

Fran Balkwill

Fran Balkwill was born in 1952 and spent her childhood in south-west London, obtaining a scholarship to attend Surbiton High School when she was 11. She obtained a BSc in Cellular Pathology at the University of Bristol, a new degree course devised by Tony Epstein with the aim of preparing undergraduates for a career in biomedical science. For her PhD she studied leukaemia cell biology in the Medical Oncology Department at St Bartholomew's Hospital under the late Gordon Hamilton-Fairley. Her postdoctoral research was carried out in Joyce Taylor-Papadimitriou's laboratory at ICRF Lincoln's Inn Fields (now the Cancer Research UK London Research Institute), where she began to study the interferons and their potential as cancer therapies. Owing to the influence of Joyce Taylor-Papadimitriou, ICRF became involved in clinical trials with interferons and Fran left Lincoln's Inn Fields to set up a small laboratory that analysed patient samples from the clinical trials. Two years later Fran returned to ICRF, where she first worked on the therapeutic potential of interferons and other cytokines. Throughout her career Fran has been interested in translating lab research to clinical practice, and in 2000 she moved to Queen Mary, University of London, where she is Professor of Cancer Biology and Director of the Centre for Translational Oncology in the Cancer Research UK Clinical Cancer Centre.

Fran's early work on interferons was the start of a lifelong interest in the cytokine network and its relevance to cancer. Her work has led to the realisation that cancers possess a complex cytokine network, that a pro-inflammatory tumour micro-environment is involved in tumour promotion and spread, and that there are strong links between the processes of chronic inflammation and cancer. In addition to carrying out laboratory research, Fran has written many children's books about science and is Director of The Centre of the Cell, a project to build a science centre for children in the new Barts and The



Fran Balkwill with her two children, Jessica and Barnaby, in 1988.

London Medical School building in Whitechapel, east London.

In the interview that follows, Fiona Watt, Editor-in-Chief of JCS, asks Fran about her experiences as a woman in science.

FMW: *What changes for women in science have you observed during the course of your career?*

FB: It was very helpful that, when I was a postdoc, my first lab head (Joyce Taylor-Papadimitriou) was a working mother, at a time when this was relatively rare. Inspired by the equal rights movement, I was determined to return to work as soon as possible after the birth of my daughter – this was still considered somewhat unusual. I remember that during my first pregnancy several doctors (male) were worried about the impact of my career on the pregnancy and I was encouraged to give up work on several occasions.

My daughter, Jessica, was born in 1980. When she was just six weeks old, I was due to talk at the annual ICRF meeting at Wye College in Kent. As I was breastfeeding, the only way I could attend was by bringing along baby and nanny. My request for accommodation for all three of us was met with complete horror! The (male) administration at ICRF were scared that this would set a precedent and that everyone would want to bring their kids along to such meetings. I persisted and in the end we were given a cottage in Wye village for the duration. I was very discreet; few people knew that I had a baby in tow – until the last

day. Jessica was in a particularly good mood, so I put her in a sling and joined the lunch queue. I remember that there was quite a stir. I'm pleased to report that this did set a precedent, and in subsequent years it became accepted that young babies would always be accommodated at these ICRF meetings.

The attitude of society to working mothers is now completely different. It is more widely accepted that mothers can choose what is best for them: to work full-time, part-time or take a career break. However, I do not think that these options are any easier than they were twenty years ago. For working-mother scientists the latter two options are especially difficult in terms of establishing and maintaining a successful research career. I know of several women who have struggled and ultimately given up their aspirations for a career in scientific research, moving into science administration because they are able to work defined hours and do more work from home. Others have given up altogether. Adequate and affordable childcare still seems to be an issue. However, on a more positive note, it seems that there is more equality in terms of domestic responsibilities these days and the male scientists I work with really do their equal share of child care (or at least this is their aspiration!).

