

Cardiorespiratory Control in Hibernation



The 13-lined ground squirrel

Hibernation presents a natural model of extreme physiology. The 13-lined ground squirrel (*Spermophilus tridecemlineatus*, a “local” species) displays seasonal neuroprotection of cardiorespiratory circuits in the brain. During torpor, these animals maintain a body temperature at or slightly above freezing and reduce their heart rates and respiratory rhythms by 99%. The major focus of our project is to understand the neuroprotective changes that accompany the hibernation phenotype. Departmental colleagues, Drs. Hannah Carey and Steve Johnson, are collaborating with us on this project. We are using molecular, cellular and systems levels techniques, including RT-PCR, immunocytochemistry, western blots, and single cell recordings from cardiorespiratory regions of the brainstem.

Publications Related to This Topic:

Hengen, K.B., Johnson, S.M., Carey, H.V. and M. Behan. 2007. Neural control of cardiorespiratory function in ground squirrels during hibernation. *FASEB J.* 21:965.15.