Snail Lab Intro

Neuronal Excitability

March 16, 2015

Intrinsic Synaptic Plasticity (short and long term)

Extrinsic Synaptic Plasticity

Synaptic changes due to disease


Midterm due

11:59 PM

Lab 6 Results

Spring break

Can turn in Results earlier if that’s helpful

Midterm paper: 1 Paragraph on a disease that relates to your paper:
Symptoms, treatment, basic neurobiology

New grading Rubric

Citations, citations, citations!
Be concise!
Don’t make it a review, introduce the paper
Describe results in (more) detail
make a story out of it
use figures/tables to illustrate the story
quantitate whenever you can

Discussion
Be well organized, don’t ramble
Each paragraph has 1 major point
No brain dumps: We’re not impressed with a train of facts

Snails as a model systems in neurobiology

Our lab snail
Snail Brain

Pond snail brains- Lymnaea, Helisoma

Identified neurons in pond snail brains
Snail Buccal Ganglia- control of rhythmic feeding movements

Rhythmically bursting cells

Snail Week 1,2 Focus: Firing properties of neurons
Action Potentials

Responses to current injection

Silent cell
Tonically firing cell
Firing adaptation, also note spike broadening

Post-inhibitory rebound

note enhanced EPSPs

Burster neurons

Burst frequency control

Burst characterization

“true” bursters vs. driven bursters

Membrane potential oscillations
Interesting firing properties of neurons

Why do APs get smaller and then big again?

Otto Loewi – “Vagusstoff”

Most common fast transmitters

Proof of Neurotransmitter Identity??
- Presence
- Action
- Release
- Pharmacological Congruence
- Synthetic/packaging machinery

**Small-Molecule Neurotransmitters**

- **Acetylcholine** $\text{CH}_3\text{COCH}_2\text{CH}_2\text{CO}_2\text{H}$

**Amino Acids**
- Glutamate
- GABA

**Indoleamine**
- Serotonin (5-HT)
  - $\text{HO}_2\text{C} = \text{CH}_2 - \text{CH}_2 - \text{NH}_2$