論 文 の 内 容 の 要 旨

論文題目　X-ray crystallography of Sec10, a subunit of the exocyst complex
（Exocyst複合体Sec10サブユニットの X線結晶構造解析）

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Exocytosis mediates secretion of vesicular contents to the extracellular environment and transport of lipid and membrane proteins to the plasma membrane in eukaryotic cells. The exocyst complex is required for trafficking the *trans*-Golgi network-derived vesicles to the plasma membrane during exocytosis. This complex consists of Sec3, Sec5, Sec6, Sec8, Sec10, Sec15, Exo70 and Exo84. The disruption of its function causes defects of various biological processes such as cell polarity, cell migration and primary ciliogenesis. The exocyst complex tethers vesicles at the fusion sites as effector of small GTPases. Its interaction with phosphatidylinositol 4,5-bisphosphate is also involved in the tethering. To date, only Exo70 has its near-full-length structure determined, whereas the C-terminal half domains of Sec6, Sec15 and Exo84 and the small-GTPase-binding domains of Sec3, Sec5 and Exo84 have been solved. In this study, we determined the crystal structure of the near-full-length zebrafish Sec10 (zSec10) at 2.73 Å resolution. This determined zSec10 structure showed the □-solenoid architecture conserved with the other determined CATCHR subunits and their structurally related proteins. This structure provides a basis for future studies on its possible function as an individual molecules and/or an exocyst subunit. For the structural study of the entire exocyst complex, this structure might be used to refine or interpret the complex structure that is expected to be determined in the near future.