

Vortragsankündigung

Mittwoch, 16. Oktober 2019, 11.15 Uhr

Seminarraum I (JAK2AOG1.33), Jakob-Haringer-Straße 2a

Dr. Lucja Kowalewska

Department of Plant Anatomy and Cytology, Faculty of Biology,
University of Warsaw, Poland

“Structural plasticity of the chloroplast thylakoid network”

Intricate spatial (3D) structure of internal plastid membrane network develops in chloroplast during plant ontogenesis. Complex structure of pracrystalline tubular prolamellar body (PLB) together with porous prothylakoids is formed when seedling growth proceeds without light. Upon illumination, through multistage direct rearrangement, PLB transform into lamellar system of stacked (grana) and loosely arranged (stroma) thylakoids.

The chloroplast thylakoid network, the site of photochemical reactions, is one of the most important as well as most complicated membrane systems in nature. Thus extensive studies on its possible spatial rearrangements are important for better understanding of the crucial role of the thylakoid structure in photosynthesis regulation. Although 2D ultrastructural enable to track detailed membrane rearrangements but the dynamics of the photosynthesis can be better understood when structural relations between thylakoid compartments are described in 3D. Therefore, in our studies, we focus on the detailed spatial analysis of the thylakoid network using electron tomography and confocal laser scanning microscopy.

I will present results of our studies on the formation of cubic membrane arrangements of PLB and membrane transformation during etioplast-to-chloroplast transition on light. Moreover, I will show the influence of thylakoid membrane components on the formation of a helical grana shape in fully developed plants and importance of such spatial arrangement for the photosynthetic efficiency. Illumination-induced thylakoid membrane dynamics in short time-scales will be presented as another example of structural plasticity of the thylakoid network.