Review of Week 3

COGS1 – Spring 2019
Section B Notes are posted!

Review Lecture – Thursday Week 4

Week 5 – Midterm 1 on Tuesday!
Remember: EC-Pre-reading online quiz… starts MONDAY!

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>Apr 23 – 25</td>
<td>*How the 2014 Nobel Prize Winners Found the Brain’s Own GPS.</td>
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<td>*How Do Brain Cells Tell Us Where We Are Going?</td>
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<td>(*EC-Prereading Quiz (for BOTH readings) on TritonEd: Monday, April 22 @ 4pm – Tuesday, April 23 @10am.)</td>
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<td>Dr. Nitz (4/23) Mapping Space in the Brain.</td>
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<td>Dr. Boyle (4/25) Review for Midterm 1</td>
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<td>Quiz C in section</td>
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<td>Next week: Midterm 1 – April 30th in lecture-scantron provided ☺</td>
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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?
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?
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.)