IP39, the integral membrane protein of euglenoid flagellates

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The plasma membrane of *Euglena gracilis* possesses a densely-arranged array of intra-membrane proteins, IP39, which are implicated in the mechanism of rounding-up movement of the cell (euglenoid movement). Molecular cloning of cDNA encoding IP39 has been carried out and two types of cDNA were identified. In this study, anti-peptide antibodies were generated against deduced amino acid sequences of the two types of IP-39 proteins, α- and β-IP39, to examine molecular arrangement and cellular localization of these protein isoforms. Immunofluorescence microscopy showed that both α- and β-IP39 are uniformly localized around the cell cortex. Immunoblot analysis showed that both types of IP39 exist in the membrane fraction in either monomeric or dimeric form. Analysis of phosphorylation level of IP39 showed that IP39 is constitutionally phosphorylated, regardless of whether IP39 proteins were prepared from elongated or rounded cells. *Peranema trichophorum* is an ancestral species of euglenoids, and also shows typical euglenoid movement. Western bolt analysis using anti-IP39 antibodies showed the presence of homologous antigens in the membrane fraction of *P. trichophorum*, and PCR using gene-specific primers for IP39 amplified three DNA sequences in *P. trichophorum*. These results reveal the existence of protein(s) in *P. trichophorum* that are homologous to IP39.