

Scientists Recognized for Fundamental Discoveries

Philippa Marrack, PhD, and John Kappler, PhD, Win Novartis Prize in Immunology

SEPTEMBER 28, 2016

DENVER, CO — Philippa Marrack, PhD, and John Kappler, PhD, have received the 2016 [Novartis Prize for Immunology](#) for discoveries about the basic biology of the immune system. Drs. Marrack and Kappler and their colleague Harald von Boehmer, PhD, discovered how the immune system learns what should be tolerated in the human body and what should be attacked as an external threat. Prize recipients, chosen once every three years, share an award of approximately \$100,000.

The immune system serves as the body's defense against viruses, bacteria and other potentially harmful substances in the environment. To be effective, it must distinguish the body's own assortment of cells, molecules and tissue from potentially harmful external threats, which should be defended against. T cells make that distinction, acting as sentinels and activators of the immune system.

The researchers earned the prize for discovering how the immature immune system learns to make that crucial distinction. In the words of the selection committee, the researchers demonstrated that *'the ability of the immune system to discriminate "self" from "non-self" is acquired in the thymus through a process of positive and negative selection based on T-cell receptor mediated recognition of the peptide MHC complexes.'*

Drs. [Marrack](#) and [Kappler](#), both distinguished professors in the Department of Biomedical Research at National Jewish Health, have received numerous international awards and prizes for their discoveries about the immune system, especially T cells. Most often, they have been recognized for their discovery of the T-cell receptor and one of the genes that codes for it, the crucial tool the immune system uses to sense the environment and distinguish safe from dangerous. Today, their research continues to reveal how the immune system develops, functions and malfunctions in autoimmune disease, vaccines and aging.



National Jewish Health is the leading respiratory hospital in the nation. Founded 123 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the [media resources page](#).

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