

The amino acid transport system $\gamma^+L/4F2hc$ is a heteromultimeric complex

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4F2hc is an almost ubiquitous transmembrane protein in mammalian cells; upon expression in *Xenopus laevis* oocytes, it induces amino acid transport with characteristics of system γ^+L . Indirect evidence fostered speculation that function requires the association of 4F2hc with another protein endogenous to oocytes and native tissues. We show that expression of system γ^+L -like amino acid transport activity by 4F2hc in oocytes is limited by an endogenous factor and that direct covalent modification of external cysteine residue(s) of an oocyte membrane protein blocks system $\gamma^+L/4F2hc$ transport activity, based on the following. 1) Induction of system γ^+L -like activity saturates at very low doses of human 4F2hc cRNA (0.1 ng/oocyte). This saturation occurs with very low expression of 4F2hc at the oocyte surface, and further increased expression of the protein at the cell surface does not result in higher induction of system γ^+L -like activity. 2) Human 4F2hc contains only two cysteine residues (