

**Naoki Kobayashi, Ph.D.**

Assistant Professor

**E-mail:** naoki.kobayashi@setsunan.ac.jp

**Keywords:** Membrane transporter, Nutrient, Lipid, Intercellular mediator,



## Research topics

### Background

- Membrane transporters translocate many essential nutrients and intercellular mediators.
- Hydrophobic nutrients and intercellular mediators are believed to cross the cell membrane by diffusion.
- We have demonstrated that membrane transporters translocate hydrophobic intercellular mediators.

### Purpose

- To elucidate the molecular mechanisms of transports of hydrophobic nutrients and intercellular mediators via membrane transporters
- Development of medicines and dietary supplements targeted to membrane transporters
- Development of methods for effective production of nutrients utilizing membrane transporter activities

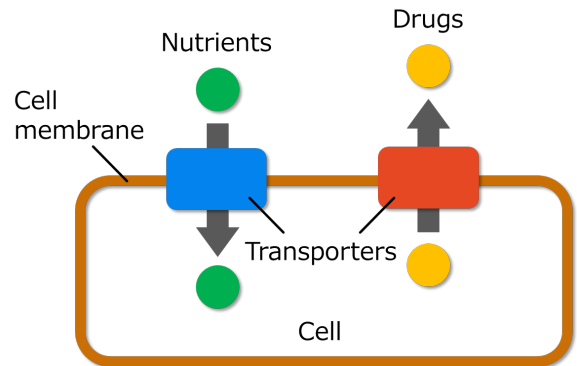
### Main achievements

- Identification of the transporter of the intercellular lipid mediator S1P that is essential for human immune system
- Knock-outs and stable expression of genes in cultured cells
- Measurement of the activity of mammalian and microbial membrane transporters

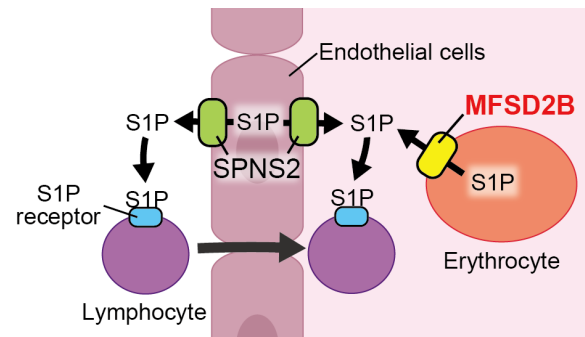
## Prospects for collaboration

### Pharmaceutical and food industry

- Development of medicines and dietary supplements that control the activities of membrane transporters
- Development of methods for effective production of nutrients utilizing membrane transporter activities



**Material transport across cell membranes via transporters**



**Intercellular S1P signaling via the S1P transporters**



### Research features

Development of valuable agents and production of nutrients by controlling membrane transporter activities