

# 輸送小胞を介する選択的細胞内蛋白質輸送の制御機構

|       |   |
|-------|---|
| 著者    | 大野 博司   |
| 著者別表示 | Ohno Hiroshi  |
| 雑誌名   | 平成11(1999)年度 科学研究費補助金 基盤研究(B)<br>研究成果報告書概要                                      |
| 巻     | 1998 1999   |
| ページ   | 2p.   |
| 発行年   | 2001-10-22  |
| URL   | <a href="http://doi.org/10.24517/00063939">http://doi.org/10.24517/00063939</a> |



# 1999 Fiscal Year Final Research Report Summary

## Mechanism of regulation of selective intracellular protein sorting by the family of Adaptor (-like) protein complexes

Research Project

### Project/Area Number

10480155

### Research Category

Grant-in-Aid for Scientific Research (B)

### Allocation Type

Single-year Grants

### Section

一般

### Research Field

Structural biochemistry

### Research Institution

Kanazawa University (1999)

Chiba University (1998)

### Principal Investigator

**OHNO Hiroshi** Kanazawa University, Cancer Research Institute, Professor, がん研究所, 教授 (50233226)

### Project Period (FY)

1998 - 1999

### Keywords

clathrin / AP complexes / tyrosine-based sorting signal / sorting signals / selective sorting / endocytosis / epithelial cells / cell polarity

### Research Abstract

Selective sorting of membrane proteins in the post-Golgi secretory and endocytic pathways are largely regulated by sorting signals encoded within the cytoplasmic tails of sorted proteins. One of the sorting signals, the tyrosine-based sorting signal, works for selective intake of the sorted molecules into the clathrin-coated vesicles (CCV), by interacting with the  $\mu$  subunits of AP complexes, a coat component of the CCV. AP complexes consist a protein family, and the tyrosine-based sorting signals are known to be involved in many intracellular sorting pathways including endocytosis and basolateral sorting. This raised the possibility that each  $\mu$  chain specifically recognizes a subset of the tyrosine-based sorting signals to produce specificity and diversity of the sorting. We utilized a yeast 2-hybrid assay to show this is the case. We cloned a new  $\mu$  homologue,  $\mu$ 1B, which is highly homologous to one of the ubiquitously expressed  $\mu$  chains,  $\mu$ 1A. In contrast to  $\mu$ 1A, however, the expression of  $\mu$ 1B is restricted to epithelial cells. Plasma membrane of epithelial cells are physically divided into two domains, apical and basolateral, and membrane proteins are sorted selectively to these two domains. By reconstituting the expression of  $\mu$ 1B into an epithelial cell line lacking the  $\mu$ 1B expression, we were able to show that  $\mu$ 1B is involved in the selective sorting of membrane proteins to the basolateral plasma membrane in epithelial cells.

# Research Products (10 results)

|     |              |
|-----|--------------|
| All | Other        |
| All | Publications |

- [Publications] Ohno, H., Poy G., Bonifacino, J.S.: "Cloning of the gene encoding the murine clathrin-associated adaptor medium chain  $\mu 2$  : gene organization, alternative splicing and chromosomal assignment"Gene. 210. 187-193 (1998) ▼
- [Publications] Ohno, H., Aguilar, R. C., Yeh, D., Taura, D., Saito, T., Bonifacino, J. S.: "The Medium Subunits of Clathrin Adaptor Complexes Recognize Distinct but Overlapping Sets of Tyrosine-based Sorting Signals"J. Biol. Chem.. 273. 25915-25912 (1998) ▼
- [Publications] Ohno, H., Tomemori, T., Nakatsu, F., Okazaki, Y., Aguilar, R. C., Foelsch, H., Mellman, I., Saito, T., Shirasawa, T., Bonifacino, J. S.: " $\mu 1B$  : a novel adaptor medium chain expressed in polarized epithelial cells"FEBS Lett.. 449. 215-220 (1999) ▼
- [Publications] Folsch, H., Ohno, H., Bonifacino, J. S., Mellman, I.: "A novel clathrin adaptor complex mediates basolateral targeting in polarized epithelial cells"Cell. 99. 189-198 (1999) ▼
- [Publications] Nakatsu, F., Kadohira, T., Gilbert, D. J., Jenkins, N. A., Kakuda, H., Copeland, N. G., Saito, T., Ohno, H.: "Genomic structures and chromosomal mapping of the genes encoding clathrin-associated adaptor medium chains  $\mu 1A$  (Ap1m1) and  $\mu 1B$  (Ap1m2)"Cytogenet. Cell Genet.. 87. 53-58 (1999) ▼
- [Publications] Ohno, H., Poy G., Bonifacino, J. S.: "Cloning of the gene encoding the murine clathrin-associated adaptor medium chain  $\mu 2$  : gene organization, alternative splicing and chromosomal assignment."Gene. 210. 187-193 (1998) ▼
- [Publications] Ohno, H., Aguilar, R. C., Yeh, D., Taura, D., Saito, T., Bonifacino, J. S.: "The Medium Subunits of Clathrin Adaptor Complexes Recognize Distinct but Overlapping Sets of Tyrosine-based Sorting Signals."J. Biol. Chem.. 273. 25915-25921 (1998) ▼
- [Publications] Ohno, H., Tomemori, T., Nakatsu, F., Okazaki, Y., Aguilar, R. C., Foelsch, H., Mellman, I., Saito, T., Shirasawa, T.: "Bonifacino, J. S.  $\mu 1B$  : a novel adaptor medium chain expressed in polarized epithelial cells."FEBS Lett.. 449. 215-220 (1999) ▼
- [Publications] Folsch, H., Ohno, H., Bonifacino, J. S., Mellman, I.: "A novel clathrin adaptor complex mediates basolateral targeting in polarized epithelial cells."Cell. 99. 189-198 (1999) ▼
- [Publications] Nakatsu, F., Kadohira, T., Gilbert, D. J., Jenkins, N. A., Kakuda, H., Copeland, N. G., Saito, T., Ohno, H.: "Genomic structure and chromosomal mapping of the genes encoding clathrin-associated adaptor medium chains  $\mu 1A$  (Ap1m1) and  $\mu 1B$  (Ap1m2)."Cytogenet. Cell Genet.. 87. 53-58 (1999) ▼

URL:

Published: 2001-10-22