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Neuronal and Cardiovascular Potassium Channels as Therapeutic Drug Targets: Promise and Pitfalls

CHICAGO – A new review article published in the October 2015 issue of the *Journal of Biomolecular Screening* (JBS) addresses the promise and pitfalls of **Neuronal and Cardiovascular Potassium Channels as Therapeutic Drug Targets.** Online access to the paper is FREE.

Authors Edward S. A. Humphries and Caroline Dart of the Department of Biochemistry, Institute of Integrative Biology at the University of Liverpool, UK, discuss what disease-causing disruption of specific K^+ channel genes in humans reveals about the functional role of K^+ channels and explore the current status of development of therapeutic activators and inhibitors. They also further examine the reasons why so few selective K^+ channel modulators are currently licenced for clinical use in cardiovascular and neurological disease and discuss new approaches and opportunities for future drug design and development.

Potassium (K^+) channels are a large and diverse family of integral membrane proteins that form water-filled pores through which K^+ can flow. The opening of K^+ channels, which occurs in response to a range of different signals, leads almost universally to the efflux of K^+ from cells causing the membrane potential to become more negative. In nerve and muscle, this ability to repolarize or hyperpolarize the membrane helps K^+ channels control excitability and this, coupled with their accessible cell surface location, subunit variability and often tissue-defined distribution, makes them attractive targets for the design of drugs to treat dysrhythmias in the heart and abnormal neuronal activity within the brain. However, with the notable exception of the anti-diabetic sulphonylureas and anti-hypertensives that target ATP-sensitive K^+ channels, these proteins have largely evaded successful drug discovery. This may reflect the inability for many high-throughput screening methods to track subtle shifts in often complex channel behavior, and difficulties related to optimizing lead structures due to structural restraints imposed by modifiers needing to bind to inaccessible sites within the channel complex.

JBS is one of two MEDLINE-indexed scientific journals published by the Society for Laboratory Automation and Screening (SLAS). Visit JBS Online at http://jbx.sagepub.com/content/20/9 for FREE access "Neuronal and Cardiovascular Potassium Channels as Therapeutic Drug Targets: Promise and Pitfalls." For more information about SLAS and its journals, visit www.slas.org/jala-jbs.

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The Society for Laboratory Automation and Screening (SLAS) *is an international community of more than 15,000 individual scientists, engineers, researchers, technologists and others from academic, government and commercial laboratories. The SLAS mission is to be the preeminent global organization providing forums for education and information exchange and to encourage the study of, and improve the practice of laboratory science and technology. For more information, visit www.SLAS.org.*

SLAS publishes two internationally recognized, MEDLINE-indexed journals, now in their 20th year of publication. ***The Journal of Laboratory Automation (JALA)*** *and* ***Journal of Biomolecular Screening (JBS)*** *uniquely serve laboratory science and technology professionals who work primarily in life science R&D. Together, JALA and JBS address the full spectrum of issues that are mission-critical to this important audience, enabling scientific research teams to gain scientific insights, increase productivity, elevate data quality, reduce lab process cycle times and enable experimentation that otherwise would be impossible.*

Specifically, ***JALA*** *explores ways in which scientists adapt advancements in technology for scientific exploration and experimentation. In direct relation to this,* ***JBS*** *reports how scientists use adapted technology to pursue new therapeutics for unmet medical needs, including assay development, identification of chemical probes and target identification and validation in general.*

Journal of Biomolecular Screening (JBS): *2013 Impact Factor 2.423. Editor-in-Chief Robert M. Campbell, Ph.D., Eli Lilly and Company, Indianapolis, IN (USA).*

Journal of Laboratory Automation (JALA): *2013 Impact Factor 1.879. Editor-in-Chief Edward Kai-Hua Chow, Ph.D., National University of Singapore (Singapore).*