

Role of Brain-derived Neurotrophic Factor (BDNF) In Adverse and Therapeutic Effects of General Anesthetics

April 30

Tuesday, 12:30 pm

Billings Building—Rosedale Room

SPEAKER:



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Host: Dianna E. Willis, Ph.D.

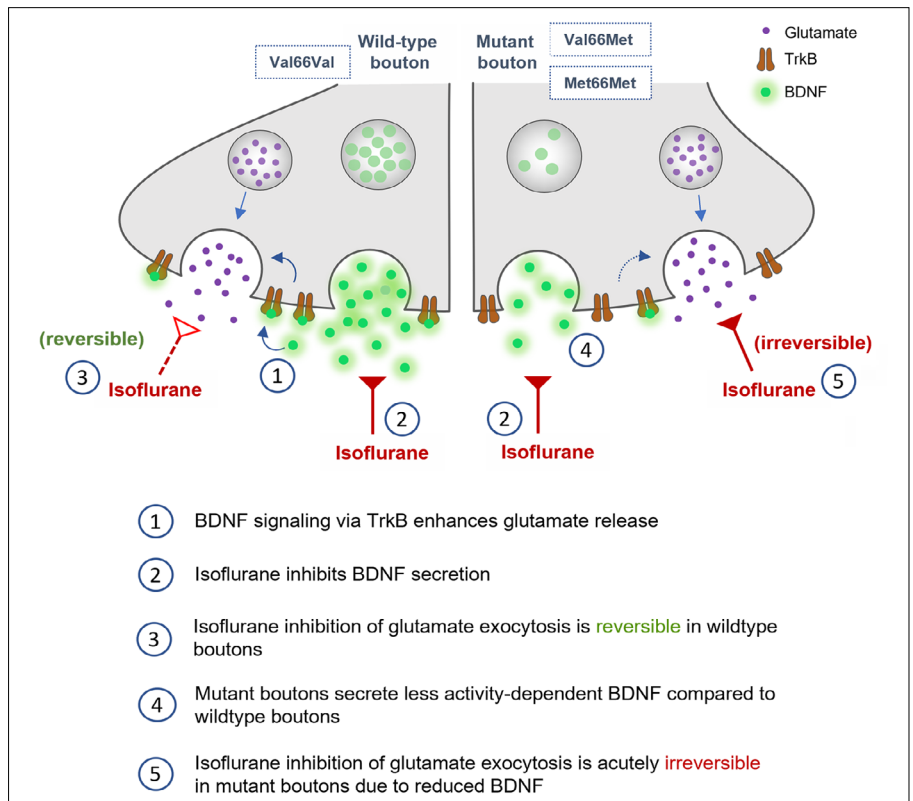
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Abstract

Based on plasma concentrations, certain anesthetics can produce anesthetic, analgesic, and/or antidepressant actions. Anesthetics are potent modulators of brain activity and growth factors such as brain-derived neurotrophic factor (BDNF) mediate both local and global plasticity. BDNF signaling has divergent actions on neuronal survival, structure, and plasticity based on developmental age, brain region, and activity. This seminar will discuss how BDNF mechanisms mediate both antidepressant and anesthetic actions of different anesthetic agents, and how impaired BDNF signaling due to genetic variation (Val66Met) presents additional vulnerability to synaptic dysfunction under these distinct behavioral endpoints.



Publications

1. Williams RA, Johnson KW, Lee FS, Hemmings HC Jr., Platholi J. A common human brain-derived neurotrophic factor polymorphism leads to prolonged depression of excitatory synaptic transmission by isoflurane in hippocampal cultures. 2022. Front Mol Neurosci. PMID: 35813074.
2. Johnson KW, Herold KF, Milner TA, Hemmings HC Jr., Platholi J. Sodium channel subtypes are differentially localized to pre- and post-synaptic sites in rat hippocampus. 2017. J Comp Neurol. PMID: 28758202.
3. Platholi J, Marongiu R, Park L, Yu F, Sommer G, Weinberger R, Tower W, Milner TA, Glass MJ. Hippocampal glial inflammatory markers are differentially altered in a novel mouse model of perimenopausal cerebral amyloid angiopathy. 2023. Front Aging Neurosci. PMID:38035277.