Endowed Chair in Rheumatology: Dr. Hani El-Gabalawy

What attracted you to the field of rheumatology? Were there any other fields of medicine that you considered?

When I was an internal medicine resident at McGill University I had some very good mentors. As with most people, it is usually a mentor who inspires you, as opposed to necessarily a specific kind of personal liking. During that time I had some very good mentors, and I did a research project, in fact, with one of them and got some very exciting results. As a result of it I was hooked on both investigation and the field of rheumatology and immunology. They were new, they were things that people had not seen before, and I was caught up in the thrill of discovery. We were working on immune responses in the cord blood to see if the lymphocytes behaved any differently from other lymphocytes and how this may potentially explain why autoimmune diseases get better during pregnancy. As a result of that I got to understand a little bit about the biological basis for autoimmune diseases and rheumatic diseases and I was really hooked.

I was looking also at respirology, chest medicine, for similar reasons. But I think I was drawn more toward rheumatology because I got engaged with my mentors at McGill University and wanted to continue working with them. At that time, there were three people who probably had the most influence on me: one was Dr. Kirk Osterland, the other was Dr. Norbert (Nobby) Gilmore, who was an immunologist, and the other person was Dr. Jacob (Jack) Karsh. They were pretty influential in my decision to go into rheumatology. I trained with them, and though I really never did any more research with any of them, they were my inspiration for always asking questions.

I actually did have a bit of a circuitous route, in that when I was finished my residency, primarily because of personal circumstances, I went into practice for a number of years before I came back to the academic environment. For five years I was in private practice and then when I came back into the academic environment, here at the University of Manitoba, many of the same questions that I had were still lingering in my mind from my training period. I had actually tried to pursue [these questions] on my own in a non-academic environment, but I felt that if I was going to do them justice and be able to be an effective investigator I needed to be in a university setting where I could have collaborators and I could have facilities and so on.

What areas of research are of the greatest interest to you at the present time and why?

My questions have always focused on rheumatoid arthritis (RA), and very broadly speaking they are: why does the disease start and why does the disease not stop? I spent a lot of time trying to understand the mechanisms of inflammation in the joint by looking at samples of synovial tissue in the joint and became quite an authority on the synovium and how it becomes inflamed, how it potentially causes damage to the joint, to the point where I have written chapters in the textbooks of rheumatology on synovial inflammation and so on.

More recently, I have been interested in why the disease starts, and so my research has taken me to the aboriginal community, who frequently get severe RA at an early age. We got some funding a number of years ago to look at the family members of First Nations people with RA. We are particularly focused on the population in Manitoba and Saskatchewan, the Cree and Ojibway population, in which RA is quite common and severe. So, we look at their family members, and consider genetics and environmental factors, and how the immune system becomes abnormal before the disease develops, and then how these abnormalities evolve to become the clinically detectable disease. We are now working with a consortium of international investigators based in the U.S. and in Europe on ways of preventing RA in these high-risk individuals. We have actually got a very exciting new protocol that is under development, in which we hope to develop preventative strategies for individuals at

high risk for disease development. Studying the First Nations people has been really instrumental in allowing us to get to this point; we have a big research group working in this area and we go up to Northern communities in Manitoba. We feel that it is also important, as we do our research, to improve the rheumatologic care of these communities by providing them early access to specialized care. So, it has really worked out quite well.

In today's uncertain economic climate, what concerns do you have about the recruitment and training of new rheumatologists and what do you think should be done?
I have been program director, and I have been a division head over the last number of years; in this time, I have seen an erosion of interest in the area of rheumatology, particularly in Canada, at a time when things are just becoming really exciting in terms of therapeutics and what we have to offer. Now, part of that is related to some financial disincentives, in that it is a thinking specialty as opposed to a procedure-orientated specialty. There are, however, a number of factors that are complex, that have interacted to really impact on our ability to get the best and the brightest. Dr. John Hanly has done work at Dalhousie for the past 15 years, getting surveys out every year and keeping track of manpower in Canada in rheumatology. Over the next five years, it is estimated that 25% of the academic rheumatology manpower is going to disappear and we are very concerned as to who is going to replace them. Who are going to be the teachers? Who are going to be the researchers? Who are going to be the educators?

We have been more successful at getting individuals to go into clinical practice. I think we have almost held our own in terms of producing enough rheumatologists to meet the clinical needs. Almost, but I do not think that we are there yet. Where we are really struggling is getting people who are going to stay in the academic environment and compete for grants, and compete to publish papers. This is where we are in very, very big trouble.

I think that what young people see is that there is a big challenge to sustaining a research career and academic career. They see their role models struggling to get grant funding, which has hit historic lows. They see a low-paying specialty, where you have little autonomy in an economic environment to change your ability to generate income. It becomes a real disincentive for an individual to want to stay in an academic environment in rheumatology, where the specialty is at the bottom third of the remuneration scale and any success in the academic environment is predicated on being lucky and tenacious and working against the odds and constantly swimming upstream, so to speak, to get funding. Now, some of that is not unique to rheumatology, but I think we have been particular victims of that and I see very few people interested in academic rheumatology in this country. There are some individuals, no question, but particularly in research I think we are really struggling.

