



Seminar/Talk

Physical approaches to metabolic scaling in living systems

Efe Ilker

Aix-Marseille Université

Host: Andela Saric

Living organisms take up energy and material resources from their environment and transduce them into other forms via metabolic processes. The total metabolic rate increases with body size and its scaling is sublinear in higher animals. This is a striking example of allometric scaling behaviors that characterize the structure and dynamic organization of organisms. In this talk, I will first review the physical concepts to characterize the metabolic rate and revisit the empirical evidence from earlier works on the scaling of metabolic rate with size of organisms. In the second part, I will present my recent research perspectives on the interplay between metabolic scaling and morphogenesis during development with two distinct biological examples: zebrafish embryogenesis and gut development in flatworms. In flatworms, metabolic scaling accompanies increases in body size sublinearly, while in zebrafish embryos it merely reflects the rise in biological complexity during early development. I will demonstrate how reaction-diffusion models can be used to investigate the relationships among spatial patterning of metabolic processes, cellular organization, and tissue development.

Thursday, November 5, 2026 11:00am - 12:00pm

Raiffeisen Lecture Hall, Central Building



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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