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NEUROSCIENCE 2011

Presentation Abstract

Program#/Poster#: 656.15/C27

Presentation Title: Excitatory actions of GABA in the dentate gyrus but not in the CA areas of the adult hippocampus

Location: Hall A-C

Presentation time: Tuesday, Nov 15, 2011, 3:00 PM - 4:00 PM

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Abstract: Over a limited postnatal period, there is a switch of GABAergic transmission from excitatory to inhibitory in the brain. In the adult hippocampus, GABAergic interneurons hyperpolarize pyramidal cells along their entire somato-dendritic axis. Contrary to this rule, here we show that GABAergic interneurons of the dentate gyrus exert shunting excitation, thereby depolarizing dentate gyrus granule cells (DGCs) from rest. Such shunting excitation persists throughout development and is rendered by a much more negative resting potential of DGCs with respect to the reversal potential of the $GABA_A$ receptor-mediated synaptic current. Our data reveal a region-specific implementation of shunting excitation in the hippocampus and suggest that GABA may have an excitatory role in synaptic integration of DGCs.

Disclosures: **P. Chiang:** None. **P. Wu:** None. **Y. Liu:** None. **T. Chien:** None. **T. Kuo:** None. **H.I. Cheng:** None. **C. Lien:** None.

Keyword(s): INTERNEURON

GABAERGIC

DENTATE GYRUS

Support: Ministry of Education (Aim for The Top University Grant) in Taiwan

National Health Research Institutes (Grants NHRI-EX100-9720NC)

Taiwan National Science Council (Grant NSC 99-2321-B-010-001)

[Authors]. [Abstract Title]. Program No. XXX.XX. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.