Career paths of academic researchers:

PHYSICAL SCIENCES

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Chemistry - Adam

Route into HE
Adam went straight from school to a degree in Chemistry which was followed by a Ph.D., both at a civic redbrick in the Midlands.

Route into Contract Research
His first, one year, contract followed directly on from Adam's Ph.D. He was not happy in this first post and explored other options, including taking an extended holiday to Australia to do some thinking from a more objective position and to investigate the possibility of working in the chemical industry there. He decided that he should not be put off academic research by one bad experience and secured a second contract at a different institution to be sure that if he did decide to turn his back on scientific research it would not be for the wrong reasons.

Likes about Contract Research
  . Producing useful and meaningful results.
  . Having time to think about where he was going when the research was successful.

Dislikes about Contract Research
  . Isolation, particularly on moving to a new institution.
  . Lack of support with research and adjusting to working in a new group.

Reasons for moving on
During his second contract, Adam realised that even when the research was going well he would be happier in a different role. He gave the contract a year to be sure.

Exploration of Options and Sources
When he first felt unhappy with contract research, Adam started by thinking about what he could do with his background and looked at his friends to start to decide what he wanted to do. When he finally decided to move on, Adam felt unable to seek help from his supervisor or anyone else in the department, and so returned to this thinking and also sought advice from the university Careers Service.

He narrowed down his interests to areas which used his scientific knowledge, such as patenting and scientific communications (journalism and the media), and more commercially focused areas such as management consultancy and accountancy. He made about 15 speculative applications and received about the same number of rejections. Although this was disheartening, Adam knew that it was not untypical. He did have one interview for a process chemist post with a large pharmaceutical company but was not successful.

Adam also applied for jobs advertised in graduate recruitment bulletins such as the Prospects magazine and websites. He was not concerned about applying for jobs at this level as he felt he had a lot to learn and was keen to change direction. He was interviewed for two jobs, one as a patent analyst and one as a medical sales representative. He had researched the patent analyst thoroughly with the help of the Careers Service, the interview was fairly conventional and he was offered the job. He was also interviewed for the medical sales post and invited for a second interview after arranging to shadow one of the company's representatives in his area.
Adam attended a career management school run by the EPSRC for contract researchers and spent three days identifying the skills he could offer employers, exploring career options, sharing contacts and setting up some work shadowing. In addition to the medical sales shadowing, Adam spent some time at a television production company, arranged through a personal contact. He found shadowing to be a very useful experience and soon realised that he did not have the qualities he felt were necessary to succeed in a media career. The medical sales shadowing, on the other hand, convinced him that the job would allow him to use his scientific communication skills and have the freedom to manage his own work and time.

Following a very unpleasant and aggressive interview, Adam did not hear from the medical sales company and had to ring them up repeatedly. He was eventually invited for a second interview and felt that although it was tough, he was better prepared for it and handled the interrogation style well. He was offered the job and has since received training and feels he can make judgements about his progress, something that was always hard as a contract researcher.

**Messages for Contract Researchers**

- Come to a decision about your future - take some time away from the University and research if you need to.
- Explore your options - most university Careers Services can offer support, but be realistic about what they can offer. Where they can be valuable is in checking C.Vs and applications, particularly if you decide to leave academia as the style you present yourself in is very different.
- It is up to you to make the decision about where your future lies; no one can tell you what that is.
- Work shadowing can give you a real insight into a career area, saving time and frustration. You almost certainly have contacts in a careers field that interests you and your Careers Service may be able to help with this too.
- Resigning from your job can be a big motivation! The work itself can distract you from the effort you put into your applications - having a fixed date to work towards might help.
Chemistry - Jeffrey

Background
Following my degree and doctorate in Chemistry I spent 18 months as a Research Assistant at the same University. However, I felt I needed to get more experience than I was getting in contract research work and I decided to make a change in my career. I let a number of people know that I was looking around and after only two weeks of looking, a personal contact told me of a job that was being advertised. I applied and was invited for an interview, which I found reasonably straightforward as it concentrated on what I could offer and bring to the company if I was offered the job. The position was in many ways a continuation of my previous work in contract research but without all the uncertainty that goes with it. Today I am a Research Scientist working on the development of novel CO2 gas sensors, a position that I thoroughly enjoy.

Transferable skills development
The main skills that I developed in contract research include:
- IT Programming in VB with PC support and administration.
- Research and analysis - Understanding and generating empirical, non-empirical, applied and pure research test methods.
- Communication - oral and written - Adapting to the level of knowledge and understanding of others. Actively listening to encouraging involvement.
- Problem solving - Analysing data to identify the real problem and making independent decisions whilst being sensitive to the feelings of others.
- Working environment - Categorising occupational risk banding into high, medium and low areas. Managing hazardous substances and following safe working procedures.
- Teaching, coaching, training and development - Using a variety of teaching and learning activities and visual aids to motivate and influence others.

