A word from the editors:
Dr Aneela Majid and
Professor Rhona Borts

The under-representation of women in Academia, particularly in more senior positions, has been in the spotlight lately. A recent paper in PNAS\(^1\) reported that science professors at American universities widely regard female students as less competent than males. Surprisingly, female professors were just as biased against women as their male colleagues. That’s why we decided to bring you a GENIE news that is dedicated to and celebrates women in science.

GENIE is proud to be supporting the Genetics Department Athena SWAN submission. The Athena SWAN awards recognise and celebrate good practice in recruiting, retaining and promoting women in Science, Technology and Engineering (SET) in higher education. That is why in this issue we have included a guest editorial from Professor Rhona Borts, who is heading the Genetics Athena SWAN team.

We’ve spoken to women at different stages in their development, from those who are well established in their chosen career paths to those who have a whole plethora of opportunities available to them. We think they are inspiring stories and show that there is more than one career path in Science.

We’d love to hear what you think of this special issue and as always any feedback is welcome. You can share your experiences and ideas about what works and what doesn’t work when encouraging women to undertake a career in science on our Facebook page and twitter or email us at Genetics_athenaswan@le.ac.uk
Dr Aneela Majid (editor)

It hardly seemed fair for me to ask others to write a piece on their career in science without volunteering myself. So how did I end up here?

As long as I can remember I always wanted to be a scientist and (as my parents are fond of telling me) I declared that I was going to cure cancer at the age of six. I took four science subjects at school, (chemistry, biology, physics and computer science), but really had to fight to take the combination. My teachers felt I was specialising too early on and actively discouraged me from taking more than two science subjects. I was the only girl in my physics class and one of the few who took chemistry. I remember my form tutor suggesting domestic science and typing might be more suitable choices (this was during the days when girls weren’t allowed to take metalwork or technical drawing).

Coming from an Asian background, there was quite a bit of pressure to go into Medicine and for a while I seriously considered it. In fact I actually applied to do Medicine at university, went for the interviews and was even offered a place at three universities. Luckily, after a heart to heart with my chemistry teacher, I realised that my real passion was research and I went on to do a degree in Chemistry and Biochemistry. I think my parents were a little disappointed, but I was very lucky as they supported my decision. Some of that disappointment was eased when I decided to do a PhD (they got a daughter who was a doctor after all!).

Being an Asian female scientist has been challenging at times. There is a definite lack of Asian female role models in science and a real lack of support for women who may want family and a career. Although times are changing, the pressure to conform to traditional roles for women still exists, especially for Asian women. I don’t think I am conscious of being held back in my career because of my gender but there have been times when I felt more could have been done to support women in science.

That doesn’t mean that I have not come across chauvinism during my career, most notably from one eminent American scientist (I won’t name him but he is VERY famous) who felt women should be at home not in the lab. Needless to say, he no longer inspires me!

Although I love doing research, I am really enjoying this opportunity to concentrate my efforts on reaching out to the community. I am particularly excited by the prospect of promoting science to the public and engaging with them through what we do. I hope that I can communicate my passion for genetics and research in a way that may inspire others, especially young girls, to take it up as a career. I am also excited by GENIE’s active role to promote women in science and it was one of the things that attracted me to come and work in the department.

Professor Rhona Borts (guest editor)

I have wanted to be a scientist since I won 2nd prize for my fourth grade science project looking at and learning about the amoebae and paramecium found in my local stream.

