

SFB 680

MOLECULAR BASIS OF EVOLUTIONARY INNOVATIONS

Eleni Katifori

MPI for Dynamics and Self-Organization, Göttingen

Xylem, phloem and optimality in leaf vascular networks

Vascular plants are endowed with two complex vein systems, the purpose of which is to distribute water where needed (xylem) and to collect the products of photosynthesis (phloem). These two vascular systems are most apparent in the leaves of modern angiosperm plants, where, superimposed on each other they typically form dense reticulate webs that serve critical functions related to leaf survival and photosynthesis. It has been hypothesized that the vascular network architecture design has been evolutionary selected to optimize photosynthetic rates. In this talk we explore this assertion further. We use hydrodynamics and network theory to model the xylem and phloem network in the leaf. We find the network architectures that are optimal for water distribution and maximize total photosynthates uptake and consider the interplay between leaf morphology and shape and network properties.

April 17, 15:00

Institute for Genetics, Zölpricher Str. 47a, Lecture Hall, 4th Floor

Host: Michael Lässig

www.sfb680.uni-koeln.de