The key skills I will need to develop in my current role include:
- Interpersonal - Managing people either directly or through others. Developing ideas or proposals of others into a cohesive plan. Liaising with other departments and external organisations
- Decision making - Taking calculated risks and knowing when an estimate or an exact decision will do.
- Networking - Supporting existing groups and developing new partnerships. Actively networking people for mutual benefit or development.

Messages
I think it is important for you to maximise your chance of getting alternative employment by using every opportunity to develop your skills during your research work. Particularly, I would recommend getting involved in IT activities as part of your research work to develop these skills. Find out what is available outside contract research by searching the classified sections of the press, but also network all your contacts as someone could know of a vacancy which might suit you.
Chemistry - Julie

Background
I graduated in Chemical and Analytical Science and then did a Ph.D. in Physical Chemistry followed by post-doctorate work with the same research group. Within a few months I realised that once the incentive of a qualification was removed, I didn't enjoy research enough and recognised that a lecturing career would fundamentally be about research, not teaching. At this stage I became very demoralised as I felt I had gone too far up the wrong path and sealed my fate! I started to keep advertisements from the New Scientist, Chemistry in Britain, the Guardian and Times Higher Education Supplement to build up a picture of the type of job that would appeal. Those that interested me were unrealistic but it enabled me to firm up my ideas. When I started looking seriously, I applied for about a dozen jobs and only had one interview - luckily I only needed one! I saw a job as a Project Assistant to develop communication skills in undergraduate chemists at a Scottish University, was lucky that they were prepared to take on someone who appeared over-qualified, and I haven't looked back since. Now I am a self-employed consultant, a move I took for entirely personal reasons, specialising in career issues affecting research students and contract researchers.

Transferable skills development

The main skills that I developed in contract research include:

. Information management - Keeping abreast of current developments and future trends. Maintaining familiarity with literature, distilling out useful information and an awareness of the research activities of others.
. Problem solving - Creativity, coming up with new and innovative solutions.
. Communication - Disseminating information, writing papers, speaking at events and conferences and the essential skill of networking.
. Teaching and mentoring - Developing teaching and support materials and one-to-one work with students and graduates.
. Insight - Perhaps not a skill, but the most useful thing to take into other jobs where an appreciation of needs and concerns of others is important.

The main skills I have had to develop since leaving contract research include:

. Interpersonal skills - Managing people and understanding how teams work, recognising people's strengths and becoming less insular and looking to others to provide support.
. Planning and organising - Time management, planning and prioritising activity when other people depend on me and when things cannot be left to the last minute as they are part of a bigger process.
. Communication - Presentation skills are very important and I had no previous training so I had to learn quickly.

Messages
All my interviews have been very similar and all in Universities, but even in academia I have seen the recruitment process become more rigorous from the time that I left research. If you are planning to change direction start to see yourself in terms of skills and motivations rather than knowledge and experience. Recognise that many people
don't know what contract research staff are and will have major misconceptions - you need to work hard to overcome these so don't just rely on paper based applications, get in their faces by work shadowing, information interviewing and networking.
Chemistry - Kathryn

Background
Following a B.Sc. and Ph.D. in Chemistry, I ended up working as a postdoc. I realised during my Ph.D. that I wasn't really cut out for lab work and the postdoc was a moment of weakness. I found the work really frustrating. I'd been very self-directed as a Ph.D. student and suddenly I was very much working on someone else's project.

What gave me the impetus to look for alternatives was knowing that I didn't want the insecurity of short term contracts, having to move around all the time. I also knew I definitely didn't want to spend ANY time in the U.S. - which seemed to be compulsory.

I became an avid reader of the Guardian (Creative, Media and Sales - Mondays and repeated on Saturdays) and successfully applied for a job in science public relations. I spent the first 12 months unable to believe that someone was paying me to do this great job! The draw back was that it was incredibly stressful. There was always far too much work to do and it was very reactive. Eventually, I moved on and am currently the editor of a web-based science magazine. Again, good for a nosey person, but at times frustrating because you are constantly flitting from topic to topic. The role is much more proactive, but you don't build up relationships with people in the way that I did in P.R.

I've now changed careers twice, which has made me realise that changing and doing something completely different is a) possible and b) wonderful in terms of personal fulfillment.

Transferable skills
During my postdoc, I started to look for opportunities to develop new skills and I got involved with a Women's Science Forum. Through organising events for them I realised that promoting science was what I wanted to do. I wanted other people to discover the same fascination I had and not to think science was too difficult for them to understand.

The main research skill I use in my current role is understanding science culture. I also use the presentation skills I developed in academia. This was actually something I hated in the academic setting but which I now enjoy.

