On the biochemical dialog between immune cells mediating anti-cancer responses

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Abstract

Antigenic stimulation leads to activation, proliferation and differentiation of immune cells into immediate effector or long-term memory cells, capable to maintain or reestablish the homeostasis. The demands for biomass building and synthesis of effector molecules require readjustment of cell metabolism, during which small molecules are likely produced and secreted. We hypothesized that many such molecules derived from metabolic reprogramming induced by immune cell activation have functions other than just serving as intermediates in metabolic pathways. For example, they may function as signaling molecules influencing the immune cells function. I will discuss the role played by GABA, a secreted immune-metabolite by B cells in regulation of immune responses. I will also introduce a novel metabolic adaptation of cytotoxic T cells to environmental stress, involving membranes and secreted metabolites and required for effective anti-tumor responses.

Biography

Team Leader of Laboratory for Mucosal Immunity, Center for Integrative Medical Sciences RIKEN, and a Professor, Division of Integrated High-Order Regulatory Systems, Center for Cancer Immunotherapy and Immunobiology, Kyoto University.

Graduated from “Iuliu Hatieganu” University of Medicine and Pharmacy in Cluj-Napoca, Romania and had residency in gastroenterology and specialty in Clinical Laboratory, Microbiology, Biochemistry and Hematology at the same university. She worked as Assistant Professor at Department of Microbiology at the University of Medicine and Pharmacy Cluj-Napoca before obtaining a Mombusho Visiting Researcher scholarship at Kyoto University. She received Ph.D. at Kyoto University, she was appointed Team leader at the Laboratory for Mucosal Immunity in RIKEN-Yokohama.

Her research activity includes impact of immune system on diversity, structure and resilience of gut microbiota, and the symbiotic relationships between the microbiota and the immune system. Recent works uncovered the role of immune activation in regulation of blood, brain biochemistry and behavior, and novel regulatory pathways involving secreted immune metabolites and anti-tumor responses. Received 2005 Young Scientist Award from the Ministry of Education, Culture, Sport, Science and Technology (MEXT), Japan, 2012 The 15th Japanese Society for Immunology Award, 2013 NISTEP Award from MEXT, Japan, and The Kobayashi Award 2020 from the Kobayashi Foundation, Japan. She has co-authored more than 50 research papers in international peer-reviewed journals such as Science, Immunity, Nature, Cell, and PNAS, many of which are ground breaking and highly cited.