Structural Studies of Kainate Receptor GluR5 Ligand-binding Core Complexes

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Ionotropic glutamate receptors (iGluRs) form a family of ligandgated ion channels that play a central role in rapid neuronal signaling in the central nervous system. The complex roles of the iGluRs are far from understood in detail but it is generally accepted that these receptors are implicated in a number of psychiatric and neurological disorders such as Alzheimer's, schizophrenia and epilepsy.

A soluble construct of the extracellular ligand-binding core of the GluR5 receptor (GluR5-S1S2), belonging to the kainate class of iGluRs, has been expressed in *Escherichia coli*. The X-ray structure of GluR5-S1S2 in complex with the endogenous neurotransmitter (*S*)-glutamate was recently determined to 1.95 Å resolution. The GluR5-S1S2 structure comprises two domains, trapping (*S*)-glutamate. Interestingly, GluR5-S1S2 forms a dimer with a different arrangement of the two protomers compared to the related GluR2-S1S2J, which belongs to the AMPA class of iGluRs. This structure as well as the current status of the project will be presented on the poster.

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