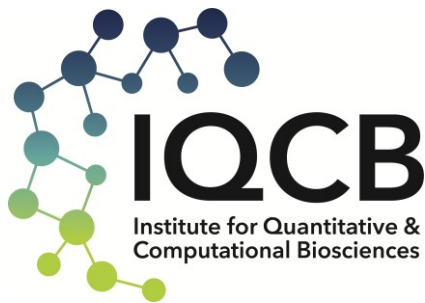




IQCB Seminar
November 26, 2025
10:30 AM

Lecture Hall (00.187) at BioZentrum I, Hanns-Dieter-Hüsch-Weg 15, 55128 Mainz

Dr. Piret Avila

University of Helsinki, Finland

Exploring Life History Evolution Through Optimal Control Theory

Life history theory examines how natural selection shapes the diversity in reproduction and mortality schedules across species, explaining variation in rates of senescence, body size evolution, and reproductive strategies. Life history strategies can be characterized as function-valued traits and studied using evolutionary game theory and optimal control theory. These traits can be characterized under different forms of plasticity: (i) age-dependent strategies (e.g., fixed developmental schedules) and (ii) state-dependent strategies (that respond to physiological or environmental conditions). I highlight how these different forms lead to fundamentally different outcomes when individuals are interacting, emphasizing how plasticity to the social environment influences life history evolution. I then examine a specific sort of interaction, intergenerational sharing of resources between family members, and show how it influences life history evolution. Finally, I discuss how social interactions and development can drive disruptive selection on life history strategies, maintaining genetic variation in life history traits. More broadly, these results reveal fundamental connections between social behavior and life history evolution, with important implications for understanding human life history evolution and evolution of aging.



IQCB EVENTS

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