Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr. Tasuku Honjo

Name: **Tasuku Honjo**
Born: **27 January 1942**

Major Scientific Interest: Mechanism of antibody memory, cancer therapy

Academic and Professional Career

since 2005	Professor, Department of Immunology and Genomic Medicine, Graduate School of Medicine, Kyoto University, Japan
1984 - 2005	Professor, Department of Medical Chemistry, Faculty of Medicine, Kyoto University, Japan
1979 - 1984	Professor of Genetics, Medical Faculty, Osaka University, Japan
1975	PHD in Medical Chemistry, Kyoto University
1974	Assistant Professor, Medical Faculty, Tokyo University, Japan
1966	MD, Kyoto University

Functions in Scientific Societies and Committees (Selection)

since 2012	Chairman, Board of Directors, Shizuoka Prefectural University Corporation, Japan
2006 - 2012	Executive Member, Council for Science and Technology Policy, Cabinet Office, Japan
since 2006	Scientific advisory board of the Singapore Immunology Network
since 2005	Councilor of Takeda Science Foundation
2002 - 2004	Dean, Faculty of Medicine, Kyoto University, Japan

1996 - 2000	Dean, Faculty of Medicine, Kyoto University, Japan
since 1996	External advisory board of the Committee for Human Gene Therapy Working Group
1992 - 1995	Fellowship review committee member of International Human Frontier Science Program

Honours and Awarded Memberships (Selection)

2018	Nobel Prize in Physiology or Medicine
2016	Kyoto Prize
2012	Robert Koch Prize
2005	Member of Japan Academy
2004	Leading Japanese Scientists in Emerging Research Fronts (Thomson)
2003	Member of the German National Academy of Sciences Leopoldina
2001	Foreign Associate of U.S. National Academy of Sciences
2000	Award “Persons of Cultural Merit” by Japanese Government
1996	The Imperial Prize and the Japan Academy Prize
1994	Uehara Prize
1992	Behring-Kitasato Prize
1991 - 1996	Fogarty Scholar-in-residence at NIH
1988	Takeda Medical Prize
1985	Erwin von Baelz Prize
1984	Osaka Science Prize
1984	Kihara Prize of the Japanese Genetics Society
1981	Noguchi Hideyo-Memorial Award for Medicine
1981	Asahi Prize

Major Scientific Interests

“The mechanism of antibody memory”

The use of vaccination to prevent infectious diseases has made profound and enduring impacts on human welfare since it was pioneered by Jenner in 1796. Extensive studies on immunoglobulin structure and function established that effective vaccination depends on the generation of antigen-specific antibody ‘memory’ characterized by two modifications of the immunoglobulin, namely class switching in the heavy-chain constant region, and an increased affinity for antigen in the

variable region.

In 1978, we proposed and subsequently proved that class switch is mediated by recombination with dynamic excision of genomic fragments. In 2000, we discovered activation-induced cytidine deaminase (AID), which is responsible for DNA cleavage to initiate both CSR and SHM. Surprisingly, AID mutates not only the antibody gene, but also protooncogenes. Whether or not AID induced in non-lymphoid cells by viral infection causes genomic alterations leading to cancer is a big question in the field. We have recently found that topoisomerase 1 (Top1) is the enzyme that initiates CSR and SHM by cleaving S and V region, respectively. In addition, AID reduces the amount of Top1, inducing the target DNA structural change, which causes the irreversible cleavage by Top1. Furthermore, the transcription coupled nucleosomal reassembly is critical for this Top1-mediated DNA cleavage during CSR and SHM.

Furthermore, we also investigate the function of Programmed cell-death-1 (PD-1), which was isolated in this laboratory and shown to be the key molecule in regulation of lymphocyte activity including tolerance. PD-1 plays critical roles in anti-cancer immunity and autoimmunity. The aim of our research is to contribute to human welfare through regulation of immune responses, elucidation of tumorigenesis and its prevention by studying the function of AID and PD-1. In our lab, highly motivated students and postdocs are collaboratively working to elucidate fundamental questions in immunology. We educate them to be independent and sophisticated scientists who are not only specialized in biochemical and immunological experimental techniques, but also have global view of life science.