Useful sources of information
• PR: The Science, Technology, Engineering and Medicine Public Relations Association at http://www2.ifr.bbsrc.ac.uk/stempra/
• Journalism: The Association of British Science Writers at http://absw.org.uk

Messages
Recognise that you have an incredible range of transferable skills. Many employers have no idea what 'being a scientist' is all about and how many things you have to do as part of your job. You need to be prepared to spell it out to them. Really work out what it is you want to do - and get some experience which proves it to your potential employer.
If you're a scientist - READ NEXT WAVE!!! (http://intl-nextwave.sciencemag.org/uk). It exists to help Ph.D. and postdoctoral scientists with their career development. If you don't know what you want to do, first person stories can give you ideas - and if you do know what you want to do, you can read how others have done it and get some useful advice.
Chemistry - *Rob*

**Route into HE**
Rob went to university straight from school and was awarded a first class degree in Physics with Laser Physics at a collegiate university. He then undertook a Ph.D. in the same department.

**Route into Contract Research**
Rob's Ph.D. led directly into his first research contract in the Physics department. After this one year contract he moved into the Chemistry department, again working in the field of laser based spectroscopy.

**Nature and range of work**
- Developing ideas.
- Conducting experimental work.
- Financial management.
- Liaison with suppliers to buy a system that would meet the needs of the project.
- Supervision of Ph.D. students and undergraduate research projects.
- Industrial collaboration.

**Likes about Contract Research**
- Able to work on the best equipment available.
- Independence.
- Freedom to decide on own style of working - hiding away to concentrate on a particular problem or line of thought or discussing work with many different people.
- The process of research - finding things out and playing with equipment!

**Dislikes about Contract Research**
- Insecurity.
- Not being able to apply for own research money.

**Reasons for moving on**
Rob felt he was fully aware of the situation facing contract researchers where there are no guarantees of future funding and was sure that he did not want to move into lecturing.

**Exploration of Options and Sources**
Moving between research contracts, Rob had used personal contacts and the University Careers Service. He started to look around well before the end of his second contract and was disappointed by what was on offer. There were not many vacancies in Physics World or New Scientist at the right level of experience. Having left himself almost a year to find something, Rob felt he could afford to be patient. Within a few months he saw a position advertised at the Central Laboratory of the Research Councils. The post was advertised as a three year contract but Rob believed that, unlike in academia, there was a good chance of securing a permanent position.

Rob had spent time thinking about what he wanted from his next job so he was able to highlight his strengths and give evidence to suggest that he would be able to make an early and significant contribution if appointed. He emphasised the relevance of his
scientific experience, the extra breadth he had achieved by the move from Physics to Chemistry and his ability to work independently with minimal management. Rob was invited to interview where he found that the additional experience of supervising and managing projects gave him plenty to talk about. His experience of dealing with people at a variety of levels through his research helped Rob to answer some difficult questions about his personal perspective and opinions.

Rob was successful and was pleased that, although a Ph.D. and research experience were not stated requirements when the vacancy was advertised, they were taken into account in his entry grade and salary. He was made permanent after two years and has recently secured a major promotion. Rob continues to talk to people about his work and what interests him and feels that this network would be useful should he ever decide to move on.

Messages for Contract Researchers

. Be aware of how what you are doing could transfer to different settings. For example, supervising students and liaising with companies proves your ability to deal with people at different levels using different styles; self-discipline and motivation are key to success in both Ph.D. and contract research.
. Don't do it for more than two years; look for something else.
. Beware of becoming too specialised.
. Think hard about what you want to do and don't let it drift - you need to do something about this sooner rather than later.
. Don't leave it too late to change; companies can be unwilling to train someone who is older and perceived as less mouldable.
Chemistry - Sam

Route into HE
Sam went directly from school to university to read Chemistry. During vacations Sam had industrial experience and he also had a one year placement at home and abroad in the chemical industry. He started his Ph.D. in his 'home' university and then moved to another with his supervisor.

Route into Contract Research
Contacting and applying to work with eminent people in their field led to a post in a traditional university in middle England.

Nature and range of work
Scientific research.

Likes about Contract Research
- The facilities.
- The freedom to pursue own ideas.

Dislikes about Contract Research
- The long, unsociable hours.
- The demands.
- Insufficient support.

Reasons for moving on
Sam knew that if he were to get anywhere in his career, he had to take a post doctoral post with someone famous (in the U.S.A.). He took advice to identify the top 20 chemists in the world and to go to see them with a view to getting a post doctoral position. Sam did this, but was frustrated when the opportunity did not deliver the outcomes he wanted of a number of good papers in the first couple of years. Sam realised he had to do more and started to look for other opportunities. He pursued an opportunity in Japan, for which he learned to speak Japanese and during which he wrote a number of papers.

