

250th WPI-IIIS Seminar

Scientific journey from ncRNA, membrane transporter and GPCR, to crosstalk between membrane and nucleic acids

I have been interested in the molecular mechanisms of olfactory reception (GPCR) for the past 46 years since my junior high school days. I began my research on tRNA in The University of Tokyo, and as I was so moved by profound insights by protein structures, I have pursued structural biology. At the age of 37, I established myself as a professor at the Tokyo Institute of Technology, where, in addition to my previous research on non-coding RNA, I started research on membrane proteins and have since elucidated the molecular mechanisms of numbers of membrane transporters and receptors. From around 2015, the cryo-electron microscopy technology gave a significant boost to structural biology research. Currently, my research focuses on the molecular mechanisms of membrane transporters and GPCR, the biological phenomena mediated by non-coding RNA (genetic code translation, RNA interference, genome editing), and the molecular mechanisms of innate immunity. However, I have been criticised by many eminent senior professors for my research being too scattered. Yet, life originated when cells, isolated from the external environment by membranes, were formed and non-coding RNA began to function; furthermore, it was the membrane—specifically the nervous system—and the genome—composed of nucleic acids—that drove the evolution of higher eukaryotes. I believe that all biological phenomena begin with the encounter between membranes and nucleic acids, and I am currently advancing research into the crosstalk between membranes and nucleic acids, with my diverse researches to date now beginning to converge. Specifically, I aim to elucidate the phenomena whereby nucleic acids permeate membranes, undergo chemical reactions such as maturation on the surface of membranes, and make membrane fusion.



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Date: **Wednesday, April 15, 2026**

Time: **11:00 – 12:00**

Venue: **1F Auditorium, IIIS Building**

*** On-site participation only**



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