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REASON FOR NOMINATION

David Colquhoun has made major contributions to our understanding of how ion channels (proteins which allow charged ions to pass across cell membranes) function to mediate electrical signaling in nerve and muscle cells. This work elegantly combines experimental and theoretical aspects, and resulted in David being made a Fellow of the Royal Society. David played a key role in resisting the notion that UCL should merge with Imperial College in 2002, by running a website opposed to the merger. He thus facilitated the continued existence of an independent UCL. He is also well-known for his principled opposition to therapies that are not based on scientific evidence, and for his blog which comments on this issue as well as on university bureaucracy and politics.

WHAT IS YOUR RESPONSE TO BEING NOMINATED?

Astounded!

WHAT HAS YOUR CAREER PATH BEEN?

My first job (in 1950s) was as an apprentice pharmacist in Timothy Whites & Taylors (Homeopathic Chemists) in Grange Road, Birkenhead. You can't get a more humble start than that. But it got me interested in drugs, and thanks to my schoolmaster father, I got to the University of Leeds.

One of the courses involved some statistics, and that interested me. I think I made a semi-conscious decision that it would be sensible to be good at something that others were bad at, so I learned quite a lot of statistics and mathematics. I recall buying a Methuen's Monograph on Determinants and Matrices in my final year, and, with the help of an Argentinian PhD student in physical chemistry (not my lecturers) I began to make sense of it.

I purposely went into my final viva with it sticking out of my pocket. The examiner was Walter Perry, then professor of Pharmacology in Edinburgh (he later did a great job setting up the Open University). That's how I came to be a PhD student in Edinburgh.

Although Perry was one of my supervisors, the only time I saw him was when he came into my lab between committee meetings for a cigarette. But he did make me an honorary lecturer so I could join the Staff Club, where I made many friends, including a young physics lecturer called Peter Higgs. The staff club exists no longer, having been destroyed in one of

those acts of short-sighted academic vandalism that vice-chancellors seem so fond of.

The great university expansion in the 1960s made it easy to get a job. The most famous pharmacology department in the world was at UCL so I asked someone to introduce me to its then head, Heinz Schild, and asked him if he had a job. While interned during WW2 he had written a paper on the statistics of biological assay and wanted someone to teach it to students, so I got a job (in 1964), and have been at UCL ever since apart from 9 years. Between 1964 and 1970 I published little, but learned a great deal by writing a textbook on statistics.

That sort of statistics is now thought too difficult for undergraduates, and the famous department that attracted me was itself destroyed in another act of academic vandalism, in 2007.

I have spent my life doing things that I enjoy. Such success as I've had, I attribute to a liking for spending time with people cleverer than I am, and wasting time drinking coffee. I found a very clever statistician, Alan Hawkes, in the Housman Room in the late 1960s, and we began to collaborate on the theory of single ion channel analysis in a series of papers that still isn't quite finished. He did the hard mathematics, but I knew enough about it to write it up in a more or less comprehensible form and to write computer programs to evaluate the algebra. When I got stuck, I would often ask Hyman Kestelman (co-author of the famous mathematics textbook, Massie & Kestelman) to explain, usually in what was then the Joint Staff Common Room at lunch time (it is now the Haldane room, the common room having been confiscated by

unenlightened management). Before leaving for the USA in 1970, in league with the then Professor of French, Brian Woledge, I eventually got through a motion that allowed women into the Housman room.

I'd also talk as much as I could to Bernard Katz, whom I asked to submit the first theoretical paper by Hawkes and I to the Royal Society. His comments on the first draft led to the published version making a prediction about single ion channel behaviour before channels could be observed.

The next step was sheer luck. As this was going on, two young Germans, Neher & Sakmann, succeeded in observing the tiny currents that flow through single ion channel molecules, so it became possible to test the theory. In series of visits to Göttingen, Sakmann and I did experiments late into the night. Neher & Sakmann got a well-deserved Nobel Prize in 1991, and I expect I benefitted from a bit of reflected glory.

The work that I have done is nothing if not basic. It doesn't fit in with the current vogue for translational research (most of which will fail), although I would regard it as laying the basis for rational drug design. My only regret is that rational drug design has proved to be so difficult that it won't be achieved in my lifetime (please don't believe the hype).

