

VCIP135 associates with both the N- and C-terminal regions of p97 ATPase.

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論 文 名 : VCIP135 associates with both the N- and C-terminal regions of p97 ATPase.
(VCIP135 は p97ATPase の N 末と C 末の両領域に結合する)

区 分 : 甲

論 文 内 容 の 要 旨

Golgi and endoplasmic reticulum (ER) biogenesis require two distinct p97ATPase-mediated membrane fusion pathways; namely, the p97/p47 pathway and the p97/p37 pathway. p97(VCP)/p47 complex-interacting protein, p135 (VCIP135) is necessary for both of these pathways. Although VCIP135 is known to form a complex with p97 in the cytosol, the role of this complex in Golgi and ER biogenesis has remained unclear. In this study, I demonstrated that VCIP135 has two distinct p97-binding sites at its N- and C-terminal regions. In particular, the C-terminal binding site includes the SHP motif, which is also found in other p97-binding proteins, such as p47, p37 and Ufd1. I also clarified that VCIP135 binds to both the N- and C-terminal regions of p97; i.e., the N- and C-terminal binding sites in VCIP135 interact with the C- and N-terminal regions of p97, respectively. These two interactions within the complex are synchronously controlled by the nucleotide state of p97. I next generated VCIP135 mutants lacking each of the p97-binding sites to investigate their functions in living cells, and clarified that VCIP135 is involved in Golgi and ER biogenesis through its two distinct interactions with p97. VCIP135 is hence a unique p97-binding protein that functions by interacting with both the N- and C-terminal regions of p97, which strongly suggests that it plays crucial roles in p97-mediated events.