米国科学アカデミーに記載された岩崎明子さんのプロフィール

Profile of Akiko Iwasaki

Jennifer Viegas, *Science Writer*

Akiko Iwasaki, an immunologist at the Yale School of Medicine and a Howard Hughes Medical Institute Investigator, has made significant contributions toward understanding innate and adaptive immunity. Her achievements include the demonstration of tissue-specific properties of dendritic cells (DCs), discovery of a pathway by which immune responses to viruses can be triggered, development of a mammalian model of a vaginal Zika infection, and formulation of the "prime and pull" vaccine strategy. The latter is being implemented in a clinical trial of a therapeutic vaccine for cervical intraepithelial neoplasia that is underway at Yale New Haven Hospital. Elected to the National Academy of Sciences in 2018, Iwasaki focuses on endogenous retroviruses (ERVs) in her Inaugural Article (1). She and her colleagues report the creation of the ERVMap, a tool for analyzing ERV expression from RNA-sequencing reads against a database of all known ERVs in the human genome.

Early Influences

Iwasaki was born and raised in Iga, Japan, where she and her two sisters enjoyed exploring nature. Her father Hiroshi, a physicist, and mother Fumiko, who fought for women's rights in the workplace, were her role models. Observing her mother's challenges, Iwasaki has become an ardent advocate for women and minorities in the sciences. Another early influence was her seventh-grade math teacher, Hajime Kajioka. She says, "What was so refreshing to me at the time was that someone outside of my family actually believed in me and my potential."

Having learned of career opportunities for women in North America, Iwasaki traveled to Canada to attend the University of Toronto, where she minored in physics and majored in biochemistry. During her third year at the university, she took an introductory immunology course taught by immunologist Brian Barber and was hooked. She says, "His lectures were eloquent, passionate, and convincing. It was impossible not to become excited about vaccines after his lectures." She joined his laboratory to do graduate work on DNA vaccines, earning her PhD in immunology in 1998. Her thesis elucidated a mechanism by which plasmid DNA vaccines induce immune responses (2). The findings garnered attention because they showed that such vaccines promote presentation of antigens to T cells through white blood cells, and not muscle cells, as was previously theorized.

Akiko Iwasaki. Image courtesy of Robert Lisak (photographer).

Formative Research

From 1998 to 2000, Iwasaki served as a postdoctoral fellow in the NIH laboratory of mucosal immunologist Brian Lee Kelsall, who specializes in the study of DCs within Peyer's patches. Iwasaki says, "He was just starting his own laboratory when I joined, and in addition to myself, there was one other postdoc and technician. This environment allowed me to develop like a seed in a small planter—lots of attention by the mentor, Dr. Kelsall, but still independent enough to explore and fail." With Kelsall, she clarified the roles of DCs and associated chemokines, with a surprising finding that DCs in the gut respond differently than those in other lymphoid organs (3–5).

After the postdoctoral stint, Iwasaki accepted a position as an assistant professor in the Department of Epidemiology and Public Health at Yale in 2000, and later in the Department of Immunobiology at Yale.

This is a Profile of a recently elected member of the National Academy of Sciences to accompany the member's Inaugural Article on page 12565.
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