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Endocytosis caused by liquid-liquid phase separation of proteins

Prof. Stephen Michnick

Université de Montréal, Canada



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北海道大学 理学部 6 号館

6-204-02 室 (多目的演習室)

Clathrin-mediated endocytosis (CME) underlies intra -and extracellular material trafficking in eukaryotes, and is essential to protein metabolism, intercellular signaling, membrane remodeling and other cell regulatory processes. Although CME is usually driven by F-actin polymerization, CME can also occur through unknown actin independent mechanisms. Here, we present evidence that CME is driven by the accumulation of proteins at sites of endocytosis initiation that undergo liquid-liquid phase separation to form viscoelastic droplets. The surfaces of these droplets, through adhesion with the membrane and surrounding cytosol, generate the work required to drive membrane invagination. The proposed mechanism expands the repertoire of functions of liquid-liquid phase separation of proteins to include their ability to do work due to soft interfaces that shape and organize cellular matter.

本講演は、大学院総合化学院『化学研究先端講義／総合化学特別研究第二』の一部として認定されています。

連絡先：北海道大学大学院理学研究院化学部門 坂口 和靖

(Tel: 011-706-2698, Mail: kazuyasu@sci.hokudai.ac.jp)

