COGS 107B

Week 9 Section
IA: Ryan Szeto
OH: Wed 1PM @ CSB Kitchen
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How was MT2?

That's my purse, Sasuke, I don't know you!!!
What about my uncle? DID YOU GIVE HIM A CHANCE?

DO YOU, SASUKE?!
Question 1

- Associative - **Amygdala**
- Procedural - **Basal ganglia**
- Episodic - **Hippocampus**
- Working memory - **Prefrontal cortex**
If we see heavy simultaneous activity in two connected neurons, we can say that the neurons are co-active.
When synapses get stronger, we see synaptic (potentiation/depotentiation). When synapses get weaker, we see synaptic (potentiation/depotentiation).
A malfunctioning FMR gene allows for **more**/fewer mGLUr receptors to be created, leading to the observation of **more**/fewer immature dendritic spines.
(False) Neuron A (connected to neuron B) fires 10ms before neuron B fires. Neuron C (connected to neuron D) fires 1ms before neuron D fires. The synapse connecting A-B potentiates more relative to the synapse connecting C-D.
High levels of (NE/ACh) relative to levels of (NE/ACh) will cause overall depotentiation of synapses, no matter which neuron on any side of a synapse is firing first.

- Implications for function of REM sleep!
Question 7

In Pavlovian fear conditioning, when the sensory systems stimulate the (central/lateral) amygdala enough, the depolarization here will lead the (central/lateral) amygdala to induce a freezing response.
Possible bonus question: Jerzy Konorski is the neurophysiologist who published his findings on neuroplasticity shortly before Donald Hebb, in the 1940s.
The neuromodulator ACh is necessary for the rat-unculus to develop increased motor proficiency for the body part that is being trained (as in the reach-to-grasp task).

- Removing ACh not only creates a lack of expansion, but we actually see a reduction in the forelimb part of rat-unculus (this causes poorer performance).
During the portion of the T maze task where the maze has been flipped over, the rat will make its decision based on (place of the reward/turning direction) in the first few days. In the days following, it decide to follow the (place of the reward/turning direction) to get to the reward.
When the rat is deciding based on the place of the reward, more ACh is observed in the **hippocampus**. When the rat is deciding based on the turning direction to the reward, more ACh is observed in the **basal ganglia**.
Possible bonus question: Patient HM can’t generate new \textit{episodic} memories. This can happen if the \textbf{CA1} region of the hippocampus is lesioned.
Retrospective neurons in the hippocampus fire at the end of a maze path, but only if the animal traveled to that point through a specific trajectory. Conversely, prospective neurons in the hippocampus fire depending on what path the animal is about to take.
Question 14

- A rat has been trained that 1>2, 2>3, 3>4, and 4>5. If the rat can now make the association that 3>5, then we can say the rat has developed **transitive inference**.
Possible bonus question: The neuroscientist Joaquin Fuster is credited with popularizing cue-delay/delay-action neurons.
It's ogre for you sasuke...