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**GABA<sub>B</sub> INHIBITOR BLOCKS THE EXPRESSION OF ANTIDROMICALLY-CONDITIONED EPSP-TO-SPIKE POTENTIATION.** Lee W. Campbell\* and Terrence J. Sejnowski. Howard Hughes Medical Institute, Salk Institute, PO Box 85800, San Diego, CA 92186.

EPSP-to-spike or E-S potentiation is a component of LTP which results from a shift in the excitation/inhibition balance. In the presence of bicuculline, a GABA<sub>A</sub> antagonist, most of the E-S potentiation component of LTP is eliminated.

Pairing antidromic theta-burst stimulation in phase with 5 Hz orthodromic stimulation produces an E-S potentiation without affecting EPSP slope (Soc Neurosci Abstr 17:533.15). This associative form of E-S potentiation is not blocked by GABA<sub>A</sub> antagonists and is mechanistically distinct from the E-S potentiation of LTP (Soc Neuro Abstr 19:547.15). Is GABA<sub>B</sub> involved in the induction or expression of antidromically-conditioned associative E-S potentiation?

The EPSP and population spike were recorded from the CA1 layer of rat hippocampal slices. The antidromic conditioning stimulus was 50 bursts of 5 pulses at 100 Hz with an interburst interval of 200 ms delivered to the alveus. The Schaffer collaterals were stimulated at 5 Hz. The compound 5-aminovaleric acid (5AV) was used in the bath to block GABA<sub>B</sub> receptors.

Several results suggest GABA<sub>B</sub> receptors are involved in the expression, but not the induction, of associative E-S potentiation. 1) In slices showing E-S potentiation following paired stimulation, adding 1 mM 5AV 10 min after pairing reduced the potentiation of the population spike to baseline; washing in normal bathing medium restored the potentiation to its former value. 2) In slices failing to potentiate following paired stimulation and in slices given the antidromic conditioning separate from the orthodromic stimulation, 5AV had no effect on the population spike. 3) Delivering paired stimulation in 5AV medium resulted\* in no E-S potentiation; washing out 5AV 10 min after pairing unmasked the potentiation.