

The Unusual G Protein Complex G β 5-R7: History, Role in Signaling, Hormone Secretion and Metabolism

ABOUT THE LECTURE

Unlike the other G protein beta subunits, G β 5 (gene: *Gnb5*) does not bind to G γ . Instead, it dimerizes with regulators of G protein signaling RGS6, 7, 9 or 11 (R7 family). The Gβ5-R7 association is necessary for stability of the dimer, so that the knockout of *Gnb5* results in degradation of all R7 proteins. Studies in mice implicated G β 5-R7 in many functions of the CNS, and this seminar will focus on the role of Gβ5-R7 in control of body weight. Haploid insufficiency by Gnb5 causes obesity in mice, consistent with human genetics that linked Gnb5 and R7 genes to increase in body mass index. While analyzing glucose metabolism we found that *Gnb5* knockout suppressed insulin exocytosis. This result is unexpected because in other systems, elimination of this RGS complex facilitates signal transduction, apparently via the GAP activity toward Gi proteins. The knockout of Gnb5 does not impair second messengers cAMP, Ca²⁺ and DAG in beta cells, but rather changes protein phosphorylation pattern. Our most recent data show that local knockout of Gnb5 in adult mouse hypothalamus cases a dramatic increase on body weight, indicating that G β 5-R7 regulates not only insulin, but also other hormones.

- **Prof Vladlen Slepak** Speaker: **Molecular and Cellular Pharmacology University of Miami School of Medicine**
 - Host: **Prof Patrick Casey** Senior Vice Dean, Research **Duke-NUS Medical School**

Dr Wang Hongyan

Associate Professor and Deputy Director Neuroscience & Behavioural Disorders Programme Duke-NUS Medical School

- Tuesday, 23 April 2019 Date:
- Time: 12.00 PM - 1.00 PM (Light refreshments will be served at 11.30 AM)
- **Duke-NUS Medical School** Venue: Amphitheatre, Level 2

Ms Kathleen Chan, Duke-NUS Research Affairs Department Contact Email: kathleen.chan@duke-nus.edu.sg **Person:**

Dr. Slepak obtained his Baccalaureate and PhD degrees in Moscow, Russia and in 1990 moved to California Institute of Technology (Caltech) to train as a postdoc with Dr. Melvin Simon. He participated in cloning and characterization of some G protein subunits, and in 1995 joined the faculty at the University of Miami where he continued research in signal transduction. He currently has the rank of Professor and serves as the Director of Graduate Program in Molecular and Cellular Pharmacology.



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