

CS341 SYSTEMS BIOLOGY I

HOMEWORK ASSIGNMENT #9 – READING (TUES OCT 24, 2017)

1. READING

The goal of this reading assignment is to gain more practice reading a journal article about a model developed to understand a biological system. In this article, the authors use their model to simulate the circadian clock in thousands of neurons. When you read the article, focus on the aspects of the system they are trying to understand (e.g. the relationship the period and phase of the oscillators).

Read “Spontaneous Synchronization of Coupled Circadian Oscillators” by Gonze et al, Biophysical Journal, 2005 (emailed by Stephanie)

- (1) Explain how the model (equations 1-4) captures intracellular (within one cell) oscillations.
- (2) Explain how the model (equations 1-4) captures intercellular (between cells) communication.
- (3) What does it mean for all the oscillations to be synchronized?
- (4) What is the order parameter and what does it indicate?