Molecular Biology Seminar

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"Insights into the mechanism of autophagosome maturation and fusion"

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Christian Ungermann 博士は、細胞内小胞の融合や繋留に関わる因子の遺伝学的・生化学的研究を精力的に展開している研究者です。最近は、特にオートファジーの後期ステップであるオートファゴソームとリソソームの融合や、エンドサイトーシスにも焦点を当てています。多くの方の参加をお待ちしています。

In both yeast and mammals, the mechanism and regulation of fusion between autophagosomes and lysosomes/vacuoles is still only partially understood. The fusion of autophagosomes with vacuoles requires SNARE proteins, the homotypic vacuole fusion and protein sorting (HOPS) tethering complex, the RAB7 GTPase Ypt7, and their guanine nucleotide exchange factor (GEF) Mon1-Ccz1. We and others recently identified Ykt6 as the autophagosomal SNARE protein. However, it has not been resolved when and how lipid-anchored Ykt6 is recruited onto autophagosomes. Here, I will present our recent insights into the targeting and functioning of Ykt6. Our data suggest that targeting of Ykt6 depends on its localization to the ER, occurs before autophagosome closure and is regulated by phosphorylation. We suggest that autophagosome maturation is controlled at several levels to ensure fusion of closed and functional autophagosomes with the vacuole. Such a mechanism is likely conserved across species.

Gao et al. *J Cell Biol*. 217:3670-3682 (2018)

González Montoro et al. *Dev Cell*. 45:621-636 (2018)

Malia et al. *Proc Natl Acad Sci U S A*. 115:4684-4689 (2018)

Gao et al. *Elife*. 7. pii: e31145 (2018)

連絡先：分子生物学分野　水島昇