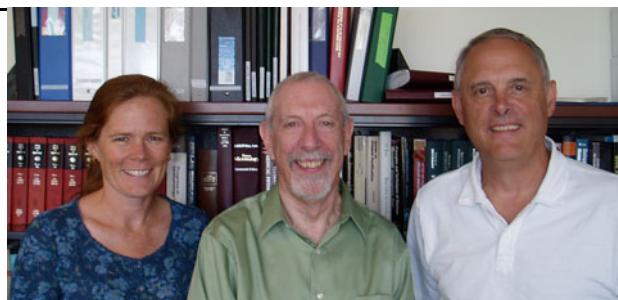


## Integrated immunology in Colorado

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Establishment of the Rocky Mountain region as a hub for immunology research began in the nineteenth and twentieth centuries with the arrival of tuberculosis patients sent for “clean air and sunshine” therapy. Gerald Webb, a pupil of Sir Almroth Wright—an early developer of typhoid vaccines and a strong proponent of immunization—moved to Colorado to be with his wife who had contracted tuberculosis and to complete his medical education at the University of Denver. In June 1913, a small group of doctors from the United States and Canada, who had trained in London with Wright, met to consider the founding of a society. Wright had famously said that “the physician of the future will be an *immunisator*.” Webb, who had become a clinician–immunologist in Colorado Springs, insisted that “immunologist” was a more inclusive term. Thus, Webb protected us from celebrating the 100th birthday of the American Association of Immunologists in 2013. He was elected the first President of the AAI, a reflection of the prominence of the Colorado group even in the early history of American immunology [1].

Many of the Colorado hospitals and research institutes began as tuberculosis sanatoria. The physicians who cared for tuberculosis patients were impressed with how prominent a role the immune response played in both the control

and the symptomatology of the disease. With the advent of streptomycin in the 1940s, the need for specialized sanatoria waned, and some of them were converted into hospitals for the treatment of another prominent pulmonary immunologic disease, asthma. National Jewish Hospital for Consumptives, the precursor of National Jewish Health, was founded in 1899. The Denver Sheltering Home for Jewish Children, the precursor of the National Asthma Center, was established in 1907 as a home for the children of tuberculosis patients. These two sites merged in 1978 and continue to lead in respiratory care and immunology research today. This was where Kimishige and Teruko Ishizaka identified IgE as the antibody isotype that mediates allergy in 1966 [2]. In that same year, Henry Claman at the University of Colorado School of Medicine observed the synergistic interaction between thymocytes and bone marrow cells for the production of antibody, thus identifying for the first time the helper T cell and T-B collaboration [3].

Both the Ishizakas and Claman were recruited to Colorado by David Talmage, who was credited as the man who brought modern immunology to Denver; he formulated what became known as the clonal selection theory in 1957 [4, 5]. Talmage arrived at the University of Colorado in 1959. He encouraged the growth of immunology at all of CU’s affiliated institutions, and began the process whereby new recruits in these institutions would also be appointed as regular CU faculty. This policy of inclusiveness led to remarkable growth of the Denver immunology group in several locations, and the eventual separation of the discipline from the Department of Microbiology and the formation of the Integrated Department of Immunology in 1993. Kathryn Haskins was the founding interim Department Chair and John Cambier became its first permanent Chair in 1999. They led us to many significant

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contributions in immunology, a number of which are discussed in this volume.

John Cambier became Department Chair under the conditions that several new faculty be recruited and that, at least initially, the laboratories of University and National Jewish faculty occupy adjacent space. This, he thought, key to promote a stronger sense of community and enhance collaborative interactions. At that time available space was almost nonexistent on the crowded health sciences campus in Denver. National Jewish Health agreed to become the headquarters of the new Department. CU and NJH faculty now work side-by-side, sharing facilities and access to graduate students. In the late 1990s, Fitzsimmons Army Medical Center was closed and its hundreds of acres in Aurora were sold to the University of Colorado for one dollar. The new Anschutz Medical Campus (AMC) was completed in 2008 and has already outgrown its space. Because of concerns about loss of identity and moving costs, NJH has elected not to move to the new Aurora campus. Immunology faculty members and trainees are now active on both campuses, which are a short shuttle ride apart. Because of the long history of immunology in the region, many of the departments at AMC are strongly immunology inflected in their research endeavors. In addition to the School of Medicine, AMC is home to Children's Hospital Colorado and University of Colorado Hospital, which in 2012 was ranked the nation's number one academic hospital. It also houses the Barbara Davis Center for Childhood Diabetes with its prominent group of autoimmunity researchers. Labs throughout the region offer homes to immunology trainees and collegial

opportunities for collaboration and translational research. Finally, plans are in place to establish a translational Department of Immunology satellite on the AMC campus. The satellite will include translationally inclined migrants from NJH as well as newly recruited faculty who will take advantage of opportunities afforded by our many clinical colleagues on the AMC.

The articles in this special volume provide a glimpse of the immunology research done in the “clean air and sunshine” of the Denver/Aurora Colorado metropolis. Please visit the Integrated Department of Immunology's website for more information. <http://medschool.ucdenver.edu/immunology>.

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