2016 William B. Coley Awards

Every year since 2001, the Cancer Research Institute (CRI) has awarded William B. Coley Awards in both tumor immunology and basic immunology. These awards have honored researchers for their contributions that have deepened our understanding of immunologic processes and the complex interaction of the immune system with tumors that shapes both the tumor and the host response to it. In September 2016, the CRI presented the William B. Coley Award in Tumor Immunology to Ton N.M. Schumacher, PhD, and the William B. Coley Award in Basic Immunology to Dan R. Littman, MD, PhD, on the occasion of the "Second CRI–CIMT–EATI–AACR International Cancer Immunotherapy Conference: Translating Science into Survival" held in New York, NY. The conference was jointly sponsored by CRI, the American Associate for Cancer Research (AACR), the Association for Cancer Immunotherapy (CIMT), and the European Academy for Tumor Immunotherapy (EATI).

Dr. Schumacher is a senior member of the Netherlands Cancer Institute in Amsterdam and professor of immunotechnology at Leiden University Medical Center. He is being honored "for his contributions to our understanding of the molecular events leading to tumor immunity. His first major contribution to immunology, made while he was a graduate student at the Netherlands Cancer Institute, involved the quantification of peptide binding to MHC class I molecules and his elucidation of the peptide preferences of these antigen-presentation proteins. After postdoctoral training at MIT, he returned to the Netherlands Cancer Institute, where in 2001 his laboratory provided an in vivo demonstration that specific TCR genes transferred into T cells could be used as therapy against infectious agents and tumors. A subsequent major contribution of his group was their development of T-cell "barcoding," based on a library of unique genetic tags inserted into cells and used to trace cell fate at the single-cell level during lineage development or to follow an immune response. Application of this technique has provided a new view on how T cells initiate, diversify, expand, and efficiently respond to antigens. Another technological advance from the Schumacher laboratory that completely changed the game with which specific T cells could be tracked involved the rapid generation of peptide-MHC class I tetramers through peptide exchange into MHC class I molecules containing photolabile peptide ligands. Together with a multiplexed technology for identification of antigen-specific T cells that the lab developed, this technique has been key to identifying T-cell responses against cancer neoantigens and how these responses change following cancer immunotherapy. We now have a much enhanced view into the dynamics of the evolving stimulus-response interactions of tumors and T cells, which are continually reacting to the pressures applied by one cell type to the other. Dr. Schumacher has won numerous other awards, is an elected member of the European Molecular Biology Organization (EMBO), and is an SU2C (Stand Up To Cancer) Immunotherapy Dream Team member.

Dr. Littman is the Kimmel Professor of Molecular Immunology in the Skirball Institute and serves as a faculty member in the departments of pathology and microbiology and as an investigator of the Howard Hughes Medical Institute at the New York University School of Medicine. He is being honored "for his definitive work on immune cell differentiation and his contributions to the identification and biology of unique immune cell subsets and their underlying interactions with the microbiome."

His major contributions early on focused on the cloning of CD4 and CD8, proving that they were necessary coreceptors for activation through the TCR, showing their binding to MHC, and that they shared common intracellular signaling pathways. This latter work played an important role in defining the molecular events leading to T-cell development in the thymus and lineage differentiation in the periphery. His interest in these molecular signals subsequently led to a dissection of the regulatory regions controlling CD4 and CD8 lineage choice, which revealed both lineage-specific silencers and enhancers of expression of the genes for these proteins, which are required for various stages in T-cell development. In their research in the gut, his laboratory has found that CD4 T cells can further develop under the right conditions into regulatory T cells or Th17 cells, given their exposure to different microbiota or environmental stimuli, providing new leads for therapeutic interventions. In addition, Dr. Littman has had a sustained interest in HIV biology. One of his laboratory's earlier discoveries was that CD4 binds to the envelope protein of HIV and that dendritic cells can mount an innate immune response to it. His group then followed with the identification of CGR5 as an important coreceptor for HIV. Dr. Littman is a member of the National Academy of Sciences and the National Academy of Medicine and a Fellow of the American Academy of Arts and Sciences. He has won numerous awards, including the 2016 Vilcek Prize in Biomedical Science.

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