated the experience of writing my doctorate in equal measure. I struggled at points, but I kept going and eventually made good progress.

Once I had completed my doctorate I was in two minds about what to do with my career. Although I still wanted an academic career I felt that after my doctorate some of my passion for the subject had gone. I applied for academic jobs, and got some interviews but I found the whole experience quite disheartening. I was eventually offered a temporary lecturership but the proposed workload was huge and it would have required me to move to a new city leaving my partner and family. I agonised over this, but eventually turned the job down. This was very risky, but I had come to realise that I was not committed enough for an academic career.

I took some time out and thought about my life and what I wanted to do. I decided that I was good at writing, at analysis, at statistics and managing data, all of the research skills that I had learnt from my doctorate. I also realised that I did not have any experience outside of academia and that I would need to build some up.

A friend of my father suggested that I might enjoy working as an MP's researcher. This appealed to me as I was interested in politics and wanted to do something where I could make more of a difference than in the academic world. So I contacted the Liberal Democrats and started work as an unpaid intern. I then went on to another unpaid internship for an MP. I then secured a paid job with an MP who was the Liberal Democrat spokesman for Arts, Heritage and Culture. My background in archaeology was part of what got me this job and was really useful.

I enjoyed working as an MP's researcher, but it got a bit repetitive after a year. Although there is a lot of research, it is mainly summarising information from others, rather than solving problems yourself, and other parts of the job are more basic administration. Also working with MPs can be challenging, as you are essentially a team of two and need to work very closely together in high pressure situations.

After about a year I decided to move into public affairs, which is a common step for MPs' researchers. Public affairs deals with the relationship between organisations and national politics. Public affairs officers spend their time organising meetings, lobbying MPs and writing letters. Sometimes you make a real difference, but at other points you do not feel like you are getting anywhere.

I got a job working for a trade association which represented companies working in environmental areas. I worked there for 14 months, and although it was interesting, I could not see much opportunity for development. I then moved to a public affairs job at the British Library. However, I'm on a short term contract and so it is unclear whether I will be at the British Library for very much longer.

I would like to move into something more research based, possibly a think tank or even getting back into academic research. I am not going to rush the decision so I might find myself taking a career break after the end of my contract to reassess my options.

Biological sciences

‘I’ve drawn on my doctorate in various ways. My subject expertise gave me authority and credibility when talking to scientists and plant breeders around the world. The transferable skills I developed have proved even more important. I have had to prepare project proposals and development plans.’

Dave Priest (doctorate in plant science)

This chapter focuses on the career stories of doctoral graduates in the biological sciences. Biological sciences doctoral graduates made up 14% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of biological sciences is broad and covers the following subjects, of which the first for are analysed in ‘What do researchers do? First destinations of doctoral graduates by subject’ (WDRDS).

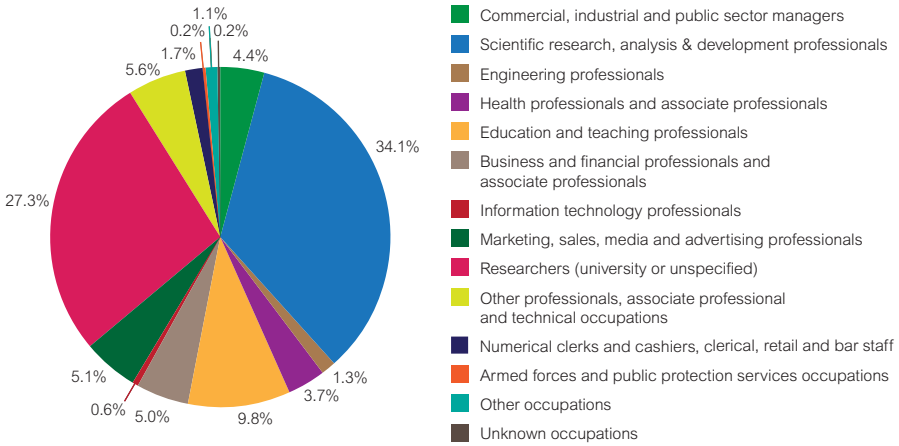
- **biology**
- **biochemistry, molecular biology and biophysics**
- **microbiology**
- **agriculture**
- **animal science**
- **botany**
- **food and beverage studies**
- **forestry**
- **genetics**
- **sports science**
- **veterinary medicine**
- **dentistry and science**
- **zoology**

This chapter presents the career stories of nine biological sciences doctoral researchers. These stories cover a total of 21 different jobs showing a range of doctoral subjects and a spread of career destinations.

Key messages from ‘What do researchers do? First destinations of doctoral graduates by subject’

The data analysed in WDRDS provides a good insight into the distribution of doctoral graduates immediately after graduation. Its results show that of UK-domiciled biological sciences (BS) doctoral graduates, graduating in 2003–2007 who responded to the survey:

- the education sector (both higher and other education, across occupations) was consistently the largest employment area for BS respondents. It employed 49% of new doctoral graduates
- BS doctoral graduates were considerably less likely to enter ‘education and teaching’ occupations within the education sector (9%) than respondents across all disciplines (22%)
- 5% of all BS respondents in UK employment, entered HE lecturing roles, well below the rate across all disciplines (14%) and the lowest of any discipline
- the percentage working in all research roles was 64%, well above the all discipline average (35%), with 36% working as HE research staff (the highest proportion of any discipline, 23% for all disciplines).



Types of work entered by UK-domiciled biological sciences doctoral graduates (2007) employed in the UK, based on Standard Occupational Classifications (SOC) returned in the 2008 ‘Destinations of leavers of higher education’ survey. [5]

[5] These first destination data refer to the latest available data rather than the amalgamation over five years discussed in the text.

Kathryn Whitehead is a research associate at Manchester Metropolitan University

‘My doctorate taught me not only about science but also about dealing with people and situations. I draw daily from this personal development in my work.’

I completed my doctorate at Manchester Metropolitan University. My subject was multidisciplinary, involving microbiology, surface engineering and chemistry.
My route into academia was somewhat unusual. At college I was forced to take humanities subjects, which I didn't want to do, so I struggled. I did a foundation degree at college, then an HND, then a degree at the University of Central Lancashire and then a doctorate. Until I started my doctorate, I worked part time throughout. My jobs included laboratory technician, bar work, packing lettuces, and even working in a motorcycle shop. I always wanted to be self-sufficient and enjoy being challenged.

My current research involves understanding why and how surfaces become fouled with micro-organisms. I design experiments, interpret the results, write journal articles and book chapters and speak at conferences. I also co-supervise three doctoral researchers and do some lecturing.

My doctorate and the expertise I gained were important for me, since I knew I wanted to continue in research and also lecture. I had two brilliant supervisors and I think that makes a major contribution to a student's enjoyment and successful completion. My doctorate taught me not only about science but also about dealing with people and situations. Multidisciplinary work can be particularly challenging. Academically, talking to a physicist, for example, can be very different to talking to a microbiologist, so I need to wear different ‘hats’ depending on whom I speaking to. You can never be sure what people's backgrounds, influences, or views will be – but it can also be a fascinating way to learn about their experiences.

First destination job titles

HE research

Higher education research is the most popular first destination for biological science doctoral graduates. Job titles include:

- career development fellow
- post doctoral research officer/fellow/associate/scholar
- postdoctoral researcher
- research associate/assistant
- research fellow/junior research fellow
- research scientist
- statistician/modeller
- visiting fellow.

There are also a number of researchers who move straight to higher education teaching roles after their doctorate, typically with the job title of ‘lecturer’ or ‘senior lecturer’. Researchers also go on to work in the health service often with a close association with a university. In addition to very similar job titles to those found in higher education there are also job titles such as ‘clinical scientist – trainee’ or ‘doctor’.

Amanda Zeffman is a senior consultancy associate for Cambridge Enterprise

> ‘My doctorate taught me to take every opportunity to learn from other people and to be self aware about what I enjoy and what my key strengths are.’

I completed my doctorate at the MRC Laboratory of Molecular Biology, Cambridge in 2000. My research focused on the structure of part of the HIV-1 genome. Having decided that I wanted to move out of the laboratory and develop other skills but still remain in a scientific environment, I moved into scientific policy, working for the Food Standards Agency.

I then had an opportunity to work in the HIV therapy area for a global healthcare market research company. I managed a team running large studies on HIV treatment patterns and worked closely with the pharmaceutical industry. In this role I further developed my presentation and networking skills and learned new skills in sales, marketing and management. Time management and analytical skills used throughout my doctorate were critical.

I then relocated to the US for family reasons, where I continued to work for the same company on a freelance basis. On my return to the UK, I took up a role at Nottingham University School of Pharmacy, training doctoral and postdoctoral researchers on the pharmaceutical industry and the job opportunities available. I also ran a doctoral training centre in therapeutic targets. I was therefore using my contacts and experience of working with the pharmaceutical industry in both roles.

We relocated again, this time back to Cambridge. I now work for Cambridge Enterprise, effectively the technology transfer arm of the university, facilitating the commercialisation of technologies arising from the university community.

My doctorate taught me to take every opportunity to learn from other people and to be self aware about what I enjoy and what my key strengths are. Carrying out research in an academic environment, I gained a strong understanding of the academic community and the key issues for the research and academic world. This understanding has been invaluable to my roles over the past nine years. Lastly: don’t be afraid to take what you have learnt from one job and move it in a different direction gaining further skills.

Dave Priest is chairman of a small banana business in Africa

> ‘With my doctorate behind me…In my planning I made sure that I had clear objectives with measurable outputs and that I highlighted potential risks. All of this is second nature to a scientist in search of data for their thesis or publications.’

I completed my doctorate in plant science at the University of York. My research focused on how plants survive environmental stress, such as drought. My motivation was to use plants to help feed the world, but I discovered that I would not do this from the laboratory.

After my doctorate I gained an international Wain fellowship with funding through BBSRC, working with the Food and Agriculture Organisation of the UN, managing the Agricultural Biotechnology Network in Africa based in Nairobi. This gave me invaluable experience of working with development organisations and enabled me to build a network of personal contacts in the field. That network is proving useful now and will doubtless continue to do so.

I was then unemployed for six months. This is a risk of working in the development sector, which is characterised by short-term contracts. I used the time to write a business plan for multiplication of disease free bananas. The aim was to set up a sustainable, up-scalable, project that covers its own costs by selling banana plants to farmers. I wrote the proposal with a colleague and we have since launched our own small banana business, of which I am chairman!

At present, I am in northern Mozambique, working for a fresh produce company that sells vegetables to UK supermarkets. My job is to work out whether and how it would be possible to buy produce from small farmers. This has involved collecting data about weather, soil quality and from field trials. I have researched how other companies and NGOs work with farmers to adapt their models to the local situation.

I’ve drawn on my doctorate in various ways. My subject expertise gave me authority and credibility when talking to scientists and plant breeders around the world. The transferable skills I developed have proved even more important. I have had to prepare project proposals and development plans. With my doctorate behind me, I was quite comfortable doing background research into what was needed and what else had been tried, and then explaining to managers in a reasoned way what would be achievable. In my planning I made sure that I had clear objectives with measurable outputs and that I highlighted potential risks. All of this is second nature to a scientist in search of data for their thesis or publications.

I have been struck how, beyond academia, people make statements without providing evidence for them. Being able to understand the importance of this and spot when somebody else does not have a good grounding for a statement or judgement has proved very useful. Similarly, being acutely aware of the difference between facts (like the results bit of the thesis) and opinion (like its discussion), and the need to base opinions on facts, has proved very valuable.

I only wish now that I had taken more advantage during my doctorate of the training courses that were offered. These were available free of charge. I soon discovered that in the world of work training opportunities are severely constrained by budgets!

Erik Werner is a project manager at the Medical Research Council's Clinical Sciences Centre

'For me it is important to remain flexible and open to all kinds of different things.'