WHAT HAVE BEEN THE HIGHS (AND THE LOWS?) OF YOUR CAREER SO FAR?

The highs have been the chance to work with brilliant people and write a handful of papers that have a chance of having a lasting influence. Because I have been able to take my time on those projects there haven't been too many lows, apart from observing the

continuous loss of academic integrity caused by the intense pressure to publish or perish, and the progressive decline in collegiality in universities caused by that pressure combined with the rise in power of managerialism. Luckily the advent of blogs has allowed me to do a little about that.

I'm saddened by the fact that the innumeracy of biologists that I noticed as an undergraduate has not really improved at all (though I don't believe it is worse). Most biologists still have difficulty with even the simplest equations. Worse still, they don't know enough maths to communicate their problem to a mathematician, so only too often one sees collaborations with mathematicians produce useless results.

The only real failure I've had was when, in a fit of vanity, I applied for the chair of Pharmacology in Oxford, in 1984, and failed to get it. But in retrospect that was really a success too. I would have hated the flummery of Oxford, and as Head of Department (an increasingly unattractive job) I would have spent my time on pushing paper, not ion channels. In retrospect, it was a lucky escape. UCL is my sort of place (most of the time).

WHAT ADVICE WOULD YOU GIVE TO PEOPLE FINISHING OFF THEIR PHD?

My career course would be almost impossible now. In fact it is very likely that I would have been fired before I got going in the present climate. There were quite long periods when I didn't publish much. I was learning the tools of my trade, both mathematical and experimental. Now there is no time to do that. You are under pressure to publish a paper a week (for the glory of your PI and your university) and probably rarely find time to leave the lab to talk to inspiring people. If you are given any courses they'll probably be in some inane HR nonsense, not in algebra. That is one reason we started our summer workshop, though bizarrely that has now been dropped by the Graduate School in favour of Advanced PowerPoint.

The plight of recent PhDs is dire. Too many are taken on (for the benefit of the university, not of the student) and there aren't many academic jobs. If you want to stay in academia, all I can suggest is that you get good at doing something that other people can't do, and to resist the pressure to publish dozens of trivial papers. Try to maintain some academic integrity despite the many pressures to do the opposite that are imposed on

you by your elders (but not always betters). That may or may not be enough to get you the job that you want, but at least you'll be able to hold your head high.

HOW DO YOU KEEP MOTIVATED?

Work-life balance is much talked about by HR, though they are one of the reasons why it is now almost impossible. In the past it wasn't a great problem. I'm fascinated by the problems that I'm trying to puzzle out. I've had periods of a year or two when things haven't gone well and I've felt as though I was a failure, but luckily they haven't lasted too long, and they occurred in a time before some idiotic performance manager would harass you for ailing to publish for a year or two. The climate of "performance management" is doing a lot to kill innovation and creativity.

WHAT DO YOU DO WHEN ARE NOT WORKING IN SLMS?

I've had various phases. For a while I carried on boxing (which had been compulsory at school). When I was first at UCL in 1964 I bought a 21 foot sloop (and as a consequence could barely afford to eat), and in 1970 (at Yale) I learned to fly. I had a lot of fun sailing right up to the early 1980s, when I found I could not afford a son as well as a boat. That was when running came into fashion and that could be done for the price of a pair of shoes. I did marathons and half marathons for fun (London in 1988 was great fun). And that was supplanted by walking country trails in the early 2000s.

There is never a clear division between work and play, especially with algebra. You can continue to struggle with a derivation on a boat, or even get a new angle on it while running. That, of course, is why the UCL Transparency Review is such total nonsense.

The main cause of stress has never been work for me. Stress comes mainly from the imposition of dim-witted managerialism and incompetent HR policies. And that has become progressively worse. I doubt that if I were a young academic now I'd have the time to spend the weekend sailing. I'm not sure whether the blogging that has taken up something like half my time since my nominal retirement in 2004 counts as work or not. It certainly depends on things that I have learned in my academic work. And it's fun to have effects in the real world after a life spent on problems that many would regard as esoteric.