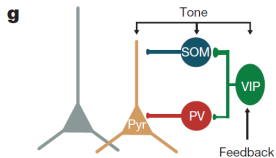


Cortical interneurons that specialize in disinhibitory control

Hyun-Jae Pi, Balazs Hangya, Duda Kvitsiani, Joshua I. Sanders, Z. Josh Huang & Adam Kepecs

Cold Spring Harbor Laboratory, 1 Bungtown Road, Cold Spring Harbor, New York 11724, USA

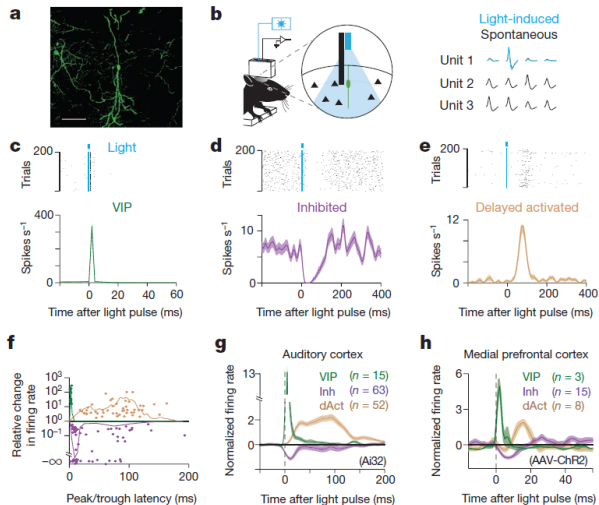
Interneuron types and optogenetics



- ▶ Parvalbumin (PV)
- ▶ Somatostatin (SOM)
- ▶ Vasoactive intestinal polypeptide (VIP)

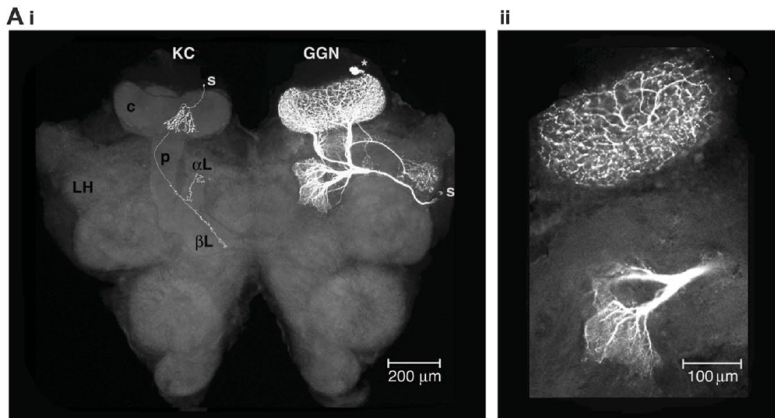
My two previous tea talks: light activation of PV-neurons inactivates local network.

Optogenetic activation of VIP neurons



Computational idea: gain-control

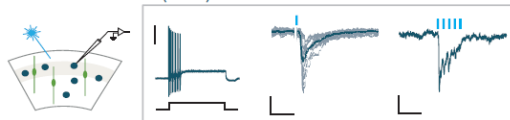
The Giant GABA-ergic Neuron and its inhibitor IG in the fly brain



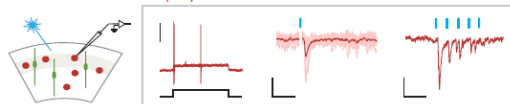
Also, see Xu et al, 2013: *Neocortical Somatostatin-Expressing GABAergic Interneurons Disinhibit the Thalamorecipient Layer 4.*

In vitro experiments confirm connectivity

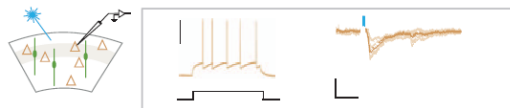
a VIP-Cre::GIN-GFP (SOM)



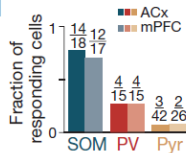
b VIP-Cre::G42-GFP (PV)



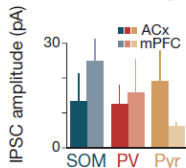
c VIP-Cre::GIN-GFP G42-GFP



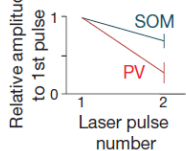
d



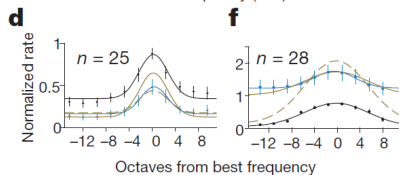
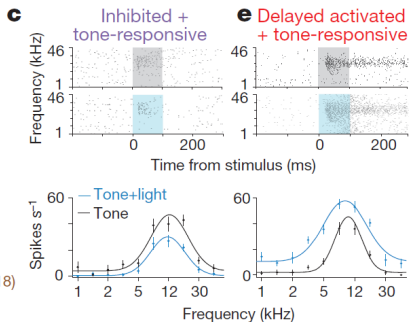
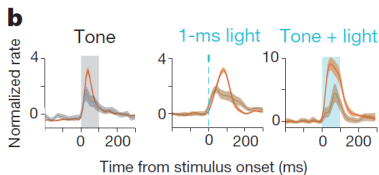
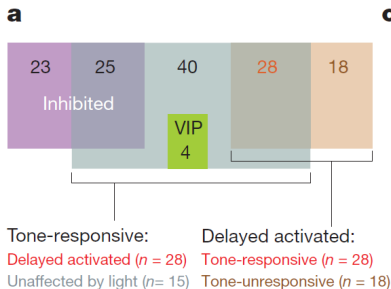
e



f



Tone-responsiveness of neuron types



VIP neurons care about reward and punishment

