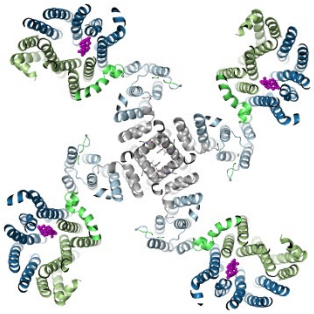
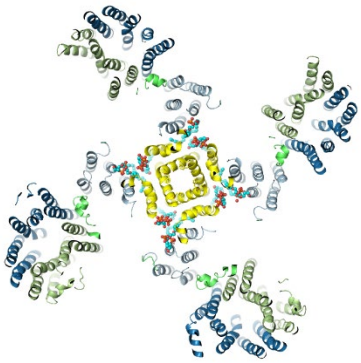
CryoEM Current Practices Webinar

K_{ATP} channels in metabolic sensing: Mechanistic insights from CryoEM structures





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K_{ATP} channels are ligand-gated potassium channels that couple cellular metabolism with membrane potential to regulate a broad range of cell activities: from hormone secretion, vasodilation, protection of cardiac and neuronal tissues against ischemic injuries, to learning and memory. Each K_{ATP} channel is composed of four inward rectifying potassium channels, Kir6.1 or Kir6.2, which form the ion-conducting pore, and four regulatory sulfonylurea receptors, SUR1, SUR2A, or SUR2B, from the ABC transporter family. Mutations in genes encoding K_{ATP} channel subunits are linked to several human diseases, including hyperinsulinism, neonatal diabetes and DEND syndrome. The importance of K_{ATP} channels in human health and disease has made them attractive drug targets. CryoEM studies have revealed how K_{ATP} channels are regulated by intracellular ATP and ADP, and membrane PIP_2, and how a variant can cause neonatal diabetes. Furthermore, cryoEM structures of the K_{ATP} channel in complex with drugs illuminate mechanisms of pharmacological modulation. The mechanistic insights from these structures offer opportunities to improve K_{ATP} pharmacology for disorders caused by channel dysfunction.

All are welcome to attend. Registration is at no-cost, but sign-up is required:
https://us02web.zoom.us/webinar/register/WN_QQy43OnwRoiC_Dgzsef0Qg

This webinar series is jointly hosted by the NIH Transformative High Resolution CryoEM Program Service Centers: the National Center for CryoEM Access and Training (NCCAT), the Pacific Northwest Center for CryoEM (PNCC), and the Stanford-SLAC CryoEM Center (S2C2) who provide no-cost access to cryoEM instrumentation and training. In this monthly series, we will highlight cryoEM methods and use the Q&A session after the seminar to stimulate discussion of best practices and interesting challenges that will be helpful to researchers new to the field. Representatives from all three service centers will also be on hand to answer questions about the cryoEM resources available to biomedical researchers and how to access them.