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Cell Biology

A cDNA clone encoding a functional L-proline transporter expressed in rat brain

Value Proposition

The L-proline transporter is expressed in several subpopulations of glutamatergic neurons and is implicated in higher cortical functions and memory. Several CNS disorders are associated with L-proline transporter abnormalities, and thus tools for investigating the transporter and associated diseases are paramount.

Technology

This invention is a cDNA clone encoding a functional L-proline transporter isolated from rat brain. The clone confers, on non-neuronal cells the ability to actively transport L-proline in a NA+ dependent manner with high affinity and accumulate L-proline from extracellular media. This cDNA can be used to synthesize the transporter in cell lines to develop specific L-proline transport antagonists.

Other Applications

This cDNA could further be used to develop specific antibodies suitable for diagnostic evaluation of transporter alterations. For example, development of antibodies directed against the cloned transporter protein may have diagnostic value for disorders associated with hyper- or hypoprolinemia as they may be able to detect expression in peripheral tissues suitable for biopsy.

Additionally, the cDNA may be used as a gene probe for identification of a human homolog.

Advantages

- The cloned carrier has never before been isolated
- The clone permits a detailed assessment of drug binding properties for agents capable of enhancing levels of L-proline in brain synapses

