

# Cutting-Edge Issues in Organ-Specific Autoimmunity

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**Abstract** There have been numerous methods and ways to classify autoimmune diseases. By far, the most traditional has been to separate immune-mediated pathology into organ-specific and organ-non-specific diseases. The classic systemic autoimmune diseases are, of course, rheumatoid arthritis and systemic lupus. The classic organ-specific autoimmune diseases have been autoimmune thyroiditis and autoimmune gastritis. However, as our understanding of the loss of tolerance has expanded, so has the long list of autoimmune diseases. In many cases, the distinction between organ-specific and organ-non-specific or systemic autoimmunity becomes a blur. In this issue, we discuss recent concepts in autoimmune pancreatitis, primary sclerosing cholangitis, Goodpasture's syndrome, myofasciitis, type I diabetes, polymyositis, autoimmune thyroid disease, IgA nephropathy, autoimmune uveitis, and ANCA-associated vasculitis. Common themes on both etiology and effector mechanisms are described throughout these papers with an attempt to provide a cutting-edge overview.

**Keywords** Autoimmunity · Organ-specific pathology · Cytotoxic T cells

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The 7th International Congress of Autoimmunity was held in Slovenia in May 2010. One of the tasks in this symposium was to focus on the geoepidemiology of autoimmune disease, and this led to a monograph that highlighted this theme [1–49]. In addition, one task of the Congress of Autoimmunity was to organize a series of cutting-edge manuscripts that focused on critical issues in autoimmune disease. This is very similar to a previous task that was published in *Clinical Reviews in Allergy and Immunology*; these included an emphasis on epigenetics as well as the biologics, and many came under the theme of challenges for the autoimmunologist [50–68].

The history of autoimmunity begins with an understanding of the serologic immune response. It was once believed that an understanding of the genetics of autoimmunity would lead directly to a better understanding of etiology and therapy. We now know that this is much too simplistic and that the genetics of the immune response and the genetic determinants of autoimmunity are exceedingly complex and, of course, can include stochastic and/or epigenetic changes. We also appreciate the importance of cell-mediated self-reactive responses, including both adaptive and innate immunity. Much of this is discussed in several of the papers presented herein. Indeed, in some diseases such as rheumatoid arthritis, the so-called classic systemic autoimmune disease, we have made enormous advances in patient therapy without comparable advances in understanding etiology. We appreciate the importance of genetic environmental interactions, and there is a significant body of data on the role of environmental factors, including drugs and chemicals on induction of autoimmune disease [49, 69–79].

We should also emphasize that autoimmunity may have a broader definition which can include not only a classic or

pure self-reactive response, but also chronic autoinflammatory diseases. The economic impact of these diseases throughout the world is enormous, and such economic impact does not include the pain and suffering of patients and families. We have previously emphasized the term “the mosaic of autoimmunity” to indicate the overlapping features of the genetics, the environment, selective and non-selective immune defects, and hormones. A number of groups, including our own, have emphasized the importance of the data on concordance of identical twins; the only major difference between twins is the immune response, due not only to stochastic events, but also to related issues of somatic mutation and recombination. The international nature of science and research has led to congresses such as this meeting in Slovenia and the ability of groups to come together to share data and to discuss the unique features of their own population. The ultimate hope is that we will help our patients with autoimmune disease; the goal of this volume has this in mind, the presentation of cutting-edge issues in this one aspect of autoimmunity, the so-called organ-specific diseases. Towards this end, the 8th Congress of Autoimmunity will be held in Granada, Spain, May 9–13, 2012.

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