The goal of this homework assignment is for you to decide on a project. Submit an initial report (2–3 pages) of your project. The report should have sufficient details about several items which include, but are not limited to:

- The biological question(s) that the project addresses with sufficient details about the background.
- The objective(s) of the project.
- The (computational) experimental design that you will use to achieve the objective.
- The computational tools that will be used.
- The data that will be used.
- The computational analyses/experiments that you will use to

Properly cited bibliography.

If multiple students are collaborating on the project, briefly describe the role of each student.

Types of projects. Your project can investigate any type of question as long computational analysis of biological networks is involved. In other words, please do not investigate social, political, etc., type of networks, and do not work on a project that does not involve computational modeling and/or analysis.

Very general ideas for research:

- Network modeling of a specific biological system, and study of its properties.
- Investigating the performance of different tools on a biological system.
- Analysis of experimental data with respect to a biological network, or in a network-centric approach.
- An empirical evaluation of the strengths and weaknesses of a computational methodology for analyzing networks.
- Defining new types of biological networks, from any biological domain (evolution, ecology, etc.), and investigating their properties.
- Analyzing network(s) with respect to a certain disease.
- Systematically investigating published results that use network-based analyses.
- Theoretical (mathematical) analysis of a network model or methodology.
- Developing new algorithm(s) for network analysis task(s), with implementation and performance study of the algorithm(s).
• New models of random networks, network evolution, etc., with a study demonstrating the utility of such models, and how they contrast to existing models.

You may want to consult the following link on the course website for tools/data/resources/etc.:

http://www.cs.rice.edu/~nakhleh/COMP572/NetworkResources.html

If you decide to work in a group (at most two students per group, and in exceptional cases, three students are allowed), I’d highly recommend that students with a biology background team up with students with a computational background.

[Only one report to be submitted by a group.]