1: Antibacterial agents derived from human and bacteria

We propose that bacteria have "2R" or "3R" system to infect the host. "3R" means as follows; 1R) Resistance to host-derived antibacterial agents, 2R) Resistance to bacteriocins, 3R) Resistance to antibacterial agents (antibiotics). When bacteria are entered to the host, bacteria are exposed to host-derived antibacterial agents (1R) and bacteria-derived agents known as bacteriocins (2R). Also, bacteria are also exposed to antibiotics (3R). We are now investigating the resistant mechanism against these agents in *S. aureus* and *S. mutans*. Especially, we are focusing on the bacterial two-component systems (TCSs) and demonstrated the association of some TCSs with the susceptibility to these antibacterial agents.

In biological fluids of human, there are many antibacterial components. We are trying to identify these factors quantitatively. Then, we look for the interaction between these expressions and infectious diseases. Also, we are studying on the bioactivity of host-derived antimicrobial peptides such as chemotaxis.

In the future, we will propose the new aspects of the mechanism for bacterial infection and the formation of bacterial community.