Evaluation Form for Cell Cycle and Modeling Section

Circle One: **Freshman**   **Sophomore**   **Junior**   **Senior**

1.   The behavior of the cell cycle can only be simulated as a series of multiple protein interactions and biochemical reactions.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

2.   The Cell Cycle can be modeled as an oscillating system with as few as two reactions.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

3.   MPF is a specific term for mitotic promoting activity in mammalian cells.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

4.   Proteins in the cell cycle are regulated by phosphorylation and the formation of protein-protein complexes.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐
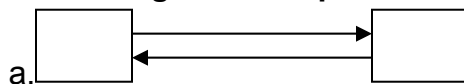
5.   Cyclin degradation is required for cell cycle progression.

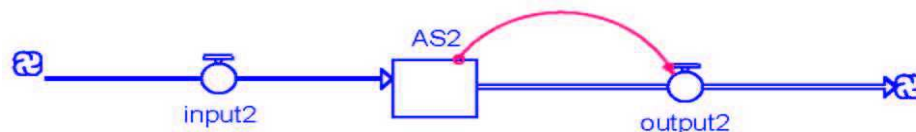Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

6.   Model construction is the same as concept mapping.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

7.   The following are examples of closed systems

a.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

b.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

c. Active MPF becomes incactive MPF; Inactive MPF becomes Active MPF

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

8.   The following are needed to make a mathematical model of the cell cycle:
   a. All known interacting proteins

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

   b. A feedback loop

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

   c. Rate equations

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

   d. Differential equations

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

   e. Rate constants

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

   f. Exact concentrations

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

9.   If concentrations of metabolites are changed, the results of the simulation will vary accordingly.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

10.   If the rate laws for the reactions are changed, the results of the simulation will change.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

11.   It's impossible to get the same simulation results from two different Stella maps.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

12.   A good model includes everything we know about the biology

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

13.   A good model accurately reflects the mechanisms of the protein interactions.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

14. **The following are examples of topological singularities:**

　　a. Mitotic spindle

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

　　b. Cell division

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

　　c. Budding in yeast

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

　　d. Greenwich time line

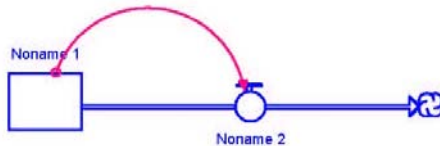Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

15. **A closed system has no loss or mass**

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

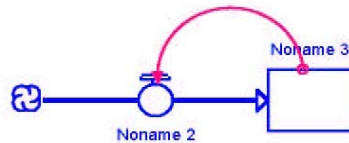**16.** **An open system allows mass in but not out**

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

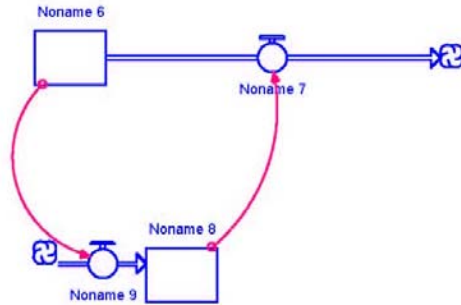**17.** **The following topologies created in Stella could have oscillations**

　　a.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐
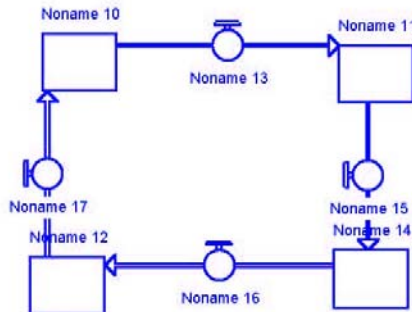

　　b.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

c.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

d.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

18.   The same dynamic behaviors can be obtained whether you use mass action or Michaelis-Menten.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

19.   A protein threshold is the maximum concentration value it reaches

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

20.   Thresholds are defined in relation to time

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

21.   I would have understood the project better if we had exercises for setting up laws of mass action.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

22.   Models have to include exact numbers from experiments in order to infer anything about how the biology works.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

23.   Modeling papers include all the information needed to create a model in the classroom.

Strongly Agree☐ Agree☐ Slightly agree☐ Slightly Disagree☐ Disagree☐ Strongly Disagree☐

Feel free to use the space below to make any additional comments or suggestions.