Mechanism of glutamate transport into synaptic vesicles

Shigeo TAKAMORI

Graduate School of Brain Science, Doshisha University, Japan

Email: stakamori@mail.doshisha.ac.jp

A large fraction of neurons in the central nervous system uses glutamic acid as the major excitatory neurotransmitter, which is released upon synaptic vesicle (SV) exocytosis. The vesicular glutamate transporters (VGLUTs) are responsible for accumulating glutamate into SVs, utilizing the proton electrochemical gradient ($\Delta\mu H^+$) generated by the vacuolar-type H^+-ATPase. However, the mechanism by which $\Delta\mu H^+$ drives VGLUT activity remains controversial. In this talk, I will summarize current models of glutamate transport and discuss our recent insights into how protons energize this process.