While there are many more women scientists now than when I was starting my career, the public's perception of scientists has not changed at all. I find the image that young people have of scientists to be particularly worrying. As

part of our research for The Centre of the Cell project, Deborah White and Amrita Agrawal evaluated children's perceptions of science and scientists. They carried out a survey of 1000 school children in east London, many of whom are from economically deprived Bangladeshi families. The children's image of a scientist was a white, middle-aged man, with glasses, untidy hair, a beard and scruffy shoes. They rarely thought of scientists as women. One young girl did draw us a picture of a female scientist – the written description under this drawing said that the lady was 30, wore old-fashioned clothes, glasses – and had a beard! I feel strongly that it is incumbent on women in science to try and change those stereotypes. Our survey also revealed that the young people did not consider science as a career at all. If they had any aspirations in the area of medicine, it was to be a doctor. They thought that you would be a scientist only if you weren't good enough to be a doctor! At The Centre of the Cell, one of our three themes will be Life Scientists, the People who study Life. We will be featuring the stories of real scientists, and they will be a diverse and representative group in terms of age, sex and race.

FMW: *How has your research career impacted on your personal life and vice versa?*

FB: My daughter Jessica was followed, in 1984, by my son Barnaby. They have had a major impact on my career, particularly in terms of my science communication work. In 1989, I began writing science books for children in partnership with the designer and illustrator Mic Rolph. The reason I started writing science books was to explain to Jessica and Barnaby what I did all day (not that they bothered to read the books once they were published!). I have now authored 13 children's books and edited a further seven, and I'm proud to say that in 2004

I received an EMBO Award for Communication in the Life Sciences.

Aside from stimulating me to write books, the other major impact my children had on my career was to keep me from working abroad. I did not gain experience in a lab in the USA or mainland Europe, and I based my entire career in London, because I wanted my children to have a stable home and schooling in the UK. I think this may have been a negative aspect, but as I have always had major collaborations in Europe and the USA, and so travel a great deal, I cannot be sure.

My experience and strong belief is that if a woman scientist can struggle through, and manage to combine work and home reasonably successfully, then the gains are enormous. I feel so privileged to have a career that is all-absorbing and never boring. My children have both left home and are happy and established in their own lives. I feel that I can make a strong and continuing contribution to the lives of my son and daughter because of what I have learnt, and am still learning, in my working life. Conversely, my experience of raising a family has greatly influenced the way I run my working life and manage my staff (hopefully in a positive way!).

FMW: *Do you feel that being a woman is an inherent advantage/disadvantage for a career in science? Why?*

FB: For women in science, whether they have children or not, I don't think it is any tougher than for men. Science is a tough and insecure profession. We need to improve the career structure. It is not surprising that fewer teenagers are choosing science subjects at university. Providing that childcare and other domestic responsibilities are manageable, then gender should not, and in my experience does not, impact on a career in science. Indeed it can sometimes be an advantage to be the only female!

FMW: *What are your remaining career ambitions?*

FB: In terms of research, my ambition is to understand further the contribution of the pro-inflammatory stroma to the malignant transformation of genetically damaged cells and to continue translating our work into clinical trials. I would also like to be involved in the development of novel, non-invasive methods to understand the actions of biological therapies in cancer patients. I think that the next 10 years will be very exciting in terms of moving forward our basic knowledge and pre-clinical experiments into carefully devised clinical trials that will give the maximum of scientific information on mechanisms of action.

In terms of science communication, my ambition is to establish The Centre of the Cell as a unique and world-class science centre that will raise the social aspirations of the children of east London and beyond, through a memorable and exciting learning experience. The centre will be accompanied by a website, e-learning and outreach programmes that aim to impact on young people's understanding of cell and biomedical science, of scientists and of health care professionals.

Finally, my latest book is part of a project to teach African children about the science of HIV/AIDS. It is called *You, Me and HIV*. I am hoping that it will be given free to many thousands of children in sub-Saharan Africa and beyond, and that, in some small way, it may contribute to the campaign against this devastating pandemic.

*Journal of Cell Science 118, 1339-1340
Published by The Company of Biologists 2005
doi:10.1242/jcs.01688*

*Feedback on our series of **Women in Cell Science** articles is always welcome and should be emailed to wics@biologists.com*