

# **COLLOQUIA IN CELLULAR SIGNALLING**

Venue: Medical University Vienna, Center for Physiology and Pharmacology,  
Institute of Pharmacology, Waehringerstrasse 13a, 1090 Vienna, "**Leseraum**".

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**Wednesday 6.6.2012 11:00 s.t.**

**Sascha Martens**  
**(host: Stefan Böhm)**

Max F. Perutz Laboratories  
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## ***"Molecular Mechanisms of Autophagosome Formation"***

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Abstract.

Autophagosomes are small double membrane-bound organelles that are formed *de novo* during a process called autophagy. Autophagosomes mediate the bulk degradation of cytoplasmic material such as aggregated proteins, dysfunctional or surplus mitochondria and intracellular pathogens. Autophagy is conserved from yeast to human and has been shown to protect the organism from conditions such as starvation, neurodegeneration and infectious diseases. During autophagosome formation initially small, double membrane structures termed isolation membranes are formed. These isolation membranes expand and thereby gradually enclose cytoplasmic cargo. Finally, isolation membranes close to give rise to mature autophagosomes. After their formation autophagosomes fuse with lysosomes or vacuoles in yeast within which their inner membrane and the content are degraded. Despite their importance little is known about how cells generate autophagosomes. In order to gain insight into how the cellular machinery generates autophagosomes we aim to reconstitute this process *in vitro*. To this end we employ purified, fluorescently labeled proteins and giant unilamellar vesicles. We will present fascinating insights we gained using this system.