I was awarded my doctorate at the Max Delbrück Center for Molecular Medicine and the Free University Berlin (Germany). My research project was in biophysics and involved crystal structures of biological macromolecules.

Previously I studied chemistry in Germany. I first came across molecular genetics and protein chemistry at the University of California, Irvine as an exchange student.

I now work in research management as the project manager of the European Union's 6th Framework Programme Integrated Project 'EURATools'. I support the scientific co-ordination of the project with seventeen partner institutes in eight countries. My main activities include reporting, event organisation, networking, integration and communication.

I took a short-term position after my doctorate to support the formation of a consortium. The 6th Framework Programme had just started and the co-ordination of large scale projects was supported financially. I supported group leaders with the preparation of project proposals. One was awarded a grant. This is when I made the decision to continue with research management rather than pursuing a scientific career. The institute employed me as group leader responsible for extramural funding within the finance department. I helped to prepare the proposal for the project I now manage.

My broad scientific education helps me to be a competent communication partner within the research project. However, the specific research I did for my doctorate thesis is of limited importance to my work. More important is my development from being a student to a (somewhat) independent researcher. This has enabled me to think in a structured manner, plan and execute a project, question and verify the outcome, solve unexpected problems, write scientific documents (publications, thesis and later grant proposals), disseminate and present the results. The interdisciplinary character of my education has helped me to think 'outside the box' and has formed the basis for a network of colleagues. My doctorate helps to ensure that I am taken seriously by high-ranking scientists.

It seems that not many researchers have a clear vision for their future life and their scientific career when they begin their doctorate. More important than the specific field is the quality of support and leadership skills of the supervisor and the working environment, including the training possibilities, the reputation of the institution (which creates important contacts and opens doors later), the people, the research infrastructure and the support services.

For me it is important to remain flexible and open to all kinds of different things. Many useful qualifications, even if they are not always essential, contribute greatly to one's development into a highly skilled professional with wide areas of expertise.

I gained a lot by attending non-scientific courses on career development, time management, administrative and financial skills, and a management course. In addition, networking with people with different areas of expertise has always proved invaluable. Nobody will ever know everything so having the capacity to find the best person to help you out with a problem cannot be underestimated.

Jennifer Houghton is a programme manager at the Science and Technology Facilities Council

'A doctorate was a requirement for my job but skills such as project management, ability to interact at all levels, putting forward solutions in the face of opposition and an understanding of universities and what research requires, have been much more useful than in-depth knowledge of my research area.'

Starting from scratch as a mature student, after 12 years in the RAF, I took short contracts in research labs and an industrial placement during my undergraduate degree before undertaking my doctorate.

My doctoral supervisor emigrated which made me more independent as I had to seek out other researchers to discuss my work. I realised that I wanted a career in science though not in research.

I initially worked for the EPSRC, before moving to my current post overseeing the UK's interests in key Light Source and Neutron Facilities in Europe. We ensure that UK researchers get access to facilities and that these are developed appropriately.

A doctorate was a requirement for my job but skills such as project management, ability to interact at all levels, putting forward solutions in the face of opposition and an understanding of universities and what research requires, have been much more useful than in-depth knowledge of my research area.

Steve Hutchinson is director of Hutchinson Training and Development Ltd

> ‘The ability to weigh up a big problem and deal with it in bits is highly prized in certain sectors. Also, the talent to conceive an original idea and follow it through for three years and be responsible for EVERY stage is something that is pretty unique. I have never met anyone without a doctorate who does it as well as the researchers that I know.’

I got my doctorate from Liverpool University in behavioural ecology, looking at competition in insects and fish: looking at fish in tanks, dung flies on cow manure and equations.

Now I run my own company. It is a training and development consultancy, working mainly with the academic sector. I subcontract various elements of the company’s portfolio.

I moved from academic research, despite being offered further posts, because, honestly, I didn’t love it enough. I realised that I liked universities, but I also liked people, and decided to branch out into staff development. I had been on a GRADschool, saw possibilities in those types of activities and so found a job running training courses for UK GRAD Programme (now Vitae). I managed to actively take advantage of the policy shift in the area of graduate development. After a few years at York I moved to the University of Leeds, where I headed the unit responsible for postgraduate skills development, and coordinated the UK GRAD Programme in the north east of England. I was also freelancing a great deal (rather than taking holidays) so it was a short step to setting up by myself, which I did about three years ago.

Honestly, I use precisely zero of the zoology that I learned. I use the management, writing, presenting and problem solving skills that came with it every single minute. I also use the reserves of resilience and resourcefulness that being a researcher breeds. The ability to weigh up a big problem and deal with it in bits is highly prized in certain sectors. Also, the talent to conceive an original idea and follow it through for three years and be responsible for EVERY stage is something that is pretty unique. I have never met anyone without a doctorate who does it as well as the researchers that I know. I gained independence and the critical ability to pause and think without taking everything at face value. The other useful skill is networking. I cannot overstate how important this is for me, and I learned to do it on the conference circuit. It certainly reduces my marketing and advertising budget now!

If I could do it again, I would get out of the academic environment more. I would disseminate what I did more widely and make it more real for anyone who might be interested. I would also be as efficient as I was in the final few months from the very beginning. Learn to speak the language of employers. A doctorate equips you to pretty much have a go at anything – as long as you can sell the skill set that you have. Always say yes to everything (professionally)… at least once. Offer to do things for nothing, and build a skill set and a network. If you are well networked and good at what you do, opportunities come along.

Finally, and cynically, the PhD letters themselves open many doors.

Martin Maudsley – founding member and coordinator of Story Soup

> ‘The career path from science doctorate to becoming a professional storyteller is probably not usual nor was it predictable, but it undoubtedly draws on many aspects of my earlier work and is immensely enjoyable and fulfilling.’

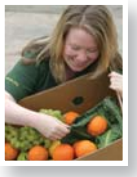
After completing my doctorate on population ecology of cereal aphids at the University of East Anglia, I worked for a short period at a field studies centre in Norfolk, teaching practical biology and environmental sciences to residential school groups. I really enjoyed teaching my subject to children, in particular helping A-level students set up their own field-based research projects. I then moved to Bristol to undertake a postdoctoral position at Long Ashton Research Station, investigating the ecology of farmland hedgerows. During this time I was granted a BBSRC media fellowship to work on the BBC TV programme ‘Countryfile’ for a period of three months. This was a great opportunity to work within the media, where I was able to identify, investigate and communicate ecological topics that had public interest, ranging from salmon farming to the BSE crisis. I also continued to play a role in presenting the work of the research station to the wider public, including schools, countryside managers and the farming community.

At the end of my four year postdoctoral appointment I followed my interest in the public understanding of science by becoming the first environmental education officer at a new science visitor centre called At-Bristol. The role included designing exhibits, running school workshops and delivering informal activities to family groups. As part of the latter task I began to use storytelling as a way of communicating ideas about the natural world. Storytelling quickly became a passion and, backed up by a part-time job as lecturer for the Open University, I left my job with At-Bristol to embark upon a new, uncertain career as a freelance storyteller.

After several years I have developed my storytelling role, having worked in lots of schools and with many different organisations including the Soil Association, Bristol Zoo, the Eden project and the National Trust. I have continued to emphasis stories about landscape and natural environments, which I myself became fascinated by through my undergraduate studies and postgraduate research. I relish the power that storytelling has, in common with science, to instil a sense of wonder about the world in young and old alike. I have recently performed a number of outdoor story walks called ‘Wild Tales’, where I am able to interweave folktales and folklore with ecological knowledge about plants and wildlife encountered on the walk.

The career path from science doctorate to becoming a professional storyteller is probably not usual nor was it predictable, but it undoubtedly draws on many aspects of my earlier work and is immensely enjoyable and fulfilling.

Andrea Fidgett is a nutritionist at Chester Zoo



> ‘I have now built into my job many features of an academic career: lecturing, conducting research (including supervision of masters and doctoral researchers with university partners) and publishing papers, but I have greater satisfaction doing this in the not-for-profit sector, where I get rapid feedback that my work and research is useful.’

I did my doctorate in the Department of Environmental and Evolutionary Biology at the University of Glasgow, graduating in 2002. I investigated the relationship between nutrition, female condition, and reproduction in birds, asking ‘what makes a good egg?’

I now organise a nutritional advisory service for the animal collection at Chester zoo and conduct research. I was interested in the role zoos played in conservation of endangered species and sought suitable work experience. Initially my expertise was largely in studying behaviour in relation to improving captive animal welfare, but funding (and thus employment potential) for this topic was limited. I was allocated a research project to investigate diet and recognised a knowledge gap (albeit still poorly funded) that I could champion and fill. I then did an awful lot of preparation for the position to be created in the first place, but never took it for granted that I would be the one to fill the vacancy. I used my network of colleagues to establish what would be involved in actually doing the job and took a lot of time customising my application to meet the requirements specified. I have now built into my job many features of an academic career: lecturing, conducting research (including supervision of masters and doctoral researchers with university partners) and publishing papers, but I have greater satisfaction doing this in the not-for-profit sector, where I get rapid feedback that my work and research is useful.

After a minimum of three years focusing on the minutiae of your research, it is incredibly difficult to truly recognise the diverse range of skills you have acquired. It is not easy to visualise how they can be used generically, beyond the context of your own research. Attending a GRADschool gave me the insight and vocabulary to identify personal qualities I had, separate and apart from my highly specialised subject knowledge, understanding which has shaped my career decisions ever since.

First destination job titles

Non-HE research

Biological science doctoral graduates commonly work in research related roles outside of higher education. Job titles include:

- biochemist
- food technologist
- investigator
- medical communications scientist
- multisensory scientist
- principal scientist
- research officer/scientist
- scientist/senior scientist
- senior ecologist.

Tara Willey is a senior associate within the corporate tax department of a 'big 4' accountancy firm

> Key benefits were definitely coming into the job at a more mature age and picking up issues faster than others, having good time and project management…and presentational skills.

I undertook my doctorate at Cambridge University in the Department of Biochemistry. I studied factors affecting the virulence of a human bacterial pathogen (closely related to anthrax).

Before my doctorate, I read for an undergraduate masters in biochemistry at the University of Bath. This involved two six month placements – one based in New York. In the summer before starting my doctorate, I undertook a research studentship.

Following completion of my doctorate, I joined a 'big 4' accountancy firm on their graduate programme. This takes a minimum of three years and includes training and examinations for the chartered accountancy qualification. I am now qualified and am studying towards my chartered tax advisor exams.

I provide corporate tax advice to a wide range of clients (large and small). I also specialise in R&D tax relief, which allows me to occasionally apply my scientific knowledge.

However, the doctorate has other advantages. Key benefits were definitely coming into the job at a more mature age and picking up issues faster than others, having good time and project management skills (useful in delivering work to time and budget) and presentational skills (I have spoken at a number of client facing events and this was made significantly easier due to the presentations I had made during my doctorate). Analytical skills are also useful, as is the experience communicating well in written format. I attended a GRADschool and the whole experience was brilliant. Hard work, but it really helped to take a step back and view yourself and your skills base in a different way, which you need to do if you are changing career direction. If you have the opportunity, take it!

Research your career possibilities thoroughly. I chose to enter accountancy via the tax department because I had researched the various routes available and knew I did not want to be an auditor; and I have not regretted my choice!

First destination job titles

Other

Doctoral graduates in biological sciences go on to work in a wide range of roles across the economy as their first destination. Job titles include:

- analyst/business analyst
- investment manager
- management consultant/consultant (professional services)
- manager (professional body)
- patent attorney
- product developer (food company)
- product development consultant (engineering company)
- production editor
- quality assurance manager
- regulatory executive (pharmaceutical industry)
- trainee auditor.

Biomedical sciences

> ‘My ability to manage projects, multi-task, solve problems and think in an analytical way were developed, to some extent, during my doctorate…I am sure I am a better manager and motivator today because of that experience.’

