



## Research background

### <Backgrounds>

- Compared to us (i.e., mammals), insect is significantly differed in breathing, skeleton structure and blood-vascular systems.
- Molecular experimental techniques revealed the similarity, including gene sets for pheromonogenesis of insects, to lipid metabolism of mammals (Fig.).
- Due to the similarity of lipid metabolism among creatures, sex pheromonogenesis of moths is good model for general understanding of the lipid metabolism.

### <Major achievements>

- Multiple gene copies on genome of moth, especially desaturase for the sex pheromone, plays an important role in making variety of pheromone molecule through "Birth and death evolution" (Fujii et al., 2011, 2015, Rooney 2011).
- The formation of LDs in pheromone gland was irrelevant to the "domestication" of silk moth, *Bombyx mori* (Fujii et al., 2018).
- Based on moth speciation and their biosynthetic mechanism, I made one of scenarios about the molecule shift of sex pheromone communication system (Naka and Fujii. 2020).

## Prospects for collaboration

**【Proposal for modeling of pheromonogenesis】** Since pheromonogenesis linked to general lipid metabolism, I'm considering application of the achievement in lipid dynamics including of related enzymes and thier genes of pheromone genesis to understanding and solving of lifestyle disease, such as hyperlepidemia.

**【Silk moth, *B. mori*, in Education and Welfare】** We have domestication history of *B. mori* for 5000 years through sericulture. The long history of selection, *B. mori* has lost flight ability resulting easy to rear, and finally became model insect for genetic experiment by publishing full genome sequence information in 2008. Moreover, *B. mori* is described in Japanese ancient myth. Pupae of *B. mori* is food material of interests recently. I'm seeking utilize the multiple faces of *B. mori* in education and welfare.

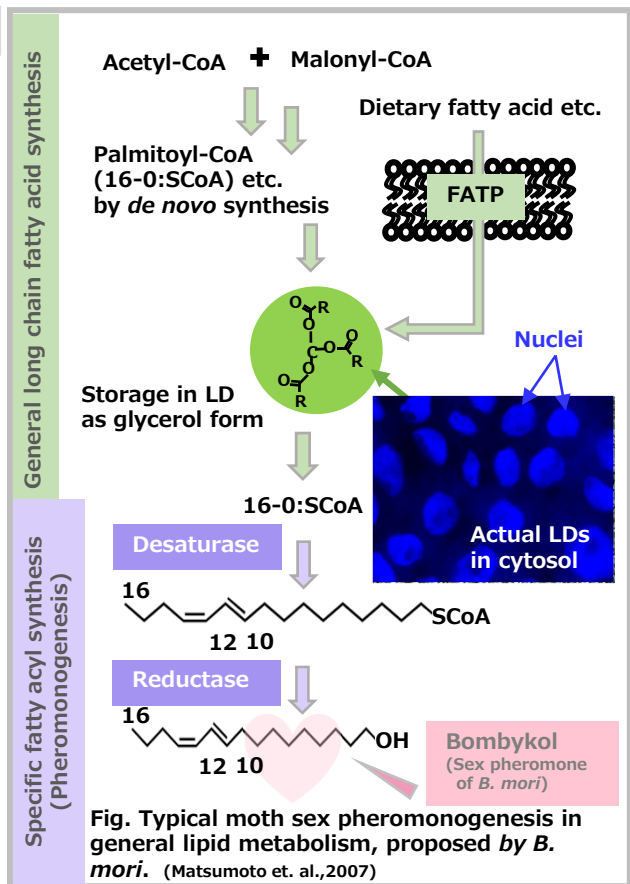


Fig. Typical moth sex pheromonogenesis in general lipid metabolism, proposed by *B. mori*. (Matsumoto et. al.,2007)



## Message as research policy

In order to rule out Human's bias, I'm keep trying to be conclusion of creature's essence by molecular evidences and observation of behavior.