Although not a particularly outdoorsy type, Mr Barnacle (yes that was his name!) my 9th grade biology teacher instilled in me a love of all things littoral and oceanic leading me to dream of being a marine biologist. This dream was (fortunately) shattered by a number of factors. Firstly, in 1972 scuba diving was an extremely rugged sport taught only by ex-marines and other such macho people. For a young girl of 4ft 10 inches weighing in at just over 100 lbs it just wasn’t physically possible to climb down great cliffs fully tanked and weighted to dive in the surging seas of the Atlantic Ocean in March. Not quite daunted by this failure to learn to dive I still wanted to be a marine biologist. So I took a summer course only to find that I was the
only girl and was not particularly welcome. I won’t elaborate on the many foolish risks I took to prove that I was as good as any man at this, suffice it to say I was lucky to survive the summer. My dream was rapidly becoming tarnished. It finally vanished into thin air when I met the love of my life. For those of you that love solving puzzles, Genetics is for you. For those of you who love beauty and cleverness in nature, Genetics is for you. The first time I heard about DNA replication the sheer elegance of it had me hooked. My last year of University I learned about genetic recombination (one of the reasons you don’t look exactly like your mother or father but have traits from both), and I knew what I wanted to study for the rest of my life. This goal was put on hold while I went to graduate school to get a PhD studying slime moulds (not quite as icky as it sounds), I finally attained my wish with my first post-doctoral fellowship and I have happily studied yeast meiosis and recombination for the last thirty years.

Professor Annette Cashmore

I started my career in science at the University of Sussex. Initially I’d wanted to go into medicine, so I was studying science subjects as a means to an end.

I really enjoyed them and so when I didn’t secure a place at medical school, I decided to do a science degree rather than defer for a year. I’d really enjoyed my science A levels and decided I could use my science degree as a route into Medicine.

As it turned out, I really enjoyed my Biological Science degree. I loved finding out new things and working at the bench was amazing, so thoughts of doing Medicine completely went out of the window. Having completed my BSc, I was determined to do a PhD and moved to the National Institute of Medical Research (NIMR), Mill Hill, London. Here I worked with Don Williamson, who introduced me to yeast as a model organism for everything. Initially I was looking at DNA replication but focussing on small DNA molecules known as plasmids. I found you could study all the basic molecular processes that a molecular biologist would look at in yeast – it really was the ideal organism. Interestingly, at undergraduate level the male to female ratio was about 1:1, but this changed dramatically at PhD level where it was nearer to 10:1. The NIMR was quite a male-orientated environment, but despite this I never personally felt discriminated against because of my gender. There was no frustration or feeling of being held back.

I moved to Leicester in 1979 and 30 years later I’m still here! One of the main reasons I chose to stay in Leicester was the collegiate and comfortable environment. I’ve never felt my gender was an issue to career progression and there was definitely no glass ceiling holding me back. My first postdoc was in a unit called the Biocentre, a collaboration between the University and 4-5 industries. It was an exciting time when biotechnology was really taking off. Out of the 16 core scientists, I was the only female at the time, but I never felt affected by any gender issues; you could see they were apparent in the industries, but luckily not in the Biocentre.

I made the transition from the Biocentre to the Department of Genetics as a lecturer and had my first child soon after. I took 2 months of maternity leave which was a conscious decision because at the time I did feel that my career may have been affected if I’d taken longer. Also, as I’d only just taken up the appointment of lecturer, I felt that it would have been unfair of me to have taken longer. However, I didn’t feel any angst about my decision, which is perhaps more a problem for women today. I took the same amount of time out after my second child and again felt it was the right decision at the time. Now that my children have grown up, I look back and feel that I may have missed out a little bit, I also realise that there would have been no negative impact on my career, nor would I have been sacrificing my professional progression. This, in part comes from the excellent support provided by the department - throughout both maternity leaves I felt totally looked after in terms of my career. In fact this is something that is evident in the department even today. There is a good system of support in place for maternity leave, from good communication whilst staff are on leave, through to ensuring as smooth a phasing back to work as possible. This department is very encouraging
and will try and accommodate requests for flexible working hours and has even supported people who have decided they don’t want to come back after their maternity leave has finished. The same is true for GENIE: as director, I can ensure women are supported in our unit by being as flexible as possible which makes it a positive experience for everyone. However, I am aware that problems do exist and we shouldn’t pretend things are all right when they are not. One of the biggest problems we face in research is having a set amount of time and money due the nature of the grant system, and flexibility is not always easy. We must be careful in a sector where individuals appointing to these positions do not discriminate against women of childbearing age.