Anna Upton (doctorate in biochemistry)

This chapter focuses on the career stories of doctoral graduates in the biomedical sciences. Biomedical sciences doctoral graduates made up over 26% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of biomedical sciences covers the following subjects, of which the first five are analysed in 'What do researchers do? First destinations of doctoral graduates by subject' (WDRDS).

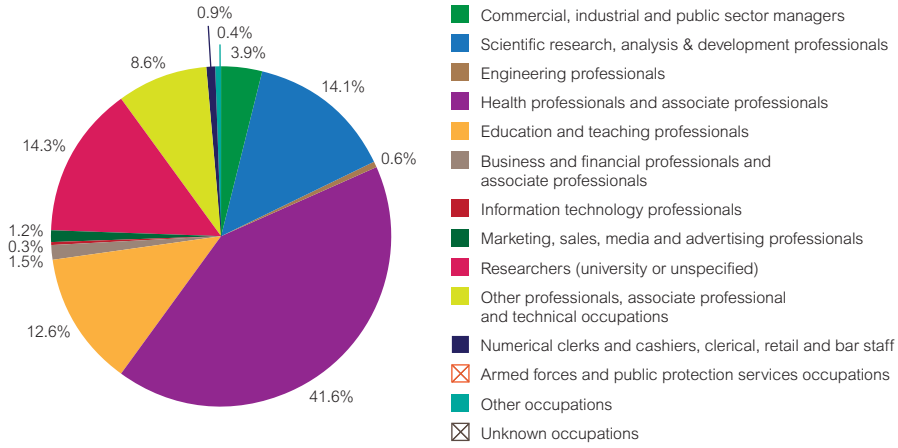
- **clinical medicine and pre-clinical medicine**
- **psychology**
- **pharmacology, toxicology and pharmacy**
- **anatomy, physiology and pathology**
- **nursing**
- **clinical dentistry**
- **complementary medicine**
- **nutrition**
- **ophthalmics**
- **aural and oral sciences**
- **medical technology**

This chapter presents the career stories of six biomedical sciences researchers. These stories cover a total of 13 different jobs showcasing a range of points of origin and a spread of career destinations.

Key messages from ‘What do researchers do? – First destinations of doctoral graduates by subject’

The data analysed in WDRDS provides a good insight into the distribution of doctoral graduates immediately after graduation. Its results show that of UK-domiciled biomedical sciences (BMS) doctoral graduates, graduating in 2003–2007 who responded to the survey:

- more were likely to enter the health and social work sector than other doctoral graduates. It absorbed 48%, compared to the all discipline average of 17%
- they were also more likely to become ‘health professionals and associate professionals’ across sectors; this category accounted for 41%
- the education sector employed 37% of new BMS doctoral graduates (49% across all disciplines)
- BMS doctoral graduates were less likely to enter ‘education and teaching’ occupations (13%) than the doctoral graduate population as a whole (22%)
- 10% of all BMS respondents in UK employment, entered HE lecturing roles, below the rate across all disciplines (14%)
- the percentage working in all research roles was 31%, just below the all discipline average (35%), with 22% working as HE research staff comparable to the all disciplines average (23%).



Types of work entered by UK-domiciled biomedical sciences doctoral graduates (2007) employed in the UK, based on Standard Occupational Classifications (SOC) returned in the 2008 'Destinations of leavers of higher education' survey. [6]

[6] These first destination data refer to the latest available data rather than the amalgamation over five years discussed in the text.

Alastair Wilkins is a consultant neurologist and a senior lecturer in neurology

> ‘My doctoral research was useful and a necessity for my current job. I understand the processes of research and some of the workings of higher educational organisations.’

I had been training in clinical medicine for over five years and was working in hospitals pursuing a career as a clinical neurologist but during my specialist training I took time out to do a PhD. I did my research at the University of Cambridge between 1999 and 2002 in the Department of Clinical Neurosciences, which is part of the Department of Medicine based at the Brain Repair Centre, Addenbrooke's Hospital. My research focused on the basic science of multiple sclerosis (MS). I have an interest in neuroscience and liked it as a junior doctor but I became interested in MS really because that is where the opportunities were. I had also done an undergraduate project on myelin biology and worked for an MS doctor in my junior neurology job.

A PhD was required to get a training job in neurology so I did my research between junior medical jobs and specialist training in neuroscience.

I am currently a senior lecturer in neurology and a consultant neurologist at the University of Bristol, dividing my time equally between research and clinical practice. As a group leader I currently supervise two postdoctoral scientists and one laboratory technician. My research interests remain in the basic science of MS, so I have been able to continue some of my previous studies. My research is funded by several charities including the MS Society and Ataxia UK.

After my PhD I returned to my neurology training programme for a further four years. I also undertook a year of postdoctoral research at the University of Cambridge and the University of Wisconsin-Madison, USA. After finishing my neurology training I moved to the University of Bristol to take up a post as an academic neurologist, which had been my aim for a number of years.

I continue to be involved with research and still work in a similar field to my doctoral research subject. I am now more involved in the planning of research and obtaining funds but still have an active role in performing experiments. In neurology, as a medical speciality, a PhD is a desirable (though not essential) qualification due to its popularity as a career. Neurology is a subject where research is moving at a fast pace, so knowledge of research is an important component of the job.

My doctoral research was useful and a necessity for my current job. I understand the processes of research and some of the workings of higher educational organisations. It has been useful to learn from mistakes and missed opportunities and to translate that into becoming an effective supervisor.

The career path to become a clinical academic is pretty standard. I would advise anyone considering it that it is important to stay in contact with clinical units in order to keep up those skills.

Karina Lovell is a therapist for a charity and a professor of mental health

> ‘The confidence I gained working in a multi-disciplinary environment and the insight into the expertise of other professionals has been highly influential in my career.’

Having previously worked as a clinical nurse specialising in cognitive behavioural therapy, I did my doctoral research in post-traumatic stress disorder. I wanted to be in a position of influence to change patient care for the better, so I also gained a teaching qualification then worked part-time as a clinician and part-time as an academic, moving from lecturer to senior lecturer to professor. My current role involves research as well as teaching.

My doctorate gave me the basic skills to be a successful researcher, a thorough grounding in critical appraisal and an introduction to the academic world. The confidence I gained working in a multi-disciplinary environment and the insight into the expertise of other professionals has been highly influential in my career.

Working in both a clinical and a research setting is a challenge but I would advise others to persevere, think through different career pathways and speak to other researchers and clinicians.

First destination job titles

Health and associated professionals

Doctoral graduates in biomedical subjects are highly likely to become ‘health and associated professionals’ as their first destination. There are a number of commonly found job titles within this discipline including:

- cardiologist
- chartered clinical and forensic psychologist
- clinical pharmacist
- clinical psychologist
- consultant (various eg surgeon, nurse, haematologist)
- doctor
- general medical practitioner
- lead psychologist
- locum pharmacist
- optometrist
- registrar/specialist registrar/surgical registrar
- staff doctor
- therapy services manager
- trainee clinical biochemist.

Catherine Martin is a researcher at the Medical Research Council's Clinical Sciences Centre

> 'Attaining a doctorate gave me an enormous sense of achievement and a tremendous boost in confidence.'

I was awarded my doctorate by the Open University (UK) having undertaken my studies at the Weatherall Institute for Molecular Medicine in Oxford. The subject discipline was biochemistry and pharmacology. I obtained a PGCE immediately after my degree. I then studied for an MSc in neuropsychopharmacology, all at the National University of Ireland. During my masters I gave birth to my first daughter.

After teaching science and maths to school children for a short period, I moved to the UK with my family and worked at Oxford University as a research assistant. I decided to register for a doctorate on a part-time basis. I published four papers in high-ranking journals during this time. My second daughter was born during my doctorate.

Attaining a doctorate gave me an enormous sense of achievement and a tremendous boost in confidence – the confidence was the most important thing. The doctorate provides recognition and this has enabled me to work more independently and to seek collaborations for certain aspects of projects.

Doctoral training also helped me to develop analytical and critical thinking skills, which are important both in research and in non-lab based work such as my current internship. With the benefit of hindsight I think I should have sought careers advice and taken steps to develop my transferable skills more: I would have made more effort to get to conferences and to network.

Immediately after receiving my doctorate, I stayed on in the lab to do postdoctoral research. I then moved to London with my family. Five months later I got my current job as a career development fellow. My current post is part-time. I have responsibility for driving a project looking at a membrane protein involved in fatty acid homeostasis. I work at the bench and share the supervision of graduate and postgraduate students. I am intellectually involved in the development of other research projects within the group. I also write progress reports for funding bodies and research papers.

Outside the lab I am a member of a committee conducting an impact assessment of the MRC's corporate governance and communications policies to ensure they conform with the new equalities legislation. I have also undertaken (part-time) a science policy internship at the Institute of Biology in order to gain hands-on experience of working in the area of science policy and to get experience of a non-traditional academic science role.

I would advise taking at least one postdoctoral research post, but do try to gain a personal fellowship early on to support an academic career. Otherwise try to find internships early in order to gain experience of other science roles. I have been on numerous transferable skills training courses, which have been very useful. I realised that I did not want to remain in academia because there were so few posts available and because it is difficult to pursue an academic career whilst bringing up a family. I therefore sought experience outside the lab in order to strengthen my CV for applying for non-research posts.[7]

First destination job titles

HE and health and social work sector research

A large number of job titles relate to research focused roles either in universities or the health sector. These include:

- biomedical scientist
- career development fellow
- Manager of synthesis and analysis unit
- medical researcher
- postdoctoral research associate/fellow/assistant
- postdoctoral scientist
- research nurse
- research physiotherapist
- research scientist
- researcher/research associate/fellow
- visiting fellow.

[7] © Catherine Martin

Mark Smith is a senior lecturer and postgraduate research director at the University of Lincoln

> 'The experience of overcoming the challenges faced throughout my doctorate and the newly acquired self-belief that any fresh challenges can also be conquered is very empowering.'

During my undergraduate study, I worked on a very ambitious independent research project, which was published as a journal article. I was elated when I was awarded a PhD studentship. The chance to continue and answer more questions that had emerged through my previous research was enlightening. I completed my doctorate at Canterbury Christ Church University College (UK). My research focused on the physiological evaluation of cycling performance.

I completed my thesis during a one-year lecturing post as a lecturer at Lincoln College. I also gained a PGCE in post-compulsory education, became an accredited practitioner of the Higher Education Academy and was granted accreditation as a practising exercise physiologist. In 2006, I made the move to the University of Lincoln and started my new role as senior lecturer.

My work at Lincoln involves teaching, research and consultancy. I spend my time planning research projects, composing book chapters, meeting research students and managing my undergraduate programme. Occasionally I am allowed out to give a lecture or two, or granted permission to collect some data in the laboratories, but only after I have finished all of my paper work!

My advice to doctoral researchers is to try to gain as much teaching experience as you can during your doctorate. Also, get as much of the work published as soon after completion as possible. By setting realistic targets to publish aspects of the thesis, you will keep involved in the research. Look at the doctorate as a starting point to your academic career rather than an end point. The experience of overcoming the challenges faced throughout my doctorate and the newly acquired self-belief that any fresh challenges can also be conquered is very empowering.

First destination job titles

Teaching and lecturing

The second most popular area for biomedical doctoral graduates is the education sector. Job titles include:

- assistant/associate professor
- clinical lecturer (various subjects)
- lecturer/senior lecturer (various subjects)
- teacher (schools).

John Baker is a lecturer at the School of Nursing Midwifery and Social Work, University of Manchester

> 'The doctorate has been pivotal in developing my academic career, as a result of my expertise in this area and collaborations I have started.'

My clinical background is mental health nursing, I am a qualified mental health nurse with a nursing degree, an MSc and an MPhil. I had been employed by the University of Manchester as a lecturer for a year before being awarded a prestigious fellowship to undertake my doctorate. Before that I was employed as a clinical nurse specialist; I had been seconded to the university in this role to work on research projects and teach student nurses for a number of years.

