Task Order 4.2

- **Nerve gas exposure can selectively alter certain type of neurons in the deep brain.**

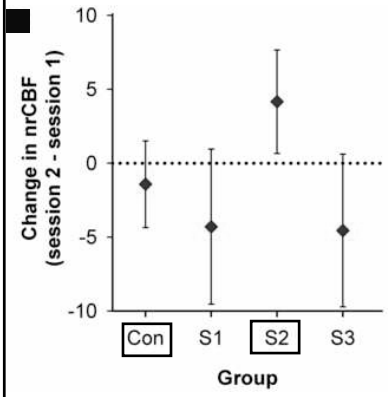
Henderson et al. 2001.

- **The health of these neurons can be studied by stimulating them and monitoring their responses.**

The neurons are stimulated with a drug, physostigmine, and the responses are monitored by blood flow measured with MRI. Assuming Group A is Sd 2, B is CON.

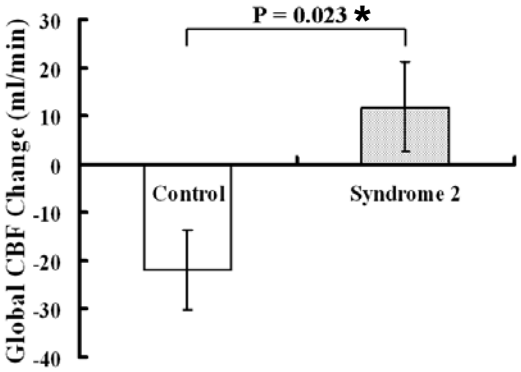
CBF change due to cholinergic stimulation: Whole brain Results

1998 Seabees Study



Blood flow measured with SPECT

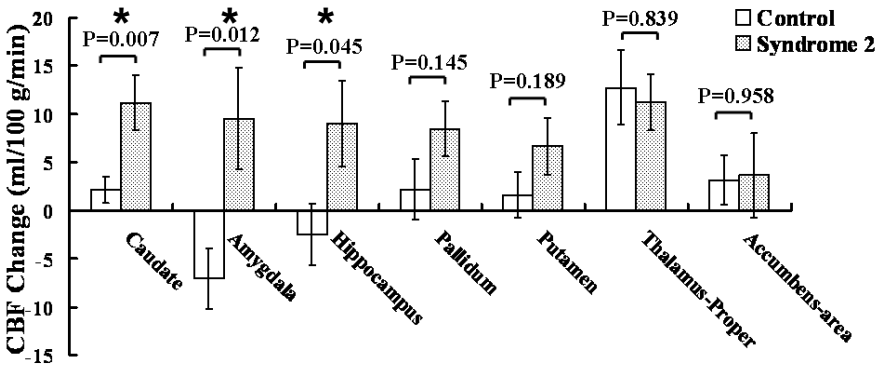
Present Seabees study



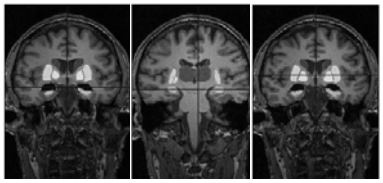
Blood flow measured with MRI

Haley et al. Psychiatry Research: Neuroimaging, in-press

CBF change due to cholinergic stimulation: Regional Results

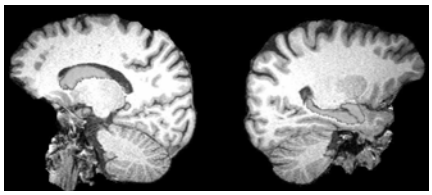


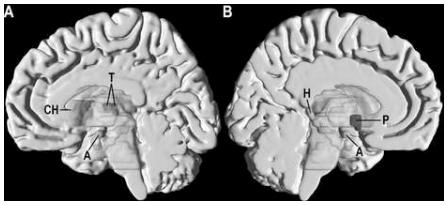
Regional CBF from the Standard Resolution ASL



Explanation

Regions with group differences





Haley et al. Psychiatry Research: Neuroimaging, in-press

Cholinergic system is an inhibitory nerve system. So the normal response should be negative CBF change. In patients, the cholinergic system is damaged, so the response becomes positive CBF change.