Searching for the genes related to the nerve net formation in hydra

Sumiko Minobe, Yumi Tajima, Shun Hamada, Mami Kurumata, and Osamu Koizumi
Fukuoka Women's University

The nervous system of hydra is one of the most primitive in the animal kingdom, consisting simply of a loose net of nerve cells. However the nerve net is not uniform and consists of variety of sub-populations. We have been studying to find how the complexity of the nerve net is formed. We searched the gene which has specific expression in a population. While screening hydra ESTs by *in situ* hybridization, we found the clone hmp4846 showed the specific expression in the nerve cells of the tentacle base. Hmp4846 doesn't seem to have the homologous gene in any other species. We examined the expression patterns during budding and head regeneration to see when the gene works related to the morphogenesis. In both processes hmp4846 expression was observed the presumptive area for the tentacle emergence before the tentacle morphogenesis was visualized. Theses results may imply that hmp4846 has some roles in the early stage of the tentacle formation or of the nerve net formation in the tentacles. We are tying to the functional analysis for hmp4846 using over expression in vivo by making transgenic hydra.