Exploration of Options and Sources
Whilst still working in Japan, Sam came home for a short period to look for work by searching in New Scientist and Chemistry in Britain. This led to nothing. Then he signed up with agents who helped him into a temporary post within three days of his permanent arrival home. Back in Japan for the last two months, Sam wrote seven papers and acted as a visiting lecturer. The temporary post back in the U.K. came to an end and Sam started applying for posts, one of which he got, just before the end of the temporary contract. He used the web for this; the Royal Society of Chemistry and his network.

Messages for Contract Research Staff
- Be on the look out for opportunities all the time and pursue them relentlessly.
- Be ruthless and objective in establishing whether an apparent golden opportunity is as golden as it seemed at first.
- Be honest in looking past the supervisor and his/her reputation to see whether this
contract is as exciting as it might have been.

- If in the wrong work - accept it and do something about it as quickly as possible.
- Realise when things are not going as they ought - papers are not going through the system for trivial reasons; there is no support.
- Look at what organisations are asking for - do not let others persuade you that they know what it is (they can be wrong!).
- Stay optimistic, even when things are not going well.
- Use initiative to change things.
- Build and use your network to change things.
- Think big.
- Realise that very good things can come out of less good things.
- Listen to gut feelings when all is not well. Ask self what is good and what is not and check with self to see if this is acceptable for the future.
- If a temporary and pleasant job is necessary to earn some income, be careful not to let it divert effort from the career progression.
- Use agencies - they do all the hard work.
- Know clearly what is important in career terms and make sure it is going to be available.
- Remember that your contract will end - tie up all loose ends and do lots of networking.
Chemistry - Samantha

Route into HE
Samantha went straight to a collegiate university from school and graduated with a 2:1 in Chemical and Analytical Science. Although she then considered other options (indeed, Samantha had a job as a trainee accountant lined up when she graduated), her experience of working in the research labs of a major consumer products company and seeing that all of the managers had Ph.Ds made Samantha decide to stay and do a Ph.D in Physical Chemistry.

Route into Contract Research
Samantha enjoyed research during her Ph.D and began to contemplate a career in academia, being particularly drawn to the teaching and pastoral side of lecturing. She opted to follow the academic path by staying with the same research group as a contract researcher for nine months, replacing someone who had left before the end of a project. This was followed by a one year post at a Scottish university which, although she was classed as a research assistant, Samantha describes as being educational development and a teaching assistant.

Dislikes about Contract Research
Frustration of completing some else's research.

Reasons for moving on
Within a few months, Samantha realised that she didn't enjoy research enough once the incentive of a qualification (which had kept her going through the doldrums of her Ph.D.) was removed. Discussions with lecturing staff made her realise that a lecturing career would be fundamentally about research, not teaching.

Exploration of Options and Sources
Samantha felt very demoralised as she felt she had walked too far up the wrong path and sealed her fate. She spent three months doing nothing (apart from complaining about her lot to anyone who would listen!). Her supervisor was supportive and suggested a few things as well as ringing a few of his own contacts to ask for advice on Samantha's behalf. She began to keep adverts from New Scientist, Chemistry in Britain, The Guardian and The Higher in order build up a picture of the type of job that would appeal. Most of those that were of interest were not realistic (Head of Science Promotion at the Royal Society, for example!), but the process did enable Samantha to firm up her ideas.

Three months before the end of her contract, Samantha saw a Project Assistant post, working on a Royal Society of Chemistry project to develop communication skills in undergraduate chemists and although the job looked largely administrative and the pay was less than 50% of her salary, she felt that it was a chance to change direction. Samantha feels she was lucky; they were willing to take on someone far more qualified and even added £5K to the salary by classifying it as a research post to take it into a different pay scale. She had applied for about a dozen jobs and only had one interview but only needed one!
In subsequent career moves, Samantha has found that networking is invaluable. This is particularly relevant now as Samantha has become a self-employed career research consultant and needs to build and maintain a list of clients.

**Messages for Contract Researchers**
- Don't disregard anything.
- If you are planning to change direction, start to see yourself in terms of skills and motivations rather than experience and knowledge.
- Make connections between what you do as a contract researcher and what is necessary in other contexts. For example, the habit of searching literature and learning to discriminate, distilling out useful information; being able to come up with new and novel solutions to problems.
- Recognise that many people don't know what contract researchers are and will have major misconceptions. Don't rely on paper-based applications in trying to overcome these, try to get yourself into their faces by work shadowing, information interviewing and networking.
Chemistry - Yvette

Route into HE
Yvette took an orthodox route from school to University for a Chemistry degree and then, like so many of her peers, onto a Ph.D. degree in Chemistry.

Route into Contract Research
Yvette wanted to work with a particular researcher and so applied and was successful.

