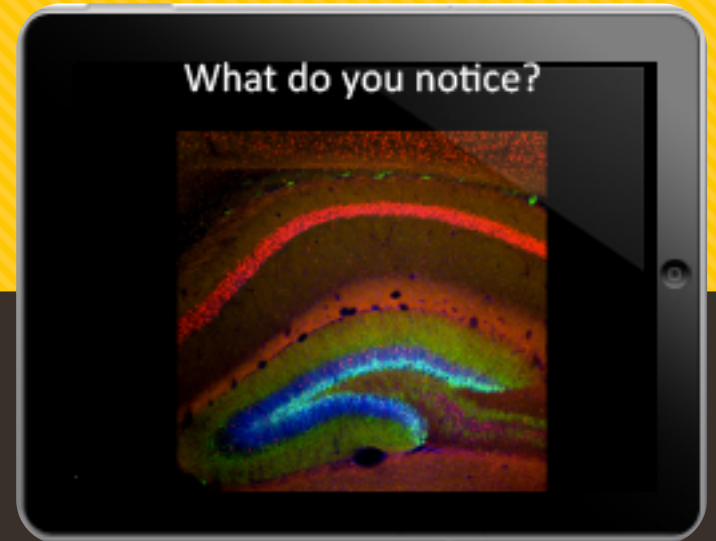
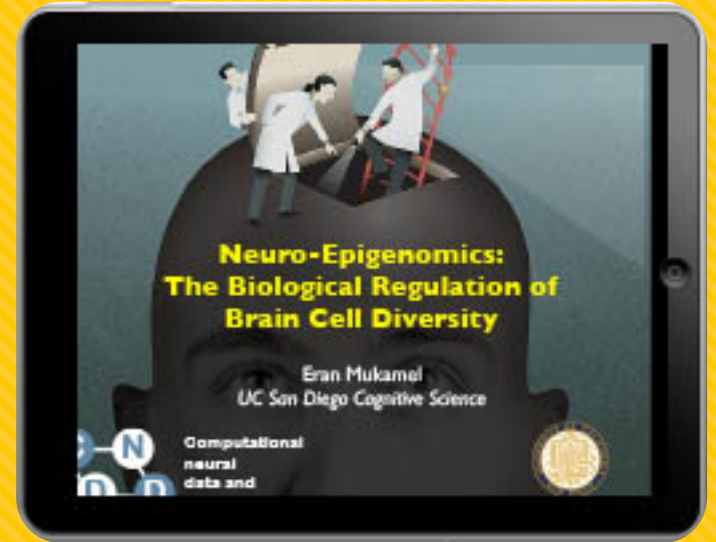


# Review of Week 3

COGS1 – Spring 2019



Section B Notes are posted!

Review Lecture – Thursday Week4

**Week 5 – Midterm1 on Tuesday!**



# Remember: EC-Pre-reading online quiz... starts MONDAY!

4  
Apr 23 – 25

*\*How the 2014 Nobel Prize  
Winners Found the Brain's Own  
GPS.*

*\*How Do Brain Cells Tell Us  
Where We Are Going?*

*(\*EC-Prereading Quiz (for **BOTH**  
readings) on TritonEd:  
Monday, April 22 @ 4pm –  
Tuesday, April 23 @10am.)*

Dr. **Nitz** (4/23)  
Mapping Space in the Brain.

Dr. **Boyle** (4/25)  
Review for Midterm 1

Quiz C in section  
Next week: Midterm 1 –  
April 30<sup>th</sup> in lecture-  
scantron provided 😊

# Mukamel–Epigenetics – Cell Diversity

- How do cell types within the CNS differ?
- What is epigenetics?  
How do cells become distinct despite having the same genome?  
What are histones?
- What are the basic levels of organization in the genome?

- How is epigenetics analogous with grammatical punctuation? What is DNA methylation and what is its function?
- How can methylation affect phenotype?
- Do epigenetics change over time? Or are they permanent? Why?

# Mukamel–Epigenetics – continued

- What is shotgun sequencing?
- How do the levels of CG and non-CG methylation change throughout a human's life and in different cell types?
- How do epigenetics play into the debate of nature vs. nurture?
- What are the similarities and differences between neural networks and gene networks?

# Rangel–Adult Neurogenesis

- Is the number of neurons in our brain constant over lifetime?
  - What is an estimate of the number of neurons in adult brain?
  - What events can cause a change in the number of neurons?
- What are the two main neurogenic regions in the human brain discussed in lecture?
- What are the stages of new neuron development?
  - What happens at each stage?
- How can we quantify neuronal proliferation and survival? (doublecortin and BrdU)
- What are some factors that can affect the proliferation/survival rate of neurons?
  - Does increased in neuron proliferation also mean increased in neuron survival?
- What are the major functions of the hippocampus and dentate gyrus?
- What is a hypothesized function of adult-born neurons in the hippocampus?
  - How do the experiments described in lecture support this hypothesis?

# Review questions from readings:

- What are some negative effects of genetic mutations?
- What does the field of epigenetics concentrate on?
- How did experimenters make the parent mice afraid of certain smells?
  - What effects does this have on the parent mice and their offspring?
- What can be said about famine and disease?
- Give examples of epigenetic changes and how they affect risk of disease (e.g. during the famine.)