Susumu Tonegawa Biography

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Biography

Japanese molecular biologist Susumu Tonegawa is a professor at the Massachusetts Institute of Technology (MIT). Tonegawa's work made important advances into understanding of the genetic mechanisms of immunological systems.

Tonegawa received his doctorate from the University of California at San Diego in 1969. In 1971, Tonegawa became a of member of the Basel Institute for Immunology in Switzerland where he conducted research until accepting the professorship at MIT in 1981.

Tonegawa's work in immunogenetics showed distinct relationships between antibodies and the genes responsible for their production and regulation. Tonegawa reported that there were alterations in patterns of chromosomal recombination that allowed the genes responsible for antibody production to move closer to one another on chromosomes. Tonegawa's worked gained a Nobel Prize in Physiology or Medicine in 1987.

The selective recombination mechanism allows organisms to enhance the production of antibodies. For example, although the human body has a limited number of chromosomes and a finite amount of DNA (only a portion of which is related to immune system function), cells are able to produce highly specific antibodies to a vast number of antigens. Tonegawa's work established that gene rearrangements allowed for increased variety in the production of antibodies.

Born in Nagoya, Japan, Tonegawa took his undergraduate studies in chemistry at Kyoto University in Japan, and in 1963, moved to the United States to undertake his graduate studies at the University of California. Tonegawa's Nobel Prize winning research was conducted at Basel Institute for Immunology in Basel, Switzerland.