Nature and range of work
Inorganic chemistry.

Likes about Contract Research
• Pursuing research topics of personal interest.
• Having partial responsibility for a Ph.D. student.

Dislikes about Contract Research
• Lab work.
• Short term contracts and lack of security.
• The way the Research Group operated, in a rather disorganised way with too little communication and consequent waste of time.

Reasons for moving on
Yvette realised early she was not enjoying what she was doing and that she did not want to continue. She wanted to work in a post where she could retain links with academia and where the post involved dissemination of knowledge. Yvette also expected to gain a permanent post in academia and was disappointed when she realised it was unlikely to happen.

Exploration of Options and Sources
At first Yvette explored the possibility of becoming a secondary school teacher, including taking up the opportunity advertised in New Scientist for fast track training. She filled in forms and waited, but nothing happened. In the meantime she watched the New Scientist and Chemistry in Britain for other advertisements and found the advertisement for an editorial and publishing job with the Royal Society of Chemistry. She now works as an Assistant Editor of a scientific journal.

Messages for Contract Researchers
• When applying for jobs, seek help from anyone who can give insight.
• Be prepared to talk about the organisation in interview - rehearse what is known about it.
• Be aware of key skills such as time management and organising people, dealing with people of much higher rank and computer/IT skills learned as a CRS.
• Be ready not to get the job applied for - but an offer for another one, felt to be more appropriate.
• Decide what is appealing about other careers as well as what is not - to help focus on what are likely to be suitable jobs to apply for.
• Do not wait, after making the decision to leave - look at options and take action.
Geochemistry - Rosemary

Background
Throughout my undergraduate Chemistry degree and postgraduate studies in Geology, I had been focused on an academic career and a permanent position was my ultimate goal. I applied for a lectureship and, following a detailed panel interview and seminar, was offered the post.

In principle, academia combines many things that I enjoy doing in a flexible and intellectual environment. In practice, I was not valued and I found the research environment competitive and back-biting. I remained in the position for four years.

My first step towards an alternative career was to use 'What Color is Your Parachute?' (a U.S. published book) to investigate my skills. I then looked into three occupational areas: museum design work, information architecture for the Internet and TV science programming. After speaking to individuals working in those fields, I decided that information architecture was the most appropriate option for me at that time. I had help from a friend within the business both in rewriting my C.V. and in formulating my job letter. This was particularly helpful.

I now work as an information architect at an e-business company. I love the working environment and working in a team. I feel appreciated and this gives me confidence. The work is highly varied and intellectually stimulating. However, I don't really want to be in business in the long term and I miss science somewhat. I'd ultimately like to move into science communication and I am trying to build up relevant contacts.

Transferable skills
The ability to think conceptually and creatively, to solve problems and to observe patterns in data are perhaps particularly pertinent to information architecture. Scientific research in its various stages embodies all of these skills.

This company has a relatively high number of Ph.Ds. I think they see it as a benchmark for a rigorous and intellectual approach to problems. Basically, they look for bright minds and reckon that given that, you can learn and adapt to anything.

Messages
Find something you really want to do and are enthusiastic and passionate about. Chances are, if you're applying for a job that is perfect for you, they'll hire you. It is very hard to be enthusiastic about something you don't really want and see as second best. I think 'What Color is Your Parachute?' really comes into its own on this front.

If you are currently researching ways out, it is a good idea to start thinking about where you might want to go and work on developing specific skills that may help in your applications and interviews. Although I had practically no web experience, I spent a week learning HTML and worked on some half finished web pages for our research group. That stood me in good stead.

Lastly, I think it is absolutely crucial to see oneself as a set of skills and not simply as an academic researcher. Many of the skills that we use and develop are directly transferable to other careers and it's important to get to the point where you see that. If you can convince yourself, you can convince a potential employer.
**Geology - Roger**

**Background**
After completing undergraduate and postgraduate courses in Geology, I set my sights on a lectureship and, after peer review of my research proposal and a panel meeting, obtained the first of 3 personal fellowships.
I enjoyed the freedom to set my own research agenda and the opportunity to interact with gifted people, but the job insecurity, constant grant-chasing and intense pressure to publish led me to consider alternative options. There was little or no U.K. research funding in my specialist area, few opportunities to progress to a permanent academic post and a lack of career development support at departmental and university level. I also needed to support a growing family.
After web-based searches continued to indicate an absence of lectureships in the U.K., U.S. and Australia, I decided to seek a position in U.K. university administration allied to research or teaching. My methods included using paper and web-based vacancy listings and talking to a careers adviser. I also revamped my C.V.
My first post was in Student Support Services where I was employed as administrative officer and computer support. This was a varied job, working with nice people but the pay was absolutely dire so I continued my search. In my current role, I advise staff on preparing research proposals, manage funded projects and provide workshops on relevant issues. At a university level, I'm involved in a committee looking into career management for contract research staff. This job is also varied and the pay is better than when I was a researcher, but I dislike not having time to write papers and do research!

