Lipocalin family proteins found in the olfactory epithelium of Japanese common newt

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We found two lipocalin genes, *Cp-Lip*1 and 2 from the cDNA library of olfactory epithelium of the Japanese common newt, *Cynops pyrrhogaster*. Lipocalin-family proteins are soluble proteins characterized by a conserved β-barrel structure and bind small hydrophobic molecules. At first we studied the expression of both genes and found that they were exclusively expressed in acinar cells of Bowman's glands, but the distribution of the cells expressing each gene was different. Using *E. coli*-expressed Cp-Lip 1 and 2 we obtained the anti-serum to the each protein, which revealed that the distribution of both proteins was also different in the mucus layer of the olfactory epithelium. Fluorescence quenching experiments showed that both proteins have an ability to bind odorant molecules, but the selectivity to odorants was different. The electro olfactograms were measured using an isolated newt olfactory epithelium. The addition of recombinant Cp-Lip 1 modified the electro olfactogram to ethylvanillin but not to linalool. Cp-Lip 1 has higher affinity to the former than the latter. Based on the results we presented a model that Cp-lip 1 and 2 play as "odorant-binding protein" and have a role in pre-discrimination of odorants in the mucus layer of the olfactory epithelium.