

Applications

- Cell line for drug screening
- G-protein coupled receptor (GPCR)- drug screening
- Screening of compounds, especially antipsychotics
- Predicting effectiveness of drug candidates.
- Research tool for studying GPCRs

Inventors

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Market Need

To date, no technology exists for screening potential antipsychotic drugs. The dysregulation of glutamate receptor 2 (mGluR2) and the serotonin 5-HT_{2A} receptor (2AR) have been demonstrated to play a significant role in schizophrenia, but the molecular determinants for a drug to behave as an atypical antipsychotic are poorly understood. From current effective drugs it appears that 2AR inverse agonists and mGluR2 agonists may be desirable. However, the relationship of agonism or inverse agonism to psychotic activity is not fully understood.

Technology Summary

Researchers at VCU have discovered that the Gi to Gq signaling ratio predicts antipsychotic activity of drugs that target the mGluR2/2AR complex. They have developed a cell line that will express the receptor complex along with the ion channels that are used to assay the activity of the receptor complex in response to ligands that target the complex. The cell line can be used for a high-throughput screening of drugs through a multi-well plate through a Flex-station that uses a thallium fluorescent assay to assess currents through the K⁺ channels. The metric that they have found allows quantification and prediction of antipsychotic /pro-psychotic effects of new drugs acting through the mGluR2/2AR receptor heterocomplex. The ability of this novel measure to predict the most effective antipsychotic and pro-psychotic drugs acting through the receptor heterocomplex, makes it a promising tool for screening new compounds with potential antipsychotic effects and predicting the efficacy of new drugs.

Technology Status

Publication: “Decoding the signaling of a GPCR heteromeric complex reveals a unifying mechanism of action of antipsychotic drugs.” Cell. 2011 Nov 23;147(5):1011-23.

This technology is available for licensing to industry for further development and commercialization.