I haven't given up on my desire for a lectureship, but I know I am more likely to find it in the U.S. (applications pending). However, I will continue in my present post for the foreseeable future.

**Transferable skills**
My current role utilises my grant-proposal writing skills, ability to work with staff at different levels and in-depth knowledge of the higher education sector.

Other skills and qualities I developed in academia that have relevance in my current role include:
- persistence, dogged determination etc. - always comes in handy!
- writing ability - useful when it comes to advising staff on writing and structuring grant applications
- teaching/presentation skills - helps when running workshops
- management - I supervised one Ph.D. student and if/when I have line management responsibilities, this will have been useful preparation

**Useful sources of information**
- RAGnet (Research Administrators Group) at [http://www.ragnet.ac.uk](http://www.ragnet.ac.uk) offers support and professional development/training
- Association of University Administrators (A.U.A.) is the general body for higher education administrative staff.
Messages
At the earliest opportunity, take time out to research the options that are open to you. Try to visit other institutions, meet people, raise your profile.
Physics - Joanna

Background
Graduating with a B.Sc. in Physics and Astronomy and a Ph.D. in Theoretical Particle Physics I started contract research work in the Physics department at a Welsh University. Although the work was interesting, I was not prepared to continue indefinitely on a short-term contract and fearful of finding it more difficult to find alternative employment the longer I stayed in contract research, I decided after two years to look for a change of career. Before making the move I considered the career paths of people with theoretical physics Ph.Ds to determine the types of jobs that may be suitable, which included computer programming, city financial jobs, technical manual writing, the met office and engineering.

I decided to try telecoms engineering and, because of my technical background and being able to sell myself at an interview I found my first job after about a month, but discovered that I did not like it and left after 6 months. I let it be known that I was looking around again and through a contact I found a job as a trainee patent attorney. Now I deal with patent applications (national and international) in electronics and I am very happy with what I do.

Transferable skills development
The main skills I developed in contract research include:
. Communication - Balancing conflicting data and viewpoints and recognising the importance of enthusiasm. Asking questions to encourage participation and illustrating complex points.
. Decision making - Considering every available option to make realistic and achievable decisions. Using own experience, intuition and logic to know when a precise or estimated decision will do.
. Planning and organising - Agreeing specific, measurable, achievable, relevant and timely objectives. Planning work to achieve goals and targets, reviewing progress and revising activity as necessary.
. Interpersonal skills - Forming a clear vision for a group, fostering and developing good relations. Leading and motivating others. Reconciling individuals to create mutual respect. Delegating responsibility as appropriate.

The skills that I need to develop further include:
. Decision making - Making timely decisions and seeing through unpopular decisions
. Communication - Creating a shared vision and avoiding jargon.

Messages
Have a contingency plan for an alternative career if things do not work out. Continue developing your skills, for example learning computer languages relevant to industry (i.e. not FORTRAN). The best way to find out about an alternative career is to speak to people in a particular company or market place. Try to assess how companies treat their employees, for example, how much training do they provide and what are the medium to long term career and salary prospects. Interviews vary and the best strategy if possible is to ask advice from someone in that company or from someone who has been through that company's interview process.
Physics - Luke

Route into HE
Luke gained a B.Sc. in Physics after entering a collegiate university direct from school then moved to a southern redbrick for M.Sc. study before returning to do a Ph.D. in Physics.

Route into Contract Research
Luke continued in the same department after his Ph.D. after being offered a research position because of his reputation. This initial three year contract was followed by an additional two years before taking up an offer at a northern redbrick university following a visit to the department and an interview with his potential supervisor.

Likes about Contract Research
. Opportunity to pursue an interest in the subject and the intellectual challenge

Reasons for moving on
Luke realised that research would be a series of short term contracts and felt the need for long term security becoming more important to him than the benefits of research. He felt he needed to get a job with better long-term prospects or one that would broaden his experience.

Exploration of Options and Sources
Luke looked for vacancies in the press, especially New Scientist and the Times Higher Education Supplement. Some research related jobs such as working for the research councils, were appealing, but Luke was not successful at interview for these. Luke was unemployed (although he did some temporary administrative work) for around six months before securing his final research contract. Although he was offered a job during this time, he felt it was unsuitable and so rejected it. Luke also seized the opportunity to develop his organisational and team skills on becoming President of the Welsh Volleyball Association. In his final research position, Luke also became more aware of the issues surrounding research policy and funding which stood him in good stead when he applied for a job with a different Research Council. He felt he interviewed much better, perhaps because of what he had learned through his earlier interview experiences and after a rigorous selection procedure which included activities based on teamwork, analysis and presentations, he was offered a job as a programme manager with that Research Council. His work involves administering funding to academics, supporting them in developing applications, visiting academics and briefing them on new funding areas.