During my postdoc, I was offered the opportunity to undertake some teaching by the Department of Genetics and I absolutely loved it. I saw the potential for synergy between teaching and research and it has remained my philosophy since. One thing I have seen, though it has not affected me personally, is that sometimes women are given the pastoral roles that come with teaching and up until recently, this didn’t help career progression. This might be because women are perceived to be more caring/nurturing types. That hasn’t happened in the Genetics Department, where the roles are equally spread out. I am now a professor and looking back over, the Department of Genetics has played a really supportive role through major stages of my career; the outlook for women in this department is really positive.

Dr Turi King

I’ve loved science for as long as I can remember. My parents bought me a microscope (not as grand as Alec Jeffreys’ first brass-bound instrument!) when I was 8 years old and I remember spending hours examining things with it. I chose to do three sciences and maths (as well as the usual required subjects) at the equivalent of A-level and scholarship level in Canada. I was also really interested in history and archaeology, and I found a subject that combines these with science, by reading Biological Anthropology at Cambridge. It was here that I really got interested in how genetics could be applied to questions in history and archaeology. I realised that I needed to get training in molecular genetics in the form of an MSc, and people told me that the University of Leicester was the best place to go – they were right.

When I was asked to write a piece about my experience of being a woman in science I realized that from my MSc onwards my career has been entirely that of a woman with children in science. Having children has had huge impact on my training and career. Indeed I left my first PhD position because it became apparent that it wasn’t going to be a supportive environment in which to work while also raising a family.

After that experience I came back to Leicester and started another PhD. This time I was fortunate in that my supervisor, Professor Mark Jobling, took a completely different approach. What was (and still is) so important to me, is that he didn’t seem to think that just because I had children (and I had two by the time I started my PhD), that I wouldn’t be a dedicated scientist. The supportive atmosphere of his lab, and that of the department as a whole, has made all the difference to me.

Any scientist will tell you that working on a lab-based project takes serious commitment, long hours, and a real love of the subject to keep going when things aren’t going to plan. It is hard to balance children and a science career: you can never give as many hours as you’d like to either childcare or lab-work; it’s much harder to move to a new lab, because you’d have to uproot your family to go with you or move on your own; you always feel several steps behind; some people don’t seem to think you’re committed to science and side-line you; and some colleagues without children (or even colleagues with children but who don’t do much of the childcare) don’t understand the sheer slog it takes to both raise children and try to forge a career in what is a competitive field. So a supportive working environment is crucial.

I have two loves in my life – my family (I now have four children as well as a supportive husband) and my work. The reason I am where I am is because I’ve had a supervisor and a department that believes in me.
Many years ago, I did an applied Languages degree in French and German with additional translation options, and I would never, ever have imagined that one day I would be wearing a white lab coat and working with human DNA.
a PhD but I didn’t hold out much hope of getting one because of my bad track record.

Then one day I spotted one at the University of Leicester in genetics (my worst subject area at undergraduate level) but I applied, had an interview and was offered a place! I re-located from York to Leicester and 10 years after I had started my Access Course I started in the lab and began to learn all about human evolution. I loved it, I enjoyed the lab work, I had a supervisor who was supportive and helpful and finally got my PhD 4 years later.

This is also when I started to work for GENIE. I had been helping out at GENIE events as a student and then applied for a job helping set up a genetics education resource website. I got the job and 5 years later I am still here, working for GENIE, researching into genetics education. My work has taken me away from lab work and I will admit that I miss it, but at the same time, there have been so many other opportunities along the way. I am now much more involved in using new and modern technologies for genetics education, and I see my career path heading along a more educational route, perhaps with a tiny bit of lab work thrown in just to keep my hand in...

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Miss Jenna Alnajar

Growing up, I was always interested in and passionate about science, and with my father being an electronic engineer I was brought up in an environment where science was highly valued.

