Thought for the Day - from a former Chairman of BSMB

"How about writing a few words for the Newsletter, Roger", said a member of the BSMB Committee. It was more of a command than a request and, conscious of the fact that this same Committee member had organised a superb BSMB meeting on the "Molecular Basis of Fibrosis" in 2003, to mark my retirement, I heard myself agreeing that I would try to write something. Since that memorable meeting I've continued in research on a part time basis, which has been a lot of fun. However I remember Helen Muir's words of wisdom when she worked as an Emeritus Professor in my old department. A scientist's career she said was punctuated by appearances in front of ones colleagues. In the early stages, as a graduate student or young post-doc, one applied to meetings to be given a ten minute slot for a podium presentation, to be followed by difficult questions. After a while, when one became more established, one was invited to give twenty minute presentations, still followed by difficult questions. At a later stage, now having achieved the cherished "international reputation" in one's field of research, one was invited to deliver plenary lectures of thirty minutes, with no questions allowed afterwards. Finally, after retirement, one was invited to open new laboratory buildings and, whatever was said, it was forgotten by those present as soon as the ribbon was cut! Never having attained Helen's scientific distinction, I have no experience of opening buildings. However I think the story illustrates nicely the pitfalls of trying to communicate anything other than hard scientific data to colleagues once one has retired! So dear reader, if at this point you decide that time would be better spent looking over that new research paper, I shall not be disappointed!

I had the good fortune to have the comic actress Janet Brown as my next door neighbour for some years. She was the one who took off Mrs Thatcher so brilliantly on stage and television, and she was as funny when having a cup of tea with a neighbour as she was in front of an audience. Comparing notes about what gave us satisfaction in our respective jobs, she was amazed to learn from me that, after giving a fifty minute lecture to a class of undergraduates, one merely closed down the session by answering any questions, and then left the lecture theatre without any applause from the audience. Applause was the life blood of any actor, she said, and without receiving a daily dose of it, an actor simply could not continue to give performances. The reward for a good performance was enthusiastic applause. So what makes us want to be scientists and what reward does science bring? You may get a little polite applause after delivering a research paper – but then come those difficult questions! Hardly a rewarding experience, even when things go well, to compare with the actors standing ovation after giving a fantastic performance! And in any case, most of the time, a researcher works in the laboratory carrying out experiments, and only occasionally presents the results of his or her endeavours in front of colleagues. I would argue that science brings two great rewards to its practitioners. The first is, of course, the excitement of making a new discovery, of observing something in the natural world which no other mortal has seen before. It does not necessarily have to be a big discovery – even little ones fire you up. And it's something that you never tire of! Each time it happens, you are fired up with equal intensity and this drives you to futher efforts. The second reward is less tangible but, I think, just as important. Being a scientist allows you to passionately follow your own ideas – a privilege not generally afforded to many other people in other jobs. John Ziman FRS, formerly professor of theoretical physics at Bristol, has drawn attention to this in his book Real Science [University Press Cambridge, 2000] and to the point that such autonomy of thinking is in contradiction to the general concept that scientists are humble, impersonal and disinterested in their pursuit of knowledge. He argues that it is only the accepted style and approach of scientific communication, oral or written, which engenders the view that scientists are humble, disinterested, etc. In fact, in contrast, at an individual level, scientists enjoy, and are rewarded by the sense of, "doing their own thing" – sometimes to the point of vanity. So, all of you who have a secret longing to be a super rock star – relax, you are already behaving like one!

Where do we stand currently as scientists researching extracellular matrix biology? Others have pointed out that "ECM biology rests on a solid historical foundation of macromolecular chemistry and structural investigations of matrix components as parts of a sophisticated scaffold for cell attachment, migration and differentiation. Given this history, it is understandable that the regulatory roles of extracellular matrix molecules were recognized only slowly and not without some initial resistance" [From the Editors Desk, Matrix Biology (2006) 25, 269-270]. I contend enthusiastically that our present horizons are distant and wide – in other words there is a lot of room for those who are interested in this field to follow their own ideas and to make original and important discoveries – as long as you embrace the ideas and technology of modern biology as a whole! It's still clearly important to have structural biologists who unravel the mysteries of the structure of a particular extracellular protein. However most of us will need to be take on board such things as cell signalling, the control of gene transcription, translational modification, cellular pathways of secretion, interaction between the cell surface and the ECM, outside-in signalling and inside-out signalling, – to name but a few processes – if we are to make rapid progress with understanding the importance of the ECM and the disorders which affect it. Clearly one cannot be an expert in all these and other necessary technical fields such as contemporary molecular imaging. Thus whilst the matrix biologist must, of course, have a good overall biological background knowledge, the way forward in research in this field is to think in terms of collaborating with those who can contribute the expertise required to solve a particular question.

Remember also the importance of *in vivo* studies to advance our knowledge of the ECM. Today it is common practice to knock-out or over express genes in mice, or to study naturally occurring mutations, to test whether their function *in vivo* really corresponds to that suggested by all those tightly controlled *in vitro* experiments. Interestingly this is not really a novel concept! William Harvey (1578-1657), discoverer of the circulation, advised us that "Nature is nowhere more accustomed more openly to display her secret mysteries than in cases where she shows traces of her workings apart from the beaten path". He continued "nor is there any better way to advance the proper practice of medicine than to give our minds to the discovery of the usual law of Nature than by careful investigation of cases of the rarer forms of disease" – the equivalent of our mutant mice today. This is some of the best advice to a biological investigator that I know – and perhaps an example of the fact that what goes around in one era, surfaces, and comes around in another!