The Study of Functional Roles of Dolichol Phosphate Mannose Synthase I (DPM1) Homolog in *Caenorhabditis elegans*

Do Hyun Kim[1], Jin Won Cho[1,2,3]

[1]*Department of Biology, Yonsei University, Seoul, 120-749, Korea*
[2]*Protein Network Research Center, Seoul, 120-749, Korea*
[3]*Biomedical Proteome Research Center, Seoul 120-749, Korea*
E-mail: sohng@sunmoon.ac.kr, Tel: 82-02-2123-7623, Fax: 82-02-312-5657

Dolichol phosphate mannose synthase is one member of the multiple enzyme family involved in *N*-glycan assembly in ER. It catalyzes the synthesis of dolichylphosphatemannose. This enzyme is composed of a catalytic subunit DPM1 and regulatory subunits DPM2 and DPM3. It was reported that partial defect in human DPM biosynthesis causes CDG (congenital disorders of glycosylation) type Ie. We found that dpm1 homolog (y66h1a.2) in *C. elegans* was mainly expressed in hypodermis and intestine. Functional block of dpm1 homolog by RNA interference caused developmental delay, formation of huge embryos or unfertilized oocytes, abnormal cleavage of embryos, egg-laying defect, and enlargement of intestinal lumen. To investigate that these developmental defects are caused by incomplete *N*-linked glycosylation in vivo, we comparatively analyzed *N*-linked glycans of wild type and RNAi-induced worms. By HPLC analysis, we found that shorter *N*-linked glycans accumulated in the dpm1 RNAi-induced worms than in wild type. These results indicate that C. elegans DPM1 has important roles involved in development and this *C. elegans* system would be a good animal model of human CDG.