This led to me attending the University of Leicester to study Medical Genetics as a degree. During this period I was involved in some very interesting research projects, including one at the Medical Research Council where I was part of a group investigating the role of mitochondrial proteins in stress responses and the link with Parkinson’s disease. This was the first time that I appreciated the wider impacts of what I was studying and science in general. Science, I realised, contains the possibility of altering people’s lives and changing our understanding of the world.

Straight after my BSc I embarked on a Masters in Molecular Genetics. However, the year was hard going due to some personal issues and I finished having lost my enthusiasm for science. I went out into the wider world and took a few different jobs, while I pondered the question of what career I was now going to pursue. I considered and got offered positions in areas such as accountancy and medical sales.

I had forgotten why I had enjoyed aspects of my degree so much and had lost my passion for working in a field that I felt was worthwhile. There was something, though, that was preventing me from fully pursuing alternative jobs. I found myself perusing science positions, realised that I really missed science and wanted to expand my knowledge.

Looking around at the various opportunities, one of the things that really caught my attention were qualifications in statistics. This raised exciting possibilities of where I could take this combined with my science background – to be able to not just conduct experiments and get data but to also fully analyse them really made me very enthusiastic. I enrolled on a degree with the Open University in Maths and Statistics and got back in contact with some of my previous science tutors who were very supportive and helpful. I was involved in GENIE as a student, and it seemed very natural to take up a position there to expand my wider skills, and to take part in analysing a university wide employability survey. I am also enjoying being back in the laboratory, working on a study investigating copper and iron homeostasis in yeast.

I would not change any of my experiences as it has made me re-affirm my commitment and passion to the field of science. For me, science is not only a job but a vocation and makes me feel like I am making a worthwhile contribution.
Dr Susanna Campesan

I am an example of a woman scientist that actually is not very ambitious. And I even left science completely for eight years, but still managed to come back to it and make it work with a family of two young children.

My science career was kind of spotless when I was young: top Biology Degree from Italy, a year Erasmus exchange at the University of Leicester in the Genetics Department, which even led to a publication, a solid PhD again in the Genetics Department (with more publications). You’d think I could have a top scientific job by now (I am 45). But it didn’t go that way. Firstly I was never ambitious enough. I did love science, don’t get me wrong, and I think I was also good at it, but my problem is that I was never very sure what I actually wanted to be after my PhD. I loved working in the lab, but I never wanted the typical academic career: being a PI, a lecturer and so on. Industry didn’t seem that appealing either. I was even considering doing a Medical Degree next.

But anyway, I didn’t have much time to think about my next career move because I got pregnant. I was very happy, and decided that it was the right time to have a family, and so I started a postdoc just to buy time before the birth. Unfortunately I also learnt that you should not make too many plans in life, because my pregnancy (I was having twins!) went all wrong and I lost both babies quite late on. I was devastated, and unfortunately, at that point, my career seemed the least important thing in my life. I really wanted to have children. So I quit. I completely stopped working and put my whole energy into having more children (I was lucky enough to finally have a boy and then a girl but after another disastrous pregnancy) and into raising them. Of course I was also lucky enough that my partner was a Professor at the University and we could afford having me at home with the children.

I think I would still be at home just being a mum (I must admit I really enjoyed it, and never missed working one bit!), if it wasn’t for my current boss. He had obtained a one year grant to work on Huntington’s Disease using fruit flies as a model. Now, fruit flies were my field and my boss worked on yeast and mammalian cells so he didn’t really know much about flies. I had done my undergraduate and my PhD working with them. I also liked the medical aspect of the project (I was still toying with the idea of going into medicine). And most of all, my daughter was just about to start school. So I applied for the job. I thought I had nothing to lose, and if I didn’t like it or it didn’t work out, at least it was only one year wasted. my boss must also have thought the same, because he took a gamble on me (he must have realized, when we chatted, that I could not remember much about my scientific past!) and gave me the job. (I guess he was also kind of desperate since nobody else seemed to want a one year only postdoc in Leicester on fruit flies!). But anyway, there you go, I was back at the Genetics Department after a whole eight years away!

