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XI TTS BASIC SCIENCE SYMPOSIUM

I ESOT BASIC SCIENCE MEETING

On Thursday the 12th of March 2009, Peter Doherty, Laureate of the Nobel Prize in Physiology or Medicine 1996, will address the first joint ESOT and TTS Basic Science Symposium at the Plaza Hotel in Brussels. As a prelude to this meeting, in the following interview conducted by Michel Braun, Peter Doherty shares his views on how to be successful in science

Michel Braun - As you know, the first joint Basic Science Meeting of the European Society for Organ Transplantation and Basic Science Symposium of the Transplantation Society will take place in Brussels in March 2009. This congress aims at promoting basic research in the field of Transplantation and most particularly among scientists of the younger generation. Obtaining the Nobel Prize is probably the secret dream of all young researchers. This dream became a reality for you thirteen years ago. At the time, had you ever imagined that the result of your research would be rewarded by the Nobel Prize?

Peter Doherty - Well, it depends what you mean by "at the time", Michel, but basically, when we made the discovery, which was way back in 1973-74, and the Nobel Prize was awarded in 1996, we knew that we had made a big finding. At that time, we were able to do some very good experiments because the cytotoxic T cell assay system we had at our disposal was much more powerful than what other people were using. It was based on studies from the transplantation world, particularly, the work of Jean-Charles Cerottini and Teddy Brunner, but adapted to look at viral immunity. So we knew it was big, but the other thing apart from the discovery itself, we also proposed a hypothesis which was the single T cell receptor/alterd-self concept. We did not know where that would go and it took another ten years after our discovery for other people to do the molecular work that supported our interpretation. So, I think the combination of the discovery and the interpretation being right was what got us eventually the Nobel Prize. The Nobel Prize, in essence, was possibly delayed because in 1980, they gave the prize for the discovery of the major histocompatibility complex to Daussey, Benaceraf and Snell and what we really discovered was the biological role of that complex.

Michel Braun - Did the Nobel Prize change your life and in what way?

Peter Doherty - Well of course it does change your life because I am a basic scientist and like most of us we are very much orientated to the lab and our own research field. I had occasionally been involved in commenting on broader issues but not very much, so

even though I was well known in immunology, I was unknown outside immunology. The Nobel Prize puts you in the public arena and you find yourself talking to a lot more diverse groups of people. Now you can either take that up and make something of it, or you can minimize it and the whole thing would go away reasonably quickly,

but for a particular reason, probably being made the Australian of the Year the following year, even though I was living in the United States, I got very much on the public scene.



Michel Braun - What is your every day life like today?

Peter Doherty - Well, I am part of two research programs. One is at St Jude's Children Research Hospital in Memphis where I was when I won the Nobel Prize and I had been for eight years. We still got some very strong basic research going on on influenza immunity, particularly on the innate side. I spend about three months every year here in Memphis but I am spending nine months in Melbourne where we have a major program looking at CD8 T cell immunity. That is basically funded from Australian sources and, really, is in the theme of what we were doing right back when we did the initial work that got us the Nobel Prize. On the top of that, I have been writing a couple of books! I wrote a book called "The beginner's guide to winning the Nobel Prize" which is also published in German and another book called "A light history of hot air" where I researched and developed an understanding of the climate change issue.

Michel Braun - What is for you the most exciting research area in immunology today?

Peter Doherty - There are a number of areas that remain very challenging and they are not necessarily going ahead all that quickly. We have got an enormous

amount of new information coming on because of the new molecular technologies but the real big challenges for Immunology are proving very tough. I mean if you are looking at the transplantation field we have had this Immune Tolerance Network for a long time in the United States but we still have not gone anywhere, as far as I am aware, with tolerising T cells so that you do not get rejection but you can still have the T cells in the system. Of course we made tremendous advances in transplantation with drugs but proper immunotherapeutic tools are still missing in transplantation. We made some progress and techniques in autoimmune diseases with things like the anti-TNF antibodies and other blocking reagents but, on

“ Nothing is written in stone in this science! “

the other hand, we have not really developed any much better understanding of what is causing those diseases like multiple sclerosis and rheumatoid arthritis. The other big challenge that faces us is to really understand these regulatory T cells and whether we can exploit them in medicine. There are a number of big challenges there, but they do not move all that fast. The regulatory area seems to be moving quicker than most at the moment. Then, of course, there are still challenges in viral immunity. We do not know how to make an AIDS vaccine, that is just a fact, and we will have to have some major breakthrough in understanding and techniques if we are going to achieve that.

Michel Braun - As you know our meeting will be attended mostly by young scientists and PhD students. According to you, what are the qualities required to be successful in science?

Peter Doherty - The qualities you need to be successful in the scientific career are the qualities you need to be successful in most things. One thing is you have to focus very hard and work very hard at what you are doing and try to master it. From some of the recent books, particularly one written by Malcolm Gladwell, you have to spend ten years doing it. I mean you really need to get confidence, both intellectual and technical confidence, at least early in your career. The second thing you have to do to be successful in science is to learn to look very closely at your data. One of the big mistakes a lot of young scientists make is to get carried away with some sort of intellectual or conceptual arguments and to try to fit every thing they find into those arguments. These are very often pushed by very powerful individuals and the younger persons can get the sense that the whole thing is written in stone. Nothing is written in stone in this science! I mean it is a very complex science, but what you really hope to do is look very hard at the results you are generating and interpret them for yourself with discussion. The other thing is to talk to people about the results. Talk to people and discuss. Two minds are often better than one. Think of Watson and Crick with the discovery of DNA for

instance. Now the other thing you have to do at some stage is to learn to write properly and write fairly in English. That is often more of a barrier to people who were brought up speaking in English because they do not learn the grammar properly. You may have an advantage if you were brought up in Belgium or somewhere where you have to speak in French or Walloon and then have to learn English.

Michel Braun - My next question is: what would be your advice to young people wishing to undertake a scientific career?

Peter Doherty - It depends on the type of personality. If you are the sort of person who likes to go in great depth with things, if you content to really go into great depth, looking at things rather than people for instance, science is a good thing to do. The other great thing about science is that it does not matter who your dad is,

“Talk to people and discuss. Two minds are always better than one.”

how powerful he is, how rich is your family. It does not matter if you went to a fancy school or a not fancy school. It does not really matter whether your skin is black, yellow or white. All it matters is how good you are and there are not that many fields where this is actually true. So again that can be a powerful motivating force. A lot of the young scientists we see and, of course, who are doing very well, are coming from the developing countries, because at the end of the analysis if they are good there is no discrimination against them.

Michel Braun - My last question will be a more personal one. How was Peter Doherty in his early twenties? Did you know at that time what you wanted to achieve professionally?

Peter Doherty - He was a kind of a bit pathetic, actually. I trained originally as a vet, a veterinary scientist. I think I would have been quite happy running a rural veterinary practice in Australia with the big agriculture industries in the outback. I do not think I would have wanted to be involved with dogs and cats. I could have done that and I did some of that for a while, but you know, I have always been somehow an over-intellectualised person and science really suits that type of personality. So I was always thinking broadly about a lot of different issues, arguing a lot, and discussing a lot. It just happened I fell into something I was good at and that happens to a lot of us,

Michel Braun - Thank you very much, Peter Doherty. We look forward to meeting you in Brussels.