Introduction to Neuroscience Fall I (September 30 – November 13, 2013)

Please write an essay of 5 pages excluding references on one of the topics below.


Peter Jonas

1. Mechanisms of exocytosis
2. Synaptic plasticity at glutamatergic synapses
3. Role of GABAergic interneurons in the brain

Gasper Tkacik

4. The functional computations of the vertebrate visual system
5. The principles of neural coding: from rate codes to timing and population codes
6. Night and day vision in the retina: different types and computations at different light levels

Ryuichi Shigemoto

7. Difference between information processing in the computer and brain
8. Functional significance of distinct morphology of neurons
9. Correlation and causality of synaptic plasticity and learning

József Csicsvari

10. Role of cortical slow oscillations in memory
11. Does sleep have a homoesthatic role?
12. Do rodents use memory schemas?

Gaia Novarino

13. What is microcephaly and what can it tell us about brain development?
14. Mapping the neuronal origins of complex behaviors studying neurological disorders: Rett syndrome
15. The other half of the brain: glial cells and disorders

Simon Hippenmeyer

16. Development of a Neuronal Circuit
17. From Neurodevelopment to Evolution of Brain Size
18. Genetic Basis of a Neurodevelopmental Diseases