I had the privilege of spending some time in the National Institutes of Health (NIH); I spent three years there from 1997 to 2000. The NIH team has phenomenal rheumatology researchers and they are unbelievable at being able to recruit gifted young people into the specialty; that's one of the reasons they have become real leaders in the research world. I think Canada is falling behind in the ability to get the best and the brightest in rheumatology. As far as I can see, there are two main differences. Some of them have to do with integrating research training with clinical training; it is all done during the post-graduate period when promising young individuals are given research training at the same time as they are given their clinical training and thus they have projects that they're working on throughout their education. There, academic medicine is highly valued. In fact, the differences between remuneration in academic medicine and in private practice are actually quite modest in the U.S., so there is no major incentive to go out and practice and make more money, whereas if you are good, and you show promise in terms of being an academic physician, an academic rheumatologist, you are given every opportunity to hone your research skills and become a competitive investigator. That is the big difference.

I think what needs to be done here is we need to integrate research training, seamlessly, into our post-graduate training. We need to have clinical departments award research degrees, such as Masters and PhDs, so that the projects are focused on clinical questions. We need to identify people at a very early stage who have potential and nurture them and provide them with funding opportunities and give them uninterrupted support and funding until they become established researchers. The problem right now is that we fund certain parts of that process, and then the individual is left to collapse and go out with the wolves. And so, if there is a big, bare period during the evolution of that academic rheumatologist or clinician scientist, if there is any extended period lacking in support, they will leave and do something else and we will lose them to the research community.

It is going to take planning from multiple levels, including faculties of medicine, divisions of rheumatology, support from local funding agencies to give graduates a good start and the training that they need. It is going to take support from the major funding agencies, from the Canadian Institute of Health Research (CIHR), from The Arthritis Society (TAS); it is going to take everybody working together

to make sure that those people are identified early and nurtured during the process, given state-of-the-art training so that they can compete with their American colleagues and with their European colleagues. It is a very competitive world we live in. I have not even started to mention the enormous competitiveness occurring in Asia right now. I am an Associate Editor of the top arthritis journal in the world, *Arthritis & Rheumatism*, and I am on the editorial board of most of the other journals, and we are getting flooded with outstanding work from China, from Southeast Asia, from Japan, from Korea. We are already way behind the Europeans and the Americans, so we have a real uphill climb here. So what I see is a trickle of good, solid research from Canada going into those journals. Now, we are lucky in that we have the *Journal of Rheumatology* (*JRheum*), which is a Canadian journal that most of us have published in. Every journal is getting bombarded with excellent work from Asia—and there has always been excellent work from Europe and the U.S. We have to wake up to the reality of who we are competing with here.

How are educators in the field of rheumatology learning from each other? What can be done to encourage an even more open, collaborative atmosphere among rheumatology training programs across the country?

I think the first thing that they have got to do is they have got to acknowledge the fact that we have a very big problem in academic rheumatology. The problem is our ability to recruit the best and the brightest young people, and once we recruit them, to actually provide a path for them. The Canadian Rheumatology Association (CRA), TAS, CIHR, the network of Canadian rheumatologists, we all need to get together and discuss solutions. But not only this, we cannot put our heads in the sand and say we are going to have these unique, made-in-Canada solutions. We have to look around at what our international colleagues are doing. We have to look at models of how they are successful in getting the best and the brightest young people, and in turn, look at how we can change things at the local divisional level, at the faculty level, and at the national level to make it more permissive.

The positive thing that has happened in Canadian rheumatology is the establishment of networks through organizations like the Canadian Arthritis Network (CAN), the Lupus Network, the Canadian Network for Improved Outcomes in Systemic Lupus Erythematosus (CaNIOS), the Scleroderma network, and the Canadian Scleroderma Research Group (CSRG). These are highly effective networks, and I think that this has been a real legacy of success in Canada. It is going to be through these groups that we are able to address some of the problems. Do not get me wrong; I am not sitting here saying it is all doom and gloom. We have done an enormous amount, of which the most positive outcome is these national networks focused on different diseases. They are able to get cohorts of individuals to bring everybody's clinical experience together to form biobanks and research cohorts that can effectively compete with the big clinical consortia that we are seeing in Europe, in particular. In order to understand major patterns of disease, and major changes in treatment and causes and so on, we have to have big numbers. Being a country with a low population density like ours, national collaboration and networks are a must; they are not just an option. I think that the Canadian rheumatology community has really embraced these things.

To what extent do you believe there should be a focus on the development of educational programs focused on rheumatology outside the university setting?

I am a person who feels that educational programs are best suited for a university setting, where you can find individuals with a lot of resources; my focus is to help those institutional resources to get the best educational packages and programs that we can.

In my opinion, I do not think that you can train academic rheumatologist outside the context of an educational setting. You can certainly have educational programs, with individuals who are potentially more effective clinicians and better integrated with clinical activities and potentially clinical research. I think there have been some good examples in Canada, for instance, the Canadian Rheumatology Research Consortium (CRRC), which has organized clinicians across the country to do clinical trials; they have really taken those out of the academic setting and have clearly identified that it is the doctors in private practice who are the ones seeing all the patients and who are the best source of study subjects for the clinical trials. This has been an important shift in paradigm. I think, though, that the real innovators, the investigator-initiated researchers who are going to be competitive, have to be trained in an academic environment.

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