The CRA's 2023 Distinguished Rheumatologist: Dr. Gilles Boire

Why did you become a rheumatologist? What or who influenced you along the way to do so?

The choice of rheumatology gradually became clearer during my core medicine residency. I had chosen medicine because I wanted to help people, but I also wanted to help improve patient care, if possible. At the time, rheumatology was a specialty with two common treatments (non-steroidal anti-inflammatory drugs [NSAIDs] and corticosteroids), with the occasional addition of hydroxychloroquine, gold salts and, rarely, cyclophosphamide. It was therefore essential to develop strong relationships with patients and to learn to listen to them to help them, if not to cure them.

It was also the time of the discovery of acquired immunodeficiency syndrome (AIDS). Clearly, we were so ignorant of how the immune system worked that there would soon be great advances in the field. Since rheumatological diseases obviously involved a disruption of the immune system, the future looked bright. Although I was born well before Generation Y, I had to consider that my wife was also a physician and that we already had two young daughters, so I needed a career with a predictable schedule. Rheumatology therefore offered the advantages of being relatively uncharted territory, but also of being less focused on hospitalized patients. But it was during my internship with Dr. Henri Ménard that things really clicked. The patients were suffering, and their doctors did not understand why. And then came Dr. Ménard who questioned, palpated, did some tests, and drew conclusions. The ability to make a diagnosis from seemingly unrelated elements appealed to me. Then Dr. Ménard and I prepared a first abstract that was submitted and accepted by the American College of Rheumatology (ACR). My passion for research was launched. And the advances in rheumatology and in research exceeded my wildest expectations.

Your major research interests include autoimmunity, in particular the Ro/hY RNA complex, improving first-line care of fragility fracture patients, and early prognostic classification of patients with recent onset inflammatory arthritis.

Can you tell us about the development of the Early Undifferentiated PolyArthritis (EUPA) cohort as well as the Biobank of Immune and Inflammatory Diseases and Disorders and the "University of Sherbrooke Registry of Advanced Therapies" that facilitate personalized approaches for the treatment of these patients?

My research career can be divided into three phases. The first phase was wet-laboratory oriented, focusing on my favorite autoantigen, the Ro ribonucleoproteins, targeted by anti-Ro (SS-A) antibodies. We studied antibodies and antigens in several ways: first with the tools I had learned during my postdoctoral fellowship at Yale University, and then with the help of colleagues in Sherbrooke. Some of our work from the 1990s is still cited regularly. Then, we crossed paths with Ms. Savoie. The discovery of anti-Sa (citrullinated vimentin) in the serum of this patient reoriented me towards clinical research, and in particular cohorts of patients, specifically with polyarthritis of recent onset (EUPA cohort). The principles underlying EUPA were clear: 1) without accurate and thorough phenotyping, biomarkers are useless; 2) long-term longitudinal follow-up is essential to properly define clinical outcomes; and 3) scientific knowledge evolves rapidly and in unpredictable directions. It is therefore crucial to have quality data matched to stored serialized biospecimens to allow for the study of new biomarkers, or the use of new analytical methods that we could not even dream of at the time of their collection. The EUPA patient specimens have now been analyzed by different "-omics" (genomics, microRNAmics, proteomics). Hence the third phase, the development of the Biobank of Immune and Inflammatory Diseases and Disorders, initially focused on the EUPA cohort. Thanks to recent legislative progress concerning clinical research, the Biobank is now dedicated to all aspects of rheumatology, from autoinflammation to autoimmunity, and from serum to synovial and salivary biopsies, including synovial fluid.

One of the most important conundrums in rheumatology is the heterogeneity of response to treatments. Our somewhat eccentric geographic location allows for prolonged follow-up of most of our patients. Moreover, the regional organization of care means that all the hospital administrative data of these patients can easily be combined with clinical information, leading to the development of our University of Sherbrooke Registry of Advanced Therapies (USRAT). We have linked our biobank with USRAT to better define the biological or psychosocial characteristics underlying treatment failure.

Dr. Gilles Boire receiving his award from CRA President Dr. Nigil Haroon at the CRA Annual Scientific Meeting in Quebec City, which took place in February 2023.

In addition to running a busy clinic and assuming several administrative duties, you have supervised 20 graduate and postgraduate students as well as 27 rheumatology fellows, 5 of whom are still in training. What are your thoughts on teaching?

One of my greatest satisfactions during my career has been my involvement in teaching at all levels within the medical school. This included mentoring at the undergraduate level for general training of medical students, at the postdoctoral level teaching rheumatology basics to pediatric and core medical residents and training new rheumatologists, and at the postgraduate level training immunology and clinical scientists. Many of my former graduate students are now academic or industry researchers. Rheumatologists who graduated from the Sherbrooke program now represent nearly 20% of all rheumatologists in Quebec. I am pleased to have been able to facilitate their positive contribution to Quebec and Canada today.

Can you tell us about other adult cohorts that you have contributed to (CATCH; BIODAM) and pediatric (REACCH-Out; BBOP)?

From the very beginning, I had a high clinical interest in treating children with rheumatologic disease. I was initially responding to a local clinical need as there was no other rheumatologist available to treat children with arthritis. But it also allowed me to see how rudimentary the treatment of children was at the time. I quickly became interested in participating and contributing to pediatric research projects. I got to know some outstanding researchers (Ciaran Duffy, Jaime Guzman, Rae Yeung and Alan Rosenberg, among others) from whom I learned a great deal. These researchers have developed a world-class pediatric rheumatology research network that has truly improved the treatment of children with rheumatic diseases. In comparison, adult rheumatologists are disorganized and would greatly benefit from the pediatric networking experience.

As a result of the development of the EUPA cohort infrastructure, I was able to join other adult clinical research efforts, in particular the CATCH cohort led by Vivian Bykerk and the BIODAM project of Walter Maksymowych. Thanks to the existence of our EUPA cohort, we have been able to contribute significantly to these research projects. The results of these extremely productive collaborations have constituted a significant proportion of my publications.

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