Messages for Contract Researchers
. Improve your awareness of the skills you are developing through research. Luke took part in a Research Council Graduate School and felt that this was a fantastic opportunity for researchers to develop this awareness.
. Experiencing a new environment (such as the Graduate School) can help you see yourself in a much more positive light.
. Investigate the new funding programmes from the Research Councils. It is possible for researchers on fixed term contracts to be named as co-authors on research funding applications (even though they cannot apply themselves) and evidence of ability to attract funding is a key measure of success in research.
Physics - Rob

Route into HE
Rob went to university straight from school and was awarded a first class degree in Physics with Laser Physics at a collegiate university. He then undertook a Ph.D. in the same department.

Route into Contract Research
Rob's Ph.D. led directly into his first research contract in the Physics department. After this one year contract he moved into the Chemistry department, again working in the field of laser based spectroscopy.

Nature and range of work
- Developing ideas.
- Conducting experimental work.
- Financial management.
- Liaison with suppliers to buy a system that would meet the needs of the project.
- Supervision of Ph.D. students and undergraduate research projects.
- Industrial collaboration.

Likes about Contract Research
- Able to work on the best equipment available.
- Independence.
- Freedom to decide on own style of working - hiding away to concentrate on a particular problem or line of thought or discussing work with many different people.
- The process of research - finding things out and playing with equipment!

Dislikes about Contract Research
- Insecurity.
- Not being able to apply for own research money.

Reasons for moving on
Rob felt he was fully aware of the situation facing contract researchers where there are no guarantees of future funding and was sure that he did not want to move into lecturing.

Exploration of Options and Sources
Moving between research contracts, Rob had used personal contacts and the University Careers Service. He started to look around well before the end of his second contract and was disappointed by what was on offer. There were not many vacancies in Physics World or New Scientist at the right level of experience. Having left himself almost a year to find something, Rob felt he could afford to be patient. Within a few months he saw a position advertised at the Central Laboratory of the Research Councils. The post was advertised as a three year contract but Rob believed that, unlike in academia, there was a good chance of securing a permanent position.

Rob had spent time thinking about what he wanted from his next job so he was able to highlight his strengths and give evidence to suggest that he would be able to make an early and significant contribution if appointed. He emphasised the relevance of his scientific experience, the extra breadth he had achieved by the move from Physics to
Chemistry and his ability to work independently with minimal management. Rob was invited to interview where he found that the additional experience of supervising and managing projects gave him plenty to talk about. His experience of dealing with people at a variety of levels through his research helped Rob to answer some difficult questions about his personal perspective and opinions.

Rob was successful and was pleased that, although a Ph.D. and research experience were not stated requirements when the vacancy was advertised, they were taken into account in his entry grade and salary. He was made permanent after two years and has recently secured a major promotion. Rob continues to talk to people about his work and what interests him and feels that this network would be useful should he ever decide to move on.

**Messages for Contract Researchers**

- Be aware of how what you are doing could transfer to different settings. For example, supervising students and liaising with companies proves your ability to deal with people at different levels using different styles; self-discipline and motivation are key to success in both Ph.D. and contract research.
- Don't do it for more than two years; look for something else.
- Beware of becoming too specialised.
- Think hard about what you want to do and don't let it drift - you need to do something about this sooner rather than later.
- Don't leave it too late to change; companies can be unwilling to train someone who is older and perceived as less mouldable.
Physics - Rowena

Background
After my B.Sc. and Ph.D. in Chemical Physics I worked for a total of four years, first for a Chemical Association and then for the Natural History Museum before taking a Research Associate position at a Welsh University where I researched non-linear asymmetrical couplers for low power switching and integration. I became disillusioned working on short-term contracts and with the lack of promotion and salary prospects associated with academia. I decided to stay in research but wanted to move to somewhere with more long-term security and prospects. I had only just started to look around when I saw my current job advertised in the New Scientist. I applied, was interviewed and offered the job before my contract expired, so there was a seamless transition from one to the other. Although applying for a technical post my interview was less technical than I expected as the company was more interested in me as a person rather than my technical expertise. My CV was more-or-less taken as read, therefore they focused on whether they could work with me as a person.

Now as a Principal Scientist I am involved in fundamental and applied research for mid to long term projects. I am also involved in project planning, people management and putting together project proposals.