After my doctorate I returned to being a lecturer. My role involves teaching, university administration and research.

The doctorate has been pivotal in developing my academic career, as a result of my expertise in this area and collaborations I have started. My advice would be to identify a topic which is interesting and stimulating, something which you might consider researching beyond your doctorate. Choose your supervisors carefully, they are key to the process. It is more than just their knowledge, you need to be able to work closely with them, argue with them and be motivated by them, at times, and they can help you with networking.

You also need to develop skills in disseminating your findings, understanding the policy context of your research, learning how to write and review grants, leadership styles and skills.

Anna Upton works for the Global Alliance for TB Drug Development

> ‘My doctorate has been crucial to my career. Subject knowledge, connections gained and the ability to critically read scientific papers all continue to be extremely important.’

I completed a combined bachelors/masters degree in molecular biology and biochemistry at Oxford University. My final year project sparked an interest in research and I won a ‘co-operative’ doctoral studentship from the BBSRC and GlaxoSmithKline to research drug resistance in the organism that causes tuberculosis. I thought I would pursue a career in research, but was unsure whether this would be in academia or the pharmaceutical industry. My studentship allowed me to work at GlaxoSmithKline for six months, which was a perfect opportunity to decide which environment I liked best.

Having decided that academia could be for me, I went on to postdoctoral research at Rockefeller University in New York. By the middle of my contract through attending conferences, I had become really interested in global public health issues and international development. I realised that my interests are broad and that I could not get excited about writing a research proposal for a faculty job; I decided to look instead at the not-for-profit sector.

I wanted to learn more about global public health policy research and advocacy so I took a job with The Global Alliance for TB Drug Development (TB Alliance), a not-for-profit TB drug developer which aims to develop drugs that are not only effective but affordable and accessible. I started out as liaison for the Stop TB Working Group based there and have since moved into a research management position, co-ordinating off-site research projects nd helping to evaluate new research opportunities, as well as generating ideas for new drug discovery projects. Both my roles at the TB Alliance have required a research background and my academic training and knowledge have been put to good use in each.

My doctorate has been crucial to my career. Subject knowledge, connections gained and the ability to critically read scientific papers all continue to be extremely important. My ability to manage projects, multi-task, solve problems and think in an analytical way were developed, to some extent, during my doctorate.

Writing my thesis and papers taught me how to write clearly for a critical audience and taught me patience! I learned to work effectively with all kinds of people. Mentoring students helped me immensely: I am sure I am a better manager and motivator today because of that experience. I am not daunted by the prospect of a very long, complicated project as nothing seems THAT bad after finishing a doctorate! I can manage my time effectively, motivate myself and deal with difficult people – perhaps these things are the most important transferable benefits derived from a doctorate.

With hindsight, I realise that during my doctoral years I lacked knowledge of career opportunities available to me. The advice from my careers service and mentors was quite narrow. I did not try hard enough to find out about my options or spend enough time thinking about what really interested me and how to go about getting the career that I wanted.

First destination job titles

Non-HE research

While most biomedical doctoral graduates go into the health or education sectors, there is a minority who are distributed more widely across the economy. Many of these will be working in research related roles. Job titles include:

- advanced scientist
- biologist
- clinical research associate (pharmaceutical consultancy)
- discovery medicine bioscientist
- higher/senior research scientist
- scientist/research scientist/project scientist
- scientific officer
- senior epidemiologist (healthcare company)
- first destination job titles (other)

There are a number of biomedical doctoral graduates who go into other roles across the wider economy. Job titles include:

- account manager (university spin-out company)
- facilitator (community interest company)
- geo-environmental technician
- laboratory technician (chemical company)
- manufacturing technician (scientific technology company)
- medical writer
- medico-legal advisor
- product and application specialist (biotech company)
- research executive (logistics company)
- scientific administrator (regulatory body)
- science consultant analyst (research consultancy)
- stability co-ordinator (pharmaceuticals company)
- technical specialist (pharmaceutical company).

HE and health and social work sector – other

There are also other job titles given by biomedical doctoral graduates which demonstrate that they are fulfilling a range of more generic roles in the education and health and social work sectors. Job titles include:

- administrator
- director (hospital).

Physical sciences and engineering

‘Ultimately you develop and hone a thorough, enquiring and penetrating mind and match it with a desire for delivering the best you can – and industry needs and welcomes that.’

Kieran Dineen (doctorate in civil engineering)

This chapter focuses on the career stories of doctoral graduates in physical sciences and engineering. Physical sciences and engineering (PS&E) doctoral graduates make up the largest discipline, representing 32% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of physical sciences and engineering is broad and covers the following subjects, of which the first nine are analysed in ‘‘What do researchers do? First destinations of doctoral graduates by subject’ (WDRDS).

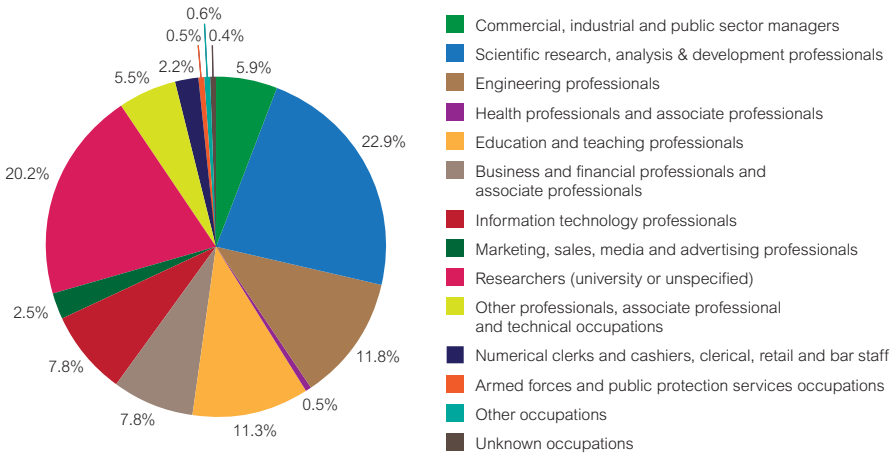
- **chemistry**
- **physics**
- **computer science**
- **mathematics**
- **physical and terrestrial geographical and environmental sciences**
- **geology**
- **electrical and electronic engineering**
- **mechanical engineering**
- **civil engineering**
- **materials science**
- **metallurgy**
- **minerals technology**
- **statistics**
- **town and country planning.**
- **aeronautical, general, chemical, maritime and production engineering**
- **architecture, building and maritime technology**

This chapter presents the career stories of 11 physical sciences and engineering researchers. These stories cover a total of 29 different jobs showcasing a range of points of origin and a spread of career destinations.

Key messages from ‘What do researchers do? – First destinations of doctoral graduates by subject’

The data analysed in WDRDS provides a good insight into the distribution of doctoral graduates immediately after graduation. Its results show that of UK-domiciled physical sciences and engineering doctoral graduates, graduating in 2003–2007 who responded to the survey:

- the most popular occupation was researcher (both within and outside academia), which accounted for 43% (the all discipline average is 35%) with 28% working as HE research staff (23% for all disciplines)
- the education sector (both higher and other education, across occupations) was consistently the largest employment area for PS&E respondents, employing 42% of new doctoral graduates
- PS&E doctoral graduates were half as likely to enter ‘education and teaching’ occupations within the education sector (11%) than respondents across all disciplines (22%)
- 6% of all PS&E respondents in UK employment, entered HE lecturing roles, less than half the rate across all disciplines (14%)
- the proportions of PS&E respondents employed in manufacturing (around 25%) and finance, business and IT (almost 20%) were considerably higher than across all disciplines (14% and 10% respectively).



Types of work entered by UK-domiciled physical sciences and engineering doctoral graduates (2007) employed in the UK, based on Standard Occupational Classifications (SOC) returned in the 2008 ‘Destinations of leavers of higher education’ survey. [8]

[8] These first destination data refer to the latest available data rather than the amalgamation over five years discussed in the text.

Jessica Barrett is a career development fellow at the Medical Research Council Biostatistics Unit

> '…the subject knowledge and expertise I developed during my doctorate is no longer as important as it once was, but the skills I developed are still very useful for me in many ways.'

I completed my theoretical physics doctorate in the Mathematical Sciences and Physics Departments of Durham University. My subject area was string theory, which is a candidate for a quantum theory of gravity.

I currently work as a career development fellow at the Medical Research Council Biostatistics Unit. The position is academic in nature: I carry out original research and publish papers in academic journals. My work involves performing statistical analyses of medical data; I have recently been researching the progression of disease for patients with psoriatic arthritis and also modelling cognitive function in the elderly.

Towards the end of my doctoral research I decided I wanted to work as an academic. I took a postdoctoral research position in the theoretical physics group at the University of Iceland in Reykjavik. After three years there I felt somewhat dissatisfied with my research area and the prospects it afforded for career progression, so I decided I needed a change.

After considering my options I settled on medical statistics, which appeals to me as I like the idea of being able to make a positive and valuable contribution to society through my research. I applied for and was awarded a career development fellowship, suitable for people seeking to change research area, by the UK Medical Research Council.

I learnt a lot as a doctoral researcher that, at the time, I did not imagine would become so useful in the future. The most important aspect for me was the experience I gained carrying out academic research. Following an academic career path would not have been possible without a doctorate. Because I have changed research areas, the subject knowledge and expertise I developed during my doctorate is no longer as important as it once was, but the skills I developed are still very useful for me in many ways. Some examples are: understanding how to absorb new subject material, the ability to ask critical questions, researching background literature, giving presentations and time management. Specific skills have also proved useful, for example learning how to write computer programs using the C programming language made it easier for me to learn how to use the statistical software necessary for my current job. I also understand better how to cope with the research process – when to work hard at completing a task or when it is best just to take a break or get a good night's sleep!

I would advise doctoral researchers to consider all options when choosing a career path. I found the careers service at Durham University very helpful for that. The careers adviser I spoke to made lots of good suggestions about possible directions for me, including medical statistics! Also, do take advantage of training opportunities. If you are considering an academic career, it is worthwhile doing postdoctoral research so as to understand your subject area in greater depth and to get a better feeling of what life is like as an academic – there are still plenty of other opportunities available afterwards if you change your mind.

First destination job titles

HE research

More than a quarter of PS&E doctoral graduates work as research staff in higher education. Typical job titles are:

- learning research systems developer
- medical statistician – trainee
- postdoctoral researcher/ research fellow
- research scientist
- research/senior research fellow/associate/assistant.

Non-HE research

More than a quarter of PS&E doctoral graduates work as research staff in higher education. Typical job titles are:

- applied glaciologist
- chemist/senior research chemist (various types)
- hydrodynamite modeller
- inventive researcher
- lubricants scientist
- palaeoceanographer
- research technologist
- researcher (various sectors)
- scientist/senior research scientist
- senior researcher
- special researcher
- systems physicist
- trainee clinical biochemist.

Tim Brown is a lecturer at the Centre for Communication Systems Research, University of Surrey

> ‘My doctorate has been essential for my current post. It not only gave me specialist subject knowledge, but also in a subject suitable for teaching and research, and has helped me to develop the ability to take the lead and solve problems.’

After post-graduation experience at Nortel Networks, where I acquired my interest in mobile radio communications, I moved on to doctoral research in electrical engineering. I went on to spend 18 months in higher education policy and time in research at Aalborg University, Denmark.

I now teach on antennas, radio propagation and radio systems and my role has an important research aspect; I am currently building up a research group. Being an academic is challenging but provides variety and space to take on new and interesting initiatives.

My doctorate has been essential for my current post. It not only gave me specialist subject knowledge, but also in a subject suitable for teaching and research, and has helped me to develop the ability to take the lead and solve problems. This is something I particularly noticed while on sabbatical, when I had to take charge of tasks myself and use my own initiative. This has helped me since in the managerial aspects of my work. I only wish I had taken time to reflect more on the importance of these qualities whilst working on my doctorate.

To doctoral researchers I would say: don’t just focus on your doctorate. Get involved in other activities that will enhance your abilities as well as reminding yourself that you have a life!

First destination job titles

Teaching

Just over 10% of doctoral graduates in this discipline become education and teaching professionals. Some job titles are:

- assistant professor
- lecturer
- teacher (school).

Andrew Eaves is an independent operational research consultant running his own company, Andalus Solutions Limited

> ‘I undertook my doctoral research for personal development: I wanted to push myself. I had to make a lot of sacrifices for my studies; I had a long-term plan and I stuck with it.’

I completed a doctorate in operational research at the University of Lancaster. I studied part-time whilst also doing a full-time job. My research was sponsored by the Ministry of Defence, my employer at the time. It concerned a real-life problem, namely the need to forecast the demand for spare parts for aircraft. I quit my job to devote time to my doctorate when it became difficult to manage my studies; in all, it took six years. I undertook my doctoral research for personal development: I wanted to push myself. I had to make a lot of sacrifices for my studies; I had a long-term plan and I stuck with it.

I am now where I planned to be, an independent consultant working across a number of industries. I have a daughter who has just turned one. At the time of her birth I was working on three contracts at once, which was not easy given the lack of sleep. Life is a lot more relaxed now.

Having a doctorate gives me extra distinction on my CV and business cards. It has also made me more confident that I know what I am talking about when speaking with clients. And it allows me to justify charging higher daily rates than my peers!

I would advise doing all you can to network. You never know who might want your services after meeting you at a conference, reading your article or seeing your online profile, perhaps years after you sowed the first seed.

Kieran Dineen is a product manager for Thomas Telford Training, the knowledge arm of the Institution of Civil Engineers

‘I have had a meandering career path – I left school at 16 years for a start…’

I studied for a PhD in Soil Mechanics in the Department of Civil Engineering at Imperial College, London. I investigated the shrinking and swelling behaviour of clays, which has direct relevance to industry.

Currently I am the product manager for Thomas Telford Training, the knowledge arm of the Institution of Civil Engineers. Thomas Telford Training deliver short professional training across the construction industry and I carry the responsibility for the design and development of all technical training we deliver. I also have input across Thomas Telford's knowledge streams, which include book and journal publications.

I have had a meandering career path – I left school at 16 years for a start. I wanted to do something practical, so undertook a mechanical engineering apprenticeship. I moved into civil engineering and then into a large consulting practice, where a latent academic ability began to emerge. I studied on a day release basis for an HNC followed by a degree in civil engineering – not an easy route. I graduated top of my class as the recession began to bite. Worried about being made redundant I started an MSc at Imperial College. I remained at Imperial for about 12 years, during which time I completed an MSc, doctorate, undertook postdoctoral research, held a part-time lectureship and set up a spin-out company.

It would have been quite easy to remain in academia as I had postdoctoral research funding and opportunities for academic appointments. However, I became involved in a research project with real value to industry – to develop instrumentation to investigate the stability of the earth embankments that the London Underground trains run on above ground. In addition to research the technology produced an income stream into the university. The natural progression was to set up a spin-out company. This was a challenging project in its own right. At first we rented space at Imperial, so the move away as well as the decision making process were gradual.

Whilst I genuinely liked my research field, it was not sufficient to sustain my ambitions in the long term. The cycle repeated five years later when I sold my share in the company to my business partner and moved to Thomas Telford Training.

I realised that I am a project person and both projects (doctorate and the spin-out company) reached a conclusion and I needed to look for a new challenge.

The benefit of holding a doctorate depends on the circles in which I operate. The demonstrable academic ability is a door opener in business. Those who have not reached your academic level respect you for what you have done, and those who have see you as an equal of which there are only few operating in your industry. During a doctorate you become a proven subject expert with in a few years. That is some demonstration of ability. You will have a toolbox of transferable skills to use throughout your career. The professional and personal friendships I made by being part of a bright, driven and enthusiastic group of international researchers have proved to be very valuable.

Ultimately you develop and hone a thorough, enquiring and penetrating mind and match it with a desire for delivering the best you can – and industry needs and welcomes that.

First destination job titles

Manufacturing

A higher proportion of PS&E doctoral graduates (about a quarter) go into manufacturing than any other discipline. Job titles include:

- new product development engineer
- process development specialist (steel company)
- product engineer.

Engineering

13% of all PS&E doctoral graduates become engineering professionals and in engineering subjects.this rises to between a quarter and half of graduates. Job titles include:

- computational fluid dynamics engineer
- design engineer/senior design engineer
- engineer in different subjects (aerospace, aerothermal, civil, geotechnical, metallurgical)
- engineering consultant
- graduate engineer (various)
- hardware engineer
- installation and test engineer
- integration engineer
- mechanical design engineer
- motor designer
- patenting inspector
- power device engineer
- process engineer
- quality engineer
- safety and reliability analyst (engineering company)
- senior optical coatings engineer
- technical support engineer.

Daryl Stewart is a founding engineer in a spin-off computer company

‘The deep knowledge I developed during my doctorate gave me an edge when dealing with customers or engineers who had practical but often thinly spread experience. On occasions I have used the theoretical side to engage customers: something extra to offer them. The title can help to create instant respect, especially in the US.’

I undertook a computer science doctorate in formal methods and electronic hardware design, having previously worked in the same lab as a research assistant on a three-year contract. My manager described my first year report as ‘half a PhD’ so we applied for PhD funding. I intended to submit after two years because of my head start but this did not happen as, by the end of my first year, my eldest child had been born. Having a baby slowed my progress but my supervisor allowed me a great work-life balance. I spent time at home while my wife worked mornings as well as doing lots of undergraduate supervisions to generate additional income.

My doctorate involved a pleasing combination of pure theory and engineering. Towards the end of it, one of the managers of the project I had worked on as a research assistant started a spin-off company and offered me the irresistible mix of a salary while writing up: a familiar area and the promise of getting really rich in two to three years tops with my founding shares! It was good fun and brought enjoyable opportunities to work outside my comfort zone because we were a small team doing customer facing work for example, which I realised I was quite good at.

After about six years the company got no more funding and was sold off to one of our customers. As the entrepreneurial aspects of the work disappeared, I started looking around for other jobs. However, due to health problems I was unable to pursue this in earnest and chose to stay. Soon afterwards the choice was made for me when I was offered redundancy. After immersing myself in my family for a few months I am now looking for a research post. This is what I always hoped to end up doing once I was rich. I hope it will be interesting and give us the flexibility for my wife to relaunch her career.

The deep knowledge I developed during my doctorate gave me an edge when dealing with customers or engineers who had practical but often thinly spread experience. On occasions I have used the theoretical side to engage customers: something extra to offer them. The title can help to create instant respect, especially in the US.

My advice to postgraduate researchers would be to publish and present at conferences. I did not realise at the time how central this is and how little time I would have later. I have been involved in recruitment and interviewing: one tip is not to worry if you get the answer to a question slightly wrong. You can often use it as a starting point for discussion to show your interest and to give the interviewer an impression of how well you can take their advice and work with them in solving problems.

First destination job titles

IT

High level IT skills mean that many PS&E doctoral graduates enter IT professions. Job titles include:

- algorithm designer
- analyst programmer
- field edit manager (CAD and GIS company)
- financial software developer
- IT consultant
- IT support technician
- programmer
- software analyst
- software designer
- software engineer/senior software engineer
- Systems engineer
- trainee software engineer
- web technology architect.

Charles Romito is a management consultant for McKinsey & Co

'The transferable skills I developed during my doctorate have been more important. On a personal level I valued time spent amongst intelligent people with a passion for what they do.'

I completed a doctorate in the Institute for Manufacturing in the Department of Engineering of Cambridge University in 2008. I looked at the generic components and structure of the decision making involved in assessing breakthrough innovations within companies.

After graduating in physics, I worked in the satellite industry. I started off in the R&D department, moving to business planning and regulatory strategy. During this time I realised that many of the 'tools' used to manage companies did not apply to the innovation domain and I wanted to find out more: undertaking original research in the area seemed like a good way to address this.

I went straight into consulting after my doctorate. A significant draw was the fact that McKinsey & Company actually has a specific entry point for doctoral graduates as well as a tailored training and development package, i.e. recognition is given to your intellectual and problem-solving abilities but more of the basic vocabulary of business is taught. Most employers I spoke to simply referred me to their undergraduate trainee programme. I was also attracted by the intellectual challenge and rapid development trajectory. The intensity and pace of the work always means that you are having to think as hard as during your doctorate – just faster!

Although there is some overlap between my research subject and my current work area the transferable skills I developed during my doctorate have been more important. It has left me with important communication skills. The ability to take a large and messy problem, scope it, work out priorities, then carve it up into manageable chunks is complemented by an increased ability for self-management. On a personal level I valued time spent amongst intelligent people with a passion for what they do. I attended a GRADschool and would highly recommend it. As well as the fantastic company I learnt a lot- notably that there was life outside my PhD!

First destination job titles

Management

Doctoral graduates in physical sciences and engineering often move to management positions or set up their own businesses across different sectors. Job titles include:

- CEO
- company director (vintage car restoring company)
- director (various)
- international marketing manager
- manager/business manager (various kinds in various sectors)
- senior associate.

Finance and banking

A higher percentage of doctoral graduates in physical sciences and engineering go into finance and banking occupations than any other discipline. Job titles include:

- accountant – trainee
- analyst (financial company)
- actuary – trainee
- banking
- investment banker.

Ray Kent works in research administration in a research-intensive university

> 'I value the experience I gained in independent research, and the freedom of being able to organise my own time effectively and set my own priorities. I also value the friendships made as a member of the research community, many of which continue to the present day. Even with hindsight, I wouldn't change anything about my time as a doctoral researcher.'

My doctorate in geology was from the University of Leicester, researching mantle plume interactions with the sub-continental lithosphere. I went on to spend six years as a postdoctoral research fellow (three individual fellowships at two different institutions), followed by a short period of unemployment before securing an enjoyable but poorly-paid post in university administration. I worked for one year in that role before moving on to become a research administrator in a post-1992 university, while also holding the post of visiting research fellow at a research-intensive university. Two and a half years later I moved to my current institution as the European funding officer. I spent two years in that role before being promoted to research development officer.

My current role is to provide funding intelligence to academic staff, to advise on new developments in UK, European and US science policy and to support the submission of strategic bids to research funding bodies. I also provide training for academic staff and other researchers in bid writing, writing for publication, costing and pricing and contractual matters.

I did not make the decision to leave academic research; a change of career direction became necessary because of an absence of employment opportunities in my field. However, I have steadily built a career and reputation in research administration, enabling me to progress quickly to a senior level.

A doctorate was not a requirement to enter my current profession, though in recent years possessing one has become desirable in order to progress to the most senior levels. Subject knowledge is occasionally useful, although my current institution does not have a geology department. Much more useful has been the academic experience and skills developed over a research career spanning nine years. This enables me to 'understand the science' and to empathise with researchers to a much greater degree than if I had not been a researcher myself.

As a fellow, I sought professional development opportunities that, at that time, were available only to 'permanent' academic staff. I often had to make a specific case to be allowed to take part in such activities. As a result, I undertook a considerable amount of training to equip myself as an academic practitioner in the widest sense. I am still able to wear more than one hat; I continue to carry out academic duties such as peer reviewing for journals and grant funding bodies, and publishing research papers.

I value the experience I gained in independent research, and the freedom of being able to organise my own time effectively and set my own priorities.. I also value the friendships made as a member of the research community, many of which continue to the present day. Even with hindsight, I wouldn't change anything about my time as a doctoral researcher.

While the way in to academic research is clearly marked, the exits are not. If you feel that the academic life is for you, you should have in mind a Plan B in case Plan A does not materialise.

First destination job titles

Geological

Doctoral graduates in geology are likely to use their doctorate in their field. Here are a number of commonly found job titles:

- economic geologist
- exploration geologist
- fossil database developer
- geologist
- geophysicist
- graduate geologist.

Other HE

Other doctoral graduates in physical sciences and engineering go on to work in higher education in a range of different (non-research) roles. Job titles include:

- assistant manager (university, research institute)
- business development officer (university)
- business science fellow
- outreach coordinator
- research grants administrator.

Vikki Allen is an editor for the Royal Society of Chemistry and a freelance writer

'I gained a lot of skills and knowledge during my doctorate besides those specific to chemistry. I learnt, for example, how to organise myself better, undertake detailed research taking an analytical approach and to work in, and lead, groups. I became far more independent, self-reliant, and much more motivated in my career.'

I gained my doctorate at the University of Birmingham with research in organic chemistry. I worked there as part of a group of ten people, looking into the possible molecular origins of life. This was fundamental, cross-disciplinary work that I found really interesting. My undergraduate degree gave me experience of working in several laboratories in both England and France and I wanted to continue with research.

I currently edit two chemistry journals for the Royal Society of Chemistry (RSC) as well as working as a freelance writer in my own time. I joined the RSC after a brief period working as a postdoc. Since joining the society I have had four different jobs. I started as an assistant editor within a small editorial team, was promoted to Deputy Editor then took a year's secondment as a journalist on the Society's magazine, Chemistry World, before becoming an editor.

I didn't have a plan to go into publishing as my first job, but the skills and knowledge that I had acquired during my doctorate seemed to prepare me for it very well so I decided to give it a go. My job involves evaluating research papers for publication. Having a doctorate isn't a requirement for my job, but it helps! The extra understanding of a subject that comes from doctoral research is very valuable and has helped me to assimilate new ideas. I travel all around the world to conferences to meet researchers and can talk with them on an even footing. My science training is also vital for much of the freelance writing that I do. Although just a pastime at the moment, most of the work I currently do is with researchers in Asia and is both interesting and challenging.

I gained a lot of skills and knowledge during my doctorate besides those specific to chemistry. I learnt, for example, how to organise myself better, undertake detailed research taking an analytical approach and to work in, and lead, groups. I became far more independent, self-reliant, and much more motivated in my career. As well as getting a great training in research methods, I also had the chance to teach many undergraduate students and take on (pastoral) care of them in halls. Looking back, I didn't really take advantage of the fact that I was at the leading edge in my research area: I always felt that I had more to learn as opposed to being the one to find things out.

A career in publishing can be very rewarding. It can provide an opportunity to use subject expertise whilst moving out of a research or laboratory environment. Further down the line it has provided me with opportunities to become involved in business and strategic roles.

First destination job titles

Publishing

Doctoral graduates in physical sciences and engineering can use the communication skills gained during their doctorate in publishing and editing. Here are a number of commonly found job titles:

- assistant publisher (academic journal)
- features editor (publishing company)
- freelance science illustrator/animator
- special projects manager (communications company)
- technical editor (scientific publisher).

Esther Haines is a regional officer for the Institute of Physics and also works for the Women in Science, Engineering and Technology Initiative (WiSETI) at the University of Cambridge

'The narrow topic of my PhD is no longer of interest. However, the broader skills in mathematical analysis of problems and computer programming are still useful.'

After a doctorate in physics I spent some time in a research role in the UK before returning to my native New Zealand. I worked in research roles, working

part-time after my son was born, then returned to the UK when my husband took up an academic post in Cambridge. Eventually I won a Daphne Jackson fellowship for returners to science, engineering and technology – an opportunity to change subject area.

I currently have two half-time jobs. My role for WiSETI has included data analysis, report writing, presenting workshops, running a network and providing one-to-one advice. As a regional officer I spend time on outreach and promoting the Institute's resources for teachers. I appreciate the variety provided by my current roles.

The narrow topic of my PhD is no longer of interest. However, the broader skills in mathematical analysis of problems and computer programming are still useful, even in my current roles. Developing the habit of working independently and finding help when needed has proved useful.

I wish now that as a doctoral researcher I had given more thought to how what I was doing would help to build my career. I would encourage anyone undertaking a doctorate now to be proactive: think about what is really important to you and how you can achieve it.

Julia Meek is a self-employed research and evaluation consultant

‘My doctorate gave me the necessary skills to become self-employed: self motivation, determination and research skills, plus a network of contacts in the university sector.’

Following an arts degree and several roles in computer based learning for higher education, I undertook doctoral research in evaluation of learning technologies.

Whilst writing up my doctorate I took several opportunities to work on evaluation projects, which led to my decision to set up my own consultancy.

I now work from home part-time, specialising in the use of technology for learning. I travel when necessary but most meetings and collaborations are conducted online. This flexibility works well for me as I have a young family and live in a rural location.

My doctorate gave me the necessary skills to become self-employed: self motivation, determination and research skills, plus a network of contacts in the university sector.

My advice to anyone considering self-employment in their research area would be to build up a wide base of contacts including university colleagues who can lead funding bids.

First destination job titles

Other

Physical science and engineering doctoral graduates are undertaking a wide variety of roles across the economy. Job titles include:

- associate auditor
- business development officer (pharmaceuticals company)
- civil servant
- consultant/scientific consultant/associate consultant/technical consultant (various sectors)
- curator – buildings and landscape (heritage organisation)
- higher radiation protection scientist (government agency)
- intermediary (open innovation organisation)
- local intelligence officer (police)
- presenter (science museum)
- process development project manager (pharmaceuticals company)
- project leader
- project manager (pharmaceuticals company)
- quantitative associate/analyst/risk analyst/developer
- registration officer (pharmaceutical company)
- scientific officer (government)
- support analyst (ambulance service)
- surveyor
- technical assistant (patent attorneys)
- technical project manager
- technical staff
- venture capitalist
- x-ray systems sales specialist.

Arnaud Miege is an application engineer for The MathWorks

‘In the longer term, if you want to pursue a technical career, having a doctorate and the experience and skills that it provides should be an advantage.’

Before I started my doctorate, I knew that I wanted a career in industry. As a French national working in the UK, I was able to count my studies in articulated vehicle safety as part of my national service requirement.

After my PhD, I had a short postdoctoral research position at Nottingham University to tide me over and finish things off. I then worked as a project engineer at QinetiQ, for two years before joining The MathWorks. My present role with a leading global provider of engineering software consists of helping customers to identify how our software can address their engineering challenges.

Although I never wanted an academic career, I do not regret doing a doctorate as the knowledge gained and hands-on experience have proved useful in subsequent roles. It also helped me to develop problem solving and project management skills.

Some employers in the industry do not value a doctorate as much as industrial experience, so you have a tough job selling yourself. In the longer term, if you want to pursue a technical career, having a doctorate and the experience and skills that it provides should be an advantage.

Social sciences

‘Having a doctorate opens all sorts of doors that you are not necessarily aware of when you start. It is fine to plan a career, but you also need to keep yourself open to possibilities you had not considered. It is good to consider that there are opportunities out there beyond research assistant, research fellow, junior lecturer etc.’

Joan Smith (doctorate in education)

This chapter focuses on the career stories of doctoral graduates in the social sciences. Social science doctoral graduates made up 10% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of social sciences is broad and covers the following subjects, of which the first six are analysed in ‘What do researchers do? – First destinations of doctoral graduates by subject’ (WDRDS).

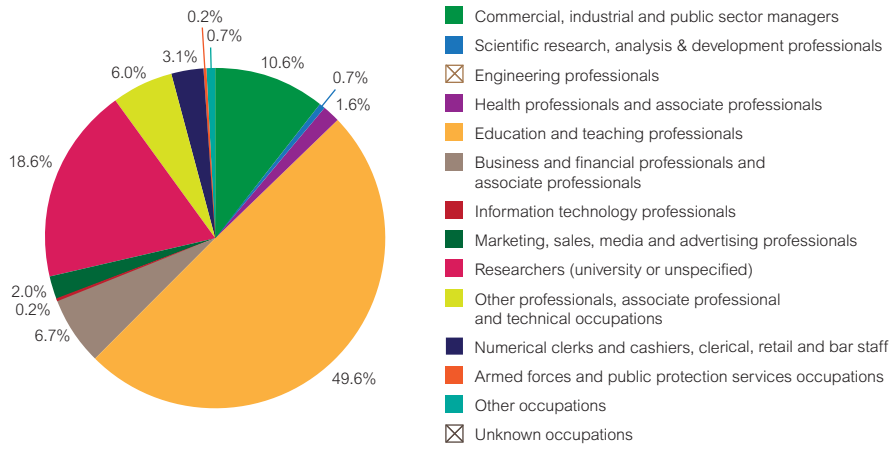
- **business and management**
- **sociology**
- **politics**
- **human and social geography**
- **law**
- **economics**
- **catering and institutional management**
- **land and property management**
- **marketing and market research**
- **psychology (without a significant element of biological science)**
- **transport**
- **other business and administrative studies**

This chapter presents the career stories of seven social science researchers. These stories cover a total of 19 different jobs showcasing a range of points of origin and a spread of career destinations.

Key messages from ‘What do researchers do? – First destinations of doctoral graduates by subject’

The data analysed in WDRDS provides a good insight into the distribution of doctoral graduates immediately after graduation. Its results show that of UK-domiciled social science (SS) doctoral graduates, graduating in 2003–2007 who responded to the survey:

- the education sector (both higher and other education, across occupations) was consistently the largest employment area. It employed 66% of new doctoral graduates
- SS doctoral graduates were about twice as likely to enter ‘education and teaching’ occupations (45%) than respondents across all disciplines (22%)
- 34% of all SS respondents in UK employment, entered HE lecturing roles, more than double the rate across all disciplines (14%) and higher than any other discipline group
- the percentage working in all research roles was 24%, well below the all discipline average (35%), with 18% working as HE research staff (23% for all disciplines).



Types of work entered by UK-domiciled social sciences doctoral graduates (2007) employed in the UK, based on Standard Occupational Classifications (SOC) returned in the 2008 ‘Destinations of leavers of higher education’ survey. [9]

[9] These first destination data refer to the latest available data rather than the amalgamation over five years discussed in the text.

Andy Charlwood is a senior lecturer at the University of York

> 'The process of conducting research, writing working papers, getting comments, presenting at seminars, going back to the data, then honing the research into a publishable paper, which I learned doing my doctorate, is absolutely central to the job I have now.'

I studied in the Industrial Relations Department at the London School of Economics (LSE). Throughout my doctorate I was attached to the 'Future of Trade Unions in Modern Britain' research programme at the LSE's Centre for Economic Performance as a research assistant. My research topic was the political economy of trade union decline in Great Britain between 1980 and 1998.

I had completed an MSc in industrial relations and before that had worked as a technician for a company that provided interpretation services for multilingual conferences and meetings. A lot of these meetings were trade union and industrial relations related, which is what sparked my interest in the subject.

I am now a senior lecturer in industrial relations and human resource management at the University of York. I got my first lecturing post (University of Kent) as soon as my doctoral funding finished. Getting a job slowed down progress on my doctorate – I was overloaded with teaching in my first year and under pressure to publish. I moved to the University of Leeds two years later, finally finishing my doctorate.

Although the pressure to publish slowed down work on my thesis, it resulted in much higher quality research. I received the Labour and Employment Relations Association's best thesis award. The combination of a strong publishing record and international recognition for my doctorate has made it easy for me to get jobs, especially since competition for posts is not as intense as it is in some subject areas. After Leeds I moved to Warwick and then back to York when the post that I am now in became available.

The process of conducting research, writing working papers, getting comments, presenting at seminars, going back to the data, then honing the research into a publishable paper, which I learned doing my doctorate, is absolutely central to the job I have now.

The most valuable aspect of my doctoral training was experiencing the research environment and culture in the Centre for Economic Performance at the LSE. I learned from the best in my field from all over the world, and it set me very high standards. The place where you do your doctorate is central to the value you derive from it. If you do your research in a world-class centre of excellence, where you present your work to the leading people in your field, you are going to get more from the experience than if you have no one to talk to but your supervisor and a couple of other doctoral researchers. The first time I presented a paper, it got torn to shreds, but I learned so much from the experience that it was worth it!

I would recommend presenting your work at conferences and workshops and working on at least one paper aimed at publication in a leading journal during your doctoral research. This might slow you down a bit, but you will learn loads from the referees' comments, and if you manage to get published, it will make getting your first job much easier.

Samantha Currie is a lecturer in law at the University of Liverpool

> 'I feel that I have constantly drawn on my experience as a doctoral researcher.'

I studied for my doctorate at the Liverpool Law School, graduating in 2007. The topic was migration in the context of European Union enlargement.

I am now a lecturer in law at the University of Liverpool. I teach and continue to develop my research. I have published a book, an edited collection and a number of articles.

I feel very lucky to have been able to develop my career here. I began my lectureship whilst I was writing up my thesis and found the transition from doctoral researcher to lecturer a very smooth one. I was teaching during my doctorate, which helped prepare me to deal with the time pressures post-appointment, and my initial responsibilities were often an extension of what I had been doing during my doctorate.

I feel that I have constantly drawn on my experience as a doctoral researcher. In particular, presenting conference papers has stood me in good stead. I was encouraged to build up networks of contacts from an early stage and this too was good preparation for academic life. I received excellent careers advice from my supervisors. This has had a massive effect on my career, both in the job application process and my subsequent development as a researcher.

It is increasingly important to have good quality publications and teaching experience in order to compete for academic posts. It is also important to complete your doctorate, or be in the final stages, before taking up a post.

First destination job titles

Teaching and lecturing

Teaching related roles are popular first destinations for social science doctoral graduates. While these are concentrated in higher education, doctoral graduates also go on to work in the school system. Job titles include:

- assistant professor
- director/deputy director of studies/programme (university)
- lecturer/senior lecturer
- pre-kindergarten teacher
- professional tutor (university)
- professor
- teacher (further education)
- tutor/tutorial assistant (university)
- vice-principal (sixth form college).

Melanie Simms is an associate professor at the University of Warwick working in the industrial relations group

'My doctorate gave me confidence that I can manage research interests alongside the more routine academic responsibilities of teaching, administration, etc'

I studied for my doctorate at Cardiff Business School, researching how trade unions have organised service sector workers. Before my doctorate I was already working as a research associate at Cardiff Business School. I registered for a part-time doctorate and completed it six years later. During that period, my research post at Cardiff came to an end, and I got a job as a lecturer at the University of Kent.

My doctorate helped me to consolidate my position in academia. My appointment at the University of Kent, for example, was based on the assumption that I would complete my doctorate in the first year or so. While at Kent I also completed a postgraduate certificate in higher education (PGCHE) and the combination of this and my doctorate were pretty crucial later in landing a job at the University of Warwick.

Where my doctoral research has been particularly helpful is in providing data for solo-authored journal papers, which is important for demonstrating an ability to develop and lead a research area. As I was already an academic when I started the doctorate, I was aware of how important such articles were for Research Assessment Exercise (RAE) submissions and so I specifically structured my doctoral research to provide the data I would need.

I am not convinced that doctoral research is the only appropriate apprenticeship for academic social scientists although most university employers see it as essential. It provides experience of designing, implementing and running a research project from start to finish, writing practice and an extended research monograph. However, I gained greater experience in managing a research team, securing funding, and of internal academic processes from being a research associate.

My doctorate gave me confidence that I can manage research interests alongside the more routine academic responsibilities of teaching, administration, etc that can sometimes consume the energy and focus of less experienced academics. Anyone undertaking a part-time doctorate will need to take a pragmatic approach to the topic and the process – do what is most efficient. Doctoral research is practice for processes you would otherwise probably tackle later in your career, such as managing a research grant or writing a book. You should make space to publish – ultimately this is what you'll be hired on – and learn to teach as well.

First destination job titles

HE research

There are a range of research based roles undertaken by social science doctoral graduates within higher education. Job titles include:

- postdoctoral research fellow/associate
- research assistant/associate
- research fellow
- research worker
- researcher.

Anna Bee is a government researcher

'I looked around with a pretty open mind and saw a job in government social research in the Department for Work and Pensions. Up until then I had only vaguely realised that the government did social research, but I fancied something different so I applied and got the job.'

I undertook a PhD focusing on agricultural development in Chile at the University of Birmingham. I was funded by the Economic and Social Research Council (ESRC) and managed to complete the degree in four years. The doctorate was certainly hard work, although I lived and studied in Chile for a year, which was fantastic.

After finishing my doctorate, I got a job as a geography lecturer and taught a number of courses that were closely connected to my PhD. I enjoyed the academic role, both the lecturing and the research. It continued to give me opportunities to go to South America and to do interesting and fulfilling work. However, I also noticed that I was doing less hands-on research and was increasingly ending up as a project manager, supervising other researchers as part of large-scale projects. I also started to feel that I could not see myself working in an academic environment for my whole career. While I was doing well with my research, I did not feel driven enough to be a professor.

After five years as a lecturer I felt it was time for a change. I looked around with a pretty open mind and saw a job in government social research in the Department for Work and Pensions. Up until then I had only vaguely realised that the government did social research, but I fancied something different so I applied and got the job.

When I left academia, I realised that I would probably never go back, but this did not worry me unduly. I felt excited that I was moving on to something new. However, it took me a while to adjust to doing research in a new context as I found I had less autonomy and personal control over the research process. The role does however give me the chance to influence government policy development

I have worked on a wide range of issues since I've moved into government research and with a wide range of research contractors, academics, policy makers and lobby groups. The area I have probably worked in most has been the evaluation of lone parent employment programmes. I am now 'on loan'; to a government Advisory Committee as their research and policy specialist. This allows me to work on a range of topical issues from across the whole of DWP policy. While I have consistently used my methodological training, very little of what I have worked on has had any connection to specialisms that I built up during my PhD.

I really enjoyed the experience of undertaking a PhD and working as a lecturer, but the move to government research was definitely the right one for me. While it was not my primary motivation, I think that I have probably done better financially than I would have in an academic role. The work is interesting and varied but has enabled me to have a good work-life balance. I now have two young children and work flexibly, which might have been more difficult in academia. The balance of work and family would also have been complicated by the non-UK basis of my academic research.

Louise Sullivan is a research manager at the Social Research Institute of Ipsos MORI

> ‘I would recommend making the most of all the training opportunities you get. Once you start work, you will not have the time and your employer will only want to fund courses that are directly relevant to their business.’

Before my doctorate I worked in the food industry for ten years after completing my degree in food science. I had wanted to change careers and move into social research for some time and studied part-time for a masters degree in social research. I thoroughly enjoyed the course and applied for ESRC funding for a doctorate. If I had not received funding, I would have used my masters to get a job in social or market research directly.

I studied for my doctorate in the Department of Sociology at Surrey University. My thesis drew on the meritocracy debate and identified a new way of measuring and describing social mobility, using second generation structural equation modelling. I thoroughly enjoyed my time as a postgraduate researcher and the freedom the doctorate gave me to explore in detail a subject I was fascinated in. There is nothing I would change about my time as a doctoral researcher, I attended loads of really interesting training courses and had a brilliant three years. I would recommend making the most of all the training opportunities you get. Once you start work, you will not have the time and your employer will only want to fund courses that are directly relevant to their business.

After finishing my doctorate, I took a job in market research, working in a statistics department. Within academia I found the obligation to publish in academic journals very off-putting and was keen to follow my interest in social research. However, my first job after graduating from my doctorate was purely number crunching and none of the high end statistical skills I learnt were put into practice.

I then moved to Ipsos MORI where I have been for the last 18 months. My job covers all aspects of the research process from proposal writing to job costing, project management, report writing and presenting. There is more client involvement than in my previous role and the breadth of projects and public sector clients makes it much more interesting. I have been able to draw on my writing skills and literature review skills developed during my doctorate. I have done some analysis but my job essentially involves project management and client liaison.

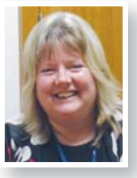
First destination job titles

Non-HE research

Although the percentage of social science doctoral graduates working in non-HE research roles is relatively small, there are a wide variety of research based roles which employ this group. Job titles include:

- chief economist (trade association)
- consultant economist (international body)
- economist (government)
- energy economist (international body)
- quantitative researcher (finance company)
- research officer
- scholar-in-residence (government)
- skills and labour market economist (regional public body).

Joan Smith works as the postgraduate training co-ordinator at the University of Leicester



‘Doing the doctorate as a mature professional, I really appreciated the opportunities that it offered me. During a doctorate you can spend lots of time on professional development, taking advantages of courses and updating your ICT skills for instance, and if you want to go to a conference, you can just go you don’t have to worry about how it fits into work etc.’

After my undergraduate degree I went on to do a PGCE and spent around twenty years in secondary education. Towards the end of this period I took an MBA in education management. This enabled me to develop more confidence in my academic abilities and got me back into learning. Following the closure of the school in which I had worked for 12 years, I applied for and was appointed to a post as a senior lecturer in secondary education at Canterbury Christ Church University. I enjoyed the job, but I realised that if I wanted to make further progress, undertaking a doctorate would be a sensible step. I was happy with this as I had always wanted to do more research, so I started a doctorate.

Doing the doctorate gave me a lot more self-confidence. It made me realise that I was able to read and assimilate large amounts of information and complex ideas, and bring them together in writing. Doing the doctorate as a mature professional, I really appreciated the opportunities that it offered me. During a doctorate you can spend lots of time on professional development, taking advantages of courses and updating your ICT skills for instance, and if you want to go to a conference, you can just go you don’t have to worry about how it fits into work etc.

I probably started my doctorate with an idea of going back to lecturing and research, but I wasn’t set on it as such. I became aware as I progressed through my doctorate that if I tried to go the conventional postdoctoral researcher/junior lecturer route that I would be competing with a lot of people who were much younger than me. I did not feel that the typical opportunities were very well geared towards mature researchers. Postdoctoral salaries were not very attractive either!

The year that I finished my doctorate was also a year when my family was experiencing illness and turmoil. I found myself commuting up and down the country to look after my parents and I decided that I needed to look for part-time work. I managed to combine my care commitments with a mix of research, university teaching and educational consultancy.

One of the schools that I had done some consultancy work for offered me the headship of a school. I did it on a part-time, consultancy basis for three months and then full-time for three months, but there were a number of reasons why this was not going to be a long-term commitment for me, and I kept my eyes open for other opportunities. It was at this point that I saw the postgraduate training co-ordinator job at the University of Leicester. I thought that this looked ideal, as it was a teaching role that called for a strong awareness of the needs of doctoral researchers, which I had from my own experience.

In my current role, I work with postgraduate researchers to support the development of their academic and transferable skills. I think that the job is about supporting researchers to find their own way forward. I think that it would be much more difficult to do this job if you had not done a doctorate yourself. I also manage a team of five people to deliver training and events to doctoral researchers. The role suits me because it allows me to use a range of skills, plus it offers a reasonable salary, a convenient location for my family commitments, and a permanent contract.

Having a doctorate opens all sorts of doors that you are not necessarily aware of when you start. It is fine to plan a career, but you also need to keep yourself open to possibilities you had not considered. It is good to consider that there are opportunities out there beyond research assistant, research fellow, junior lecturer etc.

First destination job titles

Other HE

Social science doctoral graduates are fulfilling a number of roles within higher education that fall outside of the typical research and lecturing roles. Job titles include:

- assistant education officer
- head of marketing department
- learning and teaching co-ordinator.

