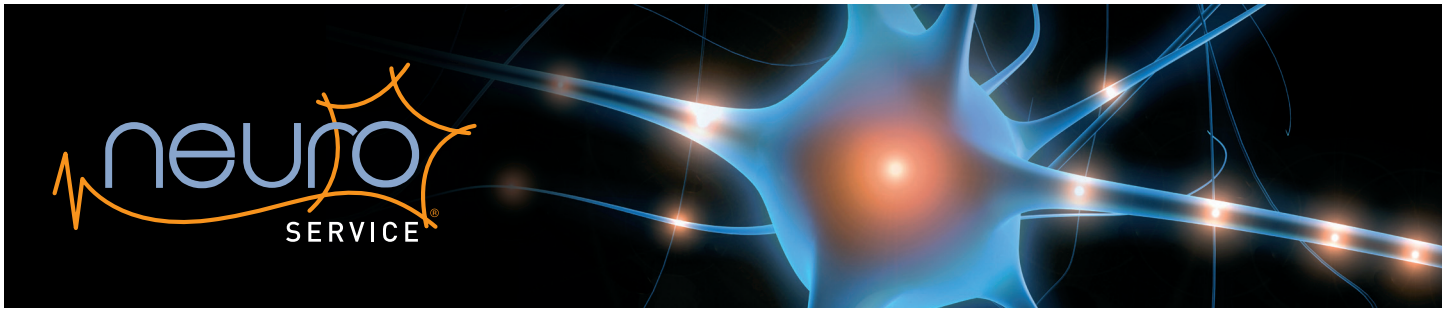
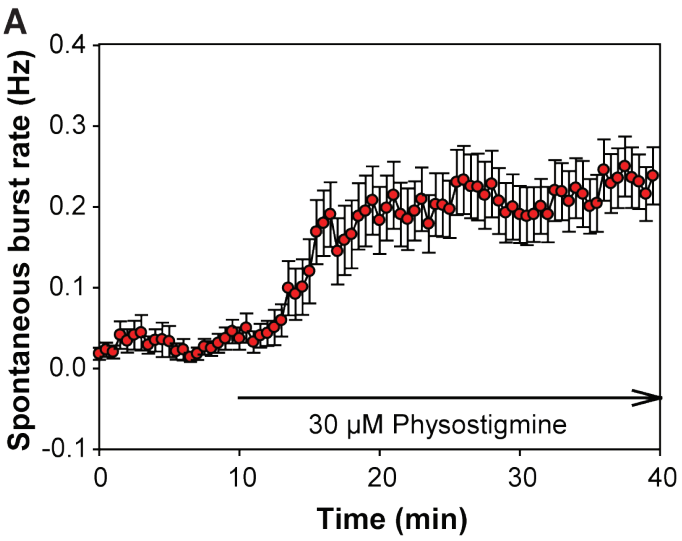
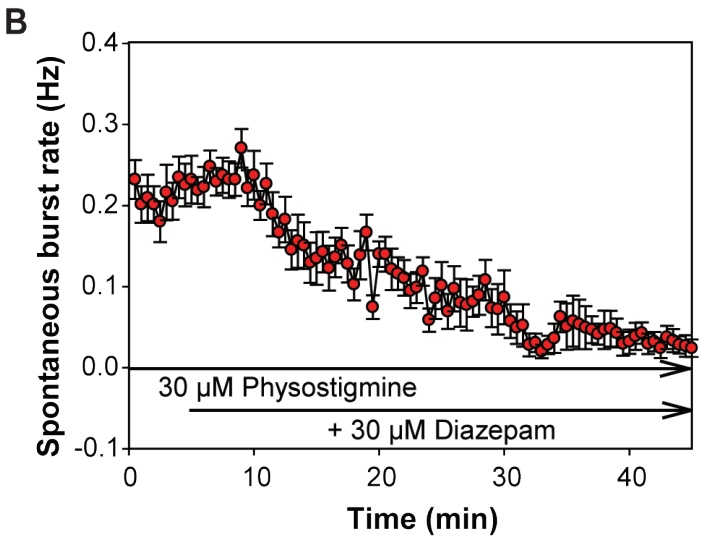
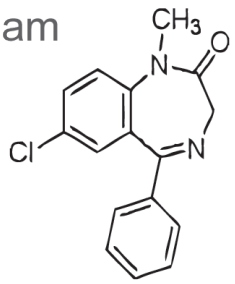


P-019 : **MODEL OF CHOLINERGIC-INDUCED EPILEPSY** : **DIAZEPAM** : **GABA$_A$ /M1muscarinic RECEPTORS**





Diazepam



BIOLOGY

Cholinergic agonists (pilocarpine, ...) as well as acetylcholinesterase inhibitors (physostimine, ...) are known to induce epileptic seizures both *in vitro* and *in vivo*. Elevated levels of acetylcholine (ACh) trigger a post-synaptic excitation mediated by M1 muscarinic receptors and suppress the GABAergic inhibition within the hippocampus. As presented on panel A, only a few minutes after physostigmine exposure, spontaneous rythmic activity occurs simultaneously at electrodes located in the CA3 region of the hippocampus. The anticonvulsant diazepam completely inhibits this epileptic activity.

PATHOLOGIES

Epilepsy

BIBLIOGRAPHY

Behrends JC, ten Bruggencate G (1993). J Neurophysiol 69:626-629.
Cruickshank JW, Brudzynski SM, McLachlan RS (1994). Brain Res 643:125-129.
Harrison PK, Sheridan RD, Green AC, Scott IR, Tattersall JE (2004). J Pharmacol Exp Ther 310:678-686.
McDonough JH, Jr., Zoeffel LD, McMonagle J, Copeland TL, Smith CD, Shih TM (2000). Epilepsy Res 38:1-14.

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