Transferable skills development
The transferable skills that I developed during contract research work include:

. Communication - oral and written - Using simple language and conversing at the level of knowledge and understanding of others. Involving everyone and using active listening to agree outcomes.
. Planning and organising - Ensuring all necessary resources are available to achieve goals and targets.
. Levels of problem solving - Analysing, evaluating and assessing relevant data and information to identify and define the root cause of problems. Developing creative, innovative and enterprising solutions to problems.
. Teaching, training, coaching and development - Preparing and presenting information clearly and confidently and using visual aids to stimulate interest.
. Generating methods to test research work.

Developing economic models of research and undertaking theoretical and/or practical investigations.

The skills I have developed since leaving contract research include:

. Interpersonal - Managing people directly and through others, breaking down barriers to develop and build strong relationships.
. Project planning - Setting realistic time scales, reviewing progress and developing contingency plans.
. Financial planning - Costing activity and managing a budget.

Messages
While your specific expertise is important, breadth of experience and flexibility are two key factors that prospective employers look for today. It is important to make sure that you can apply yourself to tasks other than those associated with your specialism in order to maximise your chances of finding an alternative career.
The Competences displayed by Contract Research Staff who make a successful transition from one career to another

1. COMMUNICATION

1.1 Making an impact
· writes to provide evidence of suitability
· writes concisely and unambiguously, with a variety of layouts to help the reader
· presents self effectively in interviews and presentations with the intention of demonstrating strengths for the post
· asks questions to ensure the post and organisation are appropriate for the candidate
· articulates constraints (such as geographical limitations) effectively

1.2 Networking effectively
· networks with people who can influence
· uses a wide range of sources of information, both print and electronic
· builds relationships with named people in careers services or recruitment agencies
· asks questions of careers/recruitment staff to ensure that they understand what is sought and what will be suitable
· scans the environment by asking questions, visiting appropriate web sites and listening to people who might have an idea about the future

1.3. Persuading
· uses well reasoned arguments in applications, interviews and presentations
· is thoroughly prepared for application and interview - having researched the organisation and its environment and being fully self aware
· provides a range of examples of achievements which used relevant key skills

2. COGNITIVE

2.1 Positive/analytical thinking and use of judgement
· positive thinker, when things go wrong, looking forward and putting effort into next attempt
· sees potential in things which are not immediately obviously suitable
· uses judgement to assess the suitability of a post in relation to key skills, preferences and potential
· analytical thinker in identifying own strengths, key skills from experience in the present and previous positions and relating them to requirements of new posts
· makes timely decisions to take action (or not)

2.2 Lateral/creative/conceptual thinking
· lateral thinker, in looking far outside the expected posts in seeking a change - systematically assembles and presents relevant data about self and links it to qualities required for posts
· makes connections between unrelated fields of work and the application of key skills
· innovative in seeking posts and presenting oneself as a candidate
· uses initiative to make self known to people who can help

2.3 Political/Collaborative thinking
· strategic thinker, planning the 'campaign' for finding a new career
• understands the political implications of situations and events by being sensitive to
the environment in which an organisation is operating and to interview questions or
answers to candidate’s questions
• collaborates with colleagues, friends and advisers who can give advice or feedback
to help the process of changing career

3. SELF DEVELOPMENT

• undertakes voluntary work/work shadowing to get experience to help in decision
making
• uses mentors to support transition
• gets additional qualifications to help transition
• has an ongoing personal development plan which is regularly updated

4. SELF MANAGEMENT

4.1 Positive/enthusiastic
• realistic about how long things will take and expectations
• has energy
• is enthusiastic - talks with passion/sees a positive side to everything/does things does
with good spirit even when they are not preferred tasks
• responsible - works to standards expected/meets deadlines/has pride in work and self

4.2 Persistence/stamina
• persistent in making applications despite disappointments
• stamina to keep making consistently high quality applications and attend and make
an impression at interviews whilst still maintaining standards in current duties and
responsibilities

4.3 Flexible/open-minded
• flexible, in listening to feedback which requires action not previously thought of and
in applying for posts which had not appeared appropriate formerly
• open minded in applying for a range of posts which require key skills but will need a
lot of new learning as well
• inquisitive about what the world outside academia has to offer
• does not dismiss anything

4.4 Self confident and self controlled
• talks objectively about strengths, needs for development and achievements - with
evidence
• self aware - has a list of everything to offer an employer, backed by evidence for
previous performance (at work or elsewhere)
• objective - looking at things as they are - without bias from past experience
• adaptable, being willing to try new things which are necessary to progress in the
direction required to fit a career plan
• assertive
• self controlled when facing anger, disappointment, frustration and able to vent these
emotions quickly and then move forward positively
• has a clear vision for self
• insightful - knows how to build a positive reputation
5. DRIVE TO ACHIEVE

• immerses self in finding knowledge about new career field
• proactive in seeking new opportunities
• uses external resources to help achieve goals
• pays attention to detail