I think I was in shock for at least six months. When I took my eight year gap I was not planning a comeback, so I had not kept up at all with anything scientific! It was hard even concentrating on the smallest task. And I found juggling experiments and children was not easy, even though I was only working part time. Fly work demanded visits to the lab in the evenings and most weekends. Neither I nor the children were used to compromising our fun and quality time together, but it had to be done.

And guess what? After five years I am still here. I got a lot of interesting results in that first year which primed another two grants and our Huntington’s fly team has grown from just me, to three postdocs and a PhD student. I won’t say it is perfect. I am still rushing like mad every day to finish in time so that I can pick up my kids from school. And I still feel I am quite incompetent since I missed out a big chunk of scientific developments when I was away. But I just try to take it day by day and experiment by experiment. I really try to prioritise on what really needs to be done (both in the lab and at home). Luckily both my boss and my partner are very understanding and very helpful (my boss even babysat for me once, so I could come to the lab!; and my partner will even come in and collect flies for me late at night if I’m too exhausted). And I still don’t know where I will be in five years’ time. However, as things are going at the moment, I could well still be here, exactly on the same (low) rung of the academic ladder. And to be honest, I don’t really mind that...
Other news

Recently GENIE was invited to attend the school assembly at Leicester High School for Girls. It was an excellent opportunity for Dr Chris Cane to give an insight into some of the varied research done at the Department of Genetics. Dr Majid also attended and gave an introduction to the work GENIE is doing to support the department’s Athena Swan bid.

Here is what the students had to say about our outreach activities:

“The Outreach program fills young budding scientists with confidence, as they hear about the ever-growing success of science. Currently, many young women feel uninspired about science, particularly as the media portrays men as the predominant gender through the many documentaries they present. This is what needs to be dealt with, and the Outreach program does exactly this. It provides plentiful information about the variety of futures science could present, for example in research, publishing and even communication. This information is what inspires young people to develop interests without the fear of not knowing where it could take them. Furthermore, the first-hand experience in a practical setting such as the Genetics Labs at Leicester University, allows young women to see science in a real-life setting, enabling them to visualise themselves in a similar setting. Moreover, learning about the many advancements in science, for example Genetic Fingerprinting, could excite young people into wanting to be part of such a success. The Outreach program is succeeding in making science more accessible for girls; the information, inspiration and hope it provides emboldens young women across the country to take part in one of the most vital aspects of this day and age.”

Aruna, year 13 student

Upcoming events

Research day
The Genome Science research theme of the College of Medicine, Biological Sciences & Psychology is organising a research day on the 25th of January, entitled ‘Celebrating Women in Science: Genomics approaches to Biological questions’. The event will feature invited external speakers (Liz Wellington, University of Warwick, and Elizabeth Murchison, Wellcome Trust Sanger Institute) together with young investigators of both sexes from within the College, and as well as a showcase for excellent science, will act as a forum for discussion of some of the issues and problems that lead to the gender imbalance in SET careers. Readers interested in learning more, or participating, should contact Mark Jobling maj4@le.ac.uk

GENIE public engagement lecture
Our next public engagement lecture takes place on March 12th 2013 at 6.30pm. The first speaker will be Dr Julian Barwell, a senior lecturer in the Department of Genetics and an honorary consultant at the Leicester Royal Infirmary whose talk is entitled ‘supporting and protecting families with cancer in our local community’. Our second speaker is Dr Blair Grubb from the Department of Cell Physiology and Pharmacology, whose talk is rather intriguingly called ‘red hot chilli peppers’. The lectures will take place in the Frank and Katherine May lecture theatre, Henry Wellcome building. To book your place, or for further information, please email: genie@le.ac.uk

References: