

## “Looking into the mirror: chirality of amino acids modifies host-microbial interplay and mucosal defense”



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**Venu: Lecture room No. 2  
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**Abstract:** Life on the earth uses exclusively L-amino acids for molecular architecture of proteins. D-amino acids are chiral form of L-amino acids and are known to function in non-ribosomal physiology. Although all proteinogenic amino acids except for glycine have chiral forms, life appears to choose one of the enantiomers in each biological process.

Among all domains of life, bacteria have the largest capacity to utilize D-amino acids. Bacteria synthesize variety of D-amino acids, which are largely distinct from mammalian D-amino acids, and utilize the amino acids not only as integral components of the cell wall but also as functional molecules to modulate synthesis of the cell wall. Mammals recognize and respond to diverse microbial products, including fragments of the cell wall, however, the impact of free microbial D-amino acids on host physiology at the host-microbial interface is not well understood.

In this talk, I will introduce the background of amino acid chirality and discuss 1) what sort of D-amino acids are produced by gut microbiota, 2) how mammals respond to such microbial D-amino acids, 3) how D-amino acid metabolism affects community of gut microbiota, and 4) whether the metabolism influences host physiology.

J. Sasabe, Y. Miyoshi, S. Rakoff-Nahoum, T. Zhang, M. Mita, B. M. Davis, K. Hamase and M. K. Waldor (2016) Interplay between microbial D-amino acids and host D-amino acid oxidase modifies murine mucosal defence and gut microbiota. *Nature Microbiology*, 1: Article 16125, DOI: 10.1038