SFB 680

Molecular Basis of Evolutionary Innovations

Molekulare Grundlagen evolutionärer Innovationen

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The interplay of population dynamics and evolutionary processes – insights from predator-prey systems

It is increasingly apparent that evolutionary dynamics that act on the same time scale as ecological processes might play an important role in determining population, community and ecosystem dynamics. In this talk I present several areas of interplay among population dynamics and evolution acting on the same time scale in predator-prey systems. I will present theory and experimental results of a *Chlamydomonas*-rotifer system showing that changes in adaptive genetic variance in a defense trait of a prey population can radically alter eco-evolutionary predator-prey dynamics. The results show that not only population dynamics are altered by the initial amount of genetic variation but also whether or not genetic variation is lost or maintained. The results further predict that the rapid evolution in the defense trait has a greater contribution to the predators' growth rate than just the number of prey items present. I further explore how higher food web and spatial complexity affects the potential for eco-evolutionary dynamics. As another example of rapid evolution in this predator-prey system, I present results of how the rate of sex evolves in a homogenous or heterogeneous environment, demonstrating that sex is advantageous when migration between divergent selecting environments leads to genetic associations that may not be favored by selection.

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2:00 p. m.

Institute for Genetics, Lecture Room, ground floor

Host: Michael Lässig

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