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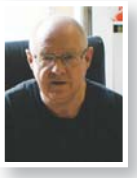

'The theoretical understanding gained from my doctorate has changed my own teaching.'

Before my doctorate I was a teacher of art and design and also the founder and editor-in-chief of the International Schools Association Journal, Skepsis. I completed my doctorate part-time in the Department of Education at the University of Bath whilst continuing to teach. I tried to find out how artists, designers, architects and writers use drawing to generate and develop ideas and how this process could be applied to education.

After obtaining my doctorate, I became the co-ordinator of my school's Theory of Knowledge programme and two years later professional development co-ordinator. This position was eliminated, meaning a return to the classroom, with a little less money but time to complete and publish a book on teaching creativity and to do some lecturing at two universities. I also held a visiting research fellowship for five years at the University of Bath. I have now been given a studio by a patron of the arts where I can write and paint and I have a new book proposal in the pipeline.

I did not undertake my doctorate specifically to develop my career. I did it because the area of research deeply interested me and because I wanted to gain some understanding of creative processes that I was involved in as a teacher and observed in the practices of others. The career steps thrown up by undertaking a doctorate have been incidental: my ideal career step would be to sit in a library for days on end, trying to make sense of the data gathered from field work among artists and writers, as well as doing some teaching.

The theoretical understanding gained from my doctorate has changed my own teaching. I have become suspicious of the distinction made between practice and theory. The link between theory and what provokes it continues to fascinate me.

First destination job titles

Other

Social science doctoral graduates are also working across a wide range of sectors in the economy. Job titles include:

- associate director (finance company)
- biodiversity data specialist (government advisory body)
- countryside management officer
- development officer (professional body)
- ecologist
- environmental consultant
- fleet services manager
- freelance musician
- fundraising officer (community organisation)
- head of international transport (communications and logistics company)
- head of youth work (government)
- independent consultant
- managing directory (educational software company)
- nursing officer (government)
- organisation behaviour consultant
- planning officer
- policy officer (local government)
- press attaché (government)
- quantitative analyst (professional services company)
- vice president of leadership development (training company).

An important sub-set of this group are doctoral graduates who go on to or return to legal roles. Job titles include:

- barrister
- barrister-pupil
- legal secretary
- solicitor
- trainee barrister.

Resources and publications

This page brings together useful resources such as reports and research studies on the careers of researchers, their employability, and UK Government and European policy relating to researcher careers[1].

Careers of doctoral graduates in the UK

'PhD study: Trends and profiles, 1996-97 to 2004-05' (2009), HEFCE
www.hefce.ac.uk/pubs/hefce/2009/09_04/

'Higher Degrees: Postgraduate Study in the UK 2000/01 to 2005/06' (2008), HECSU
www.hecsu.ac.uk/hecsu.rd/research_reports_284.htm

'What Do PhDs Do?' (2004)
www.vitae.ac.uk/CMS/files/1.UKGRAD-WDPD-full-report-Sep-2004.pdf

'What Do PhDs Do? – A Regional Analysis' (2006)
www.vitae.ac.uk/cms/files/UKGRAD-WDPD-regional-analysis-Sep-2006.pdf

'What Do PhDs Do? – Trends' (2007)
http://www.vitae.ac.uk/policy-practice/14772/What-Do-PhDs-Do-Trends.html

'What do researchers do? Career profiles of doctorate graduates' Vitae
www.vitae.ac.uk:80/careersstories

Discipline-specific career studies (UK and US)

Arts & humanities

'Career Path Study of PhD students' (2006), DTZ Consulting, Arts and Humanities Research Council
www.ahrc.ac.uk/images/PhD_Report.pdf

'PhDs in Art History: Over a Decade Later' (2003), Sadrozinski, Nerad and Cerny, University of Washington
http://depts.washington.edu/coe/cirge/html/arthistory.html

'Doctoral Futures: Career Destinations of Arts and Humanities Research Students' (2002) A copy can be obtained from cihe@btinternet.com

'From Rumors to Facts: Career Outcomes of English PhDs' (1999), Nerad and Cerny,
http://depts.washington.edu/coe/cirge/pdfs%20for%20web/rumors_to_facts.pdf

Biomedical and biological sciences

'Annual survey of UK biochemistry graduate employment' (2003), Biochemical Society
www.biochemsoc.org.uk/education/survey/default.htm

'Career paths of a 1988-1990 Prize Student Cohort' (2000), The Wellcome Trust
www.wellcome.ac.uk/assets/wtd003201.pdf

Physical sciences and engineering

'A Fifteen Year Longitudinal Career Path Study of PPARC PhD Students' (2003) and 'A Study of the Career Paths of PPARC PhD Students' (2003), DTZ Pieda Consulting/PPARC (now Science and Technology Facilities Council)
www.so.stfc.ac.uk/publications/publorderform.aspx#PG

'Employers' Views of Postgraduate Physicists' (2001), Jagger, Davis, Lain, Sinclair E and Sinclair T, IES/EPSRC
www.employment-studies.co.uk/pdflibrary/1417phys.pdf

'Postgraduate Career Progression a survey of former SERC funded postgraduates' (2000), Whitfield, National Centre for Social Research/ESPRC. It can be purchased at Natcen
www.natcen.ac.uk/natcen/pages/op_educationandskills.htm

Social sciences

'The Employment of social science PhDs in academic and non-academic jobs: research skills and postgraduate training' (May 2006), Purcell and Elias, ESRC
www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Images/employment_of_soc_sci_phds_tcm6-15385.pdf

'Career Paths and Training Needs of Social Anthropology Research Students' (2005), Spencer, Mills and Jepson
www.theasa.org/news/careers_research.doc

'The Social Science PhDs - Five Years Out Survey' (2004), Nerad, CIRGE
http://depts.washington.edu/coe/cirge/html/ford.html

'Career Outcomes of Political Science PhD Recipients' (2003), Nerad, CIRGE,
http://depts.washington.edu/cirgeweb/c/publications/260/

Employability of doctoral graduates in the UK

'Employers' briefing: Targeting the postgraduate and researcher market' (2009) Vitae, AGCAS and AGR
www.vitae.ac.uk/CMS/files/upload/Employers%20Briefing_8pp_A4.pdf

'Employers' views of researchers' skills' (2007) Rugby Team/UK GRAD Programme
www.vitae.ac.uk/cms/files/Rugby-Team-Employers-views-of-researchers-skills-September-2007.pdf

'Recruiting PhDs: What works?' (2007), Jackson, UK GRAD Programme www.vitae.ac.uk/cms/files/UKGRAD-Recruiting-PhDs-what-works-Mar-2007.pdf

'Employability and doctoral research postgraduates' (2006), Metcalfe and Gray, HEA
www.vitae.ac.uk/cms/files/HEA-ESECT-Employability-postgraduate-researchers-October-2006.pdf

'Survey of employer attitudes to postgraduate researchers' (2006), McCarthy and Simm, University of Sheffield
www.careers.dept.shef.ac.uk/pdf/employersurvey.pdf

'Survey into the career motivations and expectations of doctoral researchers' (2006) UK GRAD Programme
www.vitae.ac.uk/CMS/files/upload/career expectations survey.pdf

'EMPRESS: Employers' Perceptions of Recruiting Research Staff and Students' (2005), Souter, University of Leeds Careers Centre
http://careerweb.leeds.ac.uk/downloads/Empress_LR.pdf

'Higher Degrees of Freedom: The Value of Postgraduate Study' (2004) Institute for Employment Studies
www.employment-studies.co.uk/pubs/report.php?id=410

UK policy reviews

The Vitae website has a comprehensive policy section dedicated to UK policy relating to researchers and their professional development
www.vitae.ac.uk/policy-practice/1398/UK-policy.html

'Pathways to the future: the early career of researchers in the UK. A report by the Council for Science and Technology' London (2007) Council for Science and Technology
www.cst.gov.uk/cst/reports/#Pathways

'Leitch Review of skills' (2006)
www.hm-treasury.gov.uk/media/6/4/leitch_finalreport051206.pdf

'Increasing the Economic impact of the Research Councils - The Warry Report' (2006)
www.berr.gov.uk/files/file32802.pdf

'Code of practice for the assurance of academic quality and standards in higher education' (2004)
www.qaa.ac.uk/academicinfrastructure/codeOfPractice/section2/default.asp

'Lambert Review of Business-University Collaboration' (2003), Sir Richard Lambert, HM Treasury
www.hmtreasury.gov.uk/consultations_and_legislation/lambert/consult_lambert_index.cfm

'SET for Success: the supply of people with science, technology, engineering and mathematics skills' (2002) Sir Gareth Roberts' Review, HM Treasury
www.hmtreasury.gov.uk/documents/enterprise_and_productivity/research_and_enterprise/ent_res_roberts.cfm

'Joint Statement of the UK Research Councils' Training Requirements for Research' Students (2001)
www.vitae.ac.uk/cms/files/RCUK-Joint-Skills-Statement-2001.pdf

International studies and policy reports

Summary of European policy developments and initiatives
www.vitae.ac.uk/policy-practice/1703/Initiatives.html

'Towards an open and competitive European area for research careers: Some basic findings from the Max Weber Programme Academic Careers Observatory' (2008) European University Institute
www.iue.it/MaxWeberProgramme/AcademicCareers/ACOdocument2008.pdf

'Labour market characteristics and international mobility of doctorate holders: results for seven countries' (2007) OECD
www.vitae.ac.uk/cms/files/OECD-Careers-Doctorate-Holders-first-data-7-countries-Feb-2007.pdf

'Researchers in the European Research Area' (2007) Bryony Gill and Louise Ackers
www.resistresearch.net/cms/site/docs/WP2_Researchers%20in%20the%20ERA_submission%20Final.pdf

Lisbon Strategy (2000)
www.vitae.ac.uk/policy-practice/2674/Lisbon-strategy.html

The European Research Area (part of the Lisbon strategy)
www.vitae.ac.uk/policy-practice/1707/European-Research-Area.html

The Bologna Process (started in 1999)
www.vitae.ac.uk/policy-practice/1705/Bologna-Process.html

Other career-related resources

The careers section on the Vitae researchers' portal is a comprehensive web-based resource for researchers looking to develop their careers
www.vitae.ac.uk/1270/Careers.html

It includes links to many other sources of online careers support
www.vitae.ac.uk/1679/Websites.html

Vitae also has an expanding number of resources for those supporting the career development of researchers
www.vitae.ac.uk/policy-practice/1392/Resources.html

Higher education institutions have websites with very useful resources to support the career development of their researchers, for example through university careers services, staff development units and graduate schools

Individual HEI careers services can be accessed through the Association of Graduate Careers Advisory Services (AGCAS)
www.agcas.org.uk/people/regional_groups_of_member_services

Many professional and learned societies also offer careers support to researchers

'Beyond the PhD' A career resource for arts and humanities PhD researchers www.beyondthephd.co.uk

[1] All links were retrieved May 2009.

Incorporating the UK GRAD Programme and UKHERD

Vitae builds on previous work by the UK GRAD Programme and UKHERD. Vitae is supported by Research Councils UK (RCUK), managed by CRAC: The Career Development Organisation and delivered in partnership with regional Hub host universities.

The role of Vitae is to work with UK higher education institutions (HEIs) to embed professional and career development in the research environment. Vitae plays a major role in innovating, sharing practice and enhancing the capability of the higher education sector to provide professional development and training of researchers.

Our vision is for the UK to be world-class in supporting the personal, professional and career development of researchers.

To achieve our vision we have four aims:

- championing the development and implementation of effective policy
- enhancing higher education provision through sharing practice and resources
- providing access to development opportunities and resources
- building an evidence base to support the researcher development agenda.

For further information about the range of Vitae activities go to www.vitae.ac.uk or contact enquiries@vitae.ac.uk

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