## Group Therapy: New approach to psychosis treatment could target multiple nervous system receptors

Philadelphia, Pa. – Antipsychotic drugs, used in the treatment of psychotic disorders involving severe delusions and hallucinations, have been studied for more than 70 years. Currently available antipsychotic drugs, however, only alleviate certain symptoms, with results that vary greatly from patient to patient and frequently cause significant side effects.

A new understanding of how the brain's G-protein receptors work may soon enable a way to better customize and target antipsychotic drugs to treat specific symptoms. Researchers from Virginia Commonwealth University (VCU) will present their findings at the 57th Annual Meeting of the Biophysical Society (BPS), held Feb. 2-6, 2013, in Philadelphia, Pa.

G-protein coupled receptors (GPCRs) are responsible for activating so-called "G-proteins," internal signaling messengers that control the activity of many other internal proteins. The starring role of GPCRs in regulating a cell's activity makes them a leading pharmaceutical target: approximately 50 percent of the antipsychotic drugs produced are aimed at these important nervous system receptors.

A specific GPCR is integral to each of three key pathways for intercellular signaling, one for each of the chemical messengers dopamine, serotonin, and glutamate. But these individual GPCRs also form complexes with each other, altering their effects on signaling in the brain. The VCU team has focused on how GPCR complexes influence signaling in a distinct way from how individual GPCRs operate.

"The realization that receptors in the brain that bind and interpret dopamine, serotonin, and glutamate neurotransmitters form complexes with one another that signal very differently than when these receptors are found in isolation, promises to change the way we approach treatment of psychosis," explains VCU Ph.D. candidate Jason Younkin, who will present the team's findings.

Instead of targeting one neurotransmitter pathway at a time, Younkin and colleagues plan to target two or more at the same time. Antipsychotic drugs that target the complexes formed by the individual GPCRs will allow use of the signaling differences and could lead to more effective therapies.

"By understanding how receptor complexes signal and learning how to control these signals, it should enable the development of specific antipsychotic drugs that lack the many side effects that exist today," says VCU professor Diomedes E. Logothetis, a co-author of the study.

Presentation #595-Pos, "Functional signaling changes resulting from GPCR heteromerization: Relevance to psychosis," will take place at 1:45 p.m. on Sunday, Feb. 3, 2013, in the Pennsylvania Convention Center, Hall C. ABSTRACT: <a href="http://tinyurl.com/bhhsz7h">http://tinyurl.com/bhhsz7h</a>

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This news release was prepared for the Biophysical Society (BPS) by the American Institute of Physics (AIP).

# **ABOUT THE 2013 ANNUAL MEETING**

Each year, the Biophysical Society Annual Meeting brings together over 6,000 research scientists in the multidisciplinary fields representing biophysics. With more than 3,900 poster presentations, over 200 exhibits, and more than 20 symposia, the Annual Meeting is the largest meeting of biophysicists in the

world. Despite its size, the meeting retains its small-meeting flavor through its subgroup meetings, platform sessions, social activities, and committee programs.

The 57<sup>th</sup> Annual Meeting will be held at the Pennsylvania Convention Center (1101 Arch Street, Philadelphia, PA 19107). For maps and directions, please visit: http://www.paconvention.com/explore-philadelphia/directions-and-parking.

#### **QUICK LINKS**

Meeting Home Page:

http://www.biophysics.org/2013meeting/Main/tabid/3523/Default.aspx

Housing and Travel Information:

http://www.biophysics.org/2013meeting/AccommodationsTravel/HotelInformation/tabid/3621/Default .aspx

Program Abstracts and Itinerary Planner:

http://www.abstractsonline.com/plan/start.aspx?mkey=%7B763246BB-EBE4-430F-9545-81BC84D0C68C%7D

### **PRESS REGISTRATION**

The Biophysical Society invites credentialed journalists, freelance reporters working on assignment, and public information officers to attend its Annual Meeting free of charge. For more information on registering as a member of the press, contact BPS Director of Public Affairs and Communications Ellen Weiss at <a href="mailto:eweiss@biophysics.org">eweiss@biophysics.org</a> or 240-290-5606, or visit

http://www.biophysics.org/2013meeting/Registration/Press/tabid/3619/Default.aspx. Press registration will also be available onsite at the Pennsylvania Convention Center in the Biophysical Society's meeting office, Room 304VIP.

### **ABOUT BPS**

The Biophysical Society (BPS), founded in 1958, is a professional scientific society established to encourage development and dissemination of knowledge in biophysics. The Society promotes growth in this expanding field through its annual meeting, monthly journal, and committee and outreach activities. Its 9000 members are located throughout the U.S. and the world, where they teach and conduct research in colleges, universities, laboratories, government agencies, and industry. For more information on the Society or the 2013 Annual Meeting, visit <a href="https://www.biophysics.org">www.biophysics.org</a>.

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