# Theoretical Biology Seminar

## Nutri-developmental biology:
## Impacts of nutrition histories in juvenile stages on growth, organogenesis, and lifespan.

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Current address: Laboratory of Mathematical Biology, Institute for Life and Medical Sciences, Kyoto University

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## Seminar Room (104), 1st floor, Bldg. #2
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Postembryonic development is characterized by massive and rapid growth of juveniles. This developmental stage, in early life, is heavily influenced by the quality and quantity of nutrients consumed by the juveniles. The impact of the nutritional environment in the early life —referred to nutrition history— is not restricted to that stage, but that it also exerts long-term health effects later in life, even to adult stages. However, unveiling its underlying mechanisms of such far-reaching effects of the nutrition histories has been hampered by a lack of appropriate experimental models. To address this challenge, we have developed a novel interspecies assay using *Drosophila melanogaster* larvae fed with various mutants of budding yeast. A larval diet comprised of yeast *nat3* KO shortened the adult lifespan; and remarkably, this diet diminished the function of histone acetyltransferase Gcn5 in larvae. We have addressed whether the diminished Gcn5 function in larval stages is a cause of the shorter lifespan in adults, investigated the larval cell type that contributes to the early death of adults, and identified key nutrients in the *nat3* KO yeast. We are also investigating genetic programs that ensure the development of one of the tissues critical in our responses to diets, the adipose tissue.

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