Student directions:

You have just finished a lab activity in which you experimented with various factors that affect the activity of salivary amylase. Evaluate the following experiment and see if you can draw a conclusion based on the background and data provided. This will provide you with an opportunity to see if you can apply the principles learned in the lab to a new situation.

How do digestive enzymes function in Paramecia?

Paramecia ingest food particles and enclose them within food vacuoles. Each food vacuole circulates in the cell as the food is digested by enzymes that are added to the vacuole. Nutrients made available during digestion are absorbed into the cytoplasm.

Analysis
1) Some digestive enzymes function best at higher pH levels, while others function best at lower (more acid) pH levels.

2) Congo red is a pH indicator dye; it is red when the pH is above 5 and blue when the pH is below 3 (very acid).

3) Yeast cells that contain Congo red can be produced by adding dye to solution in which the cells are growing.

4) When paramecia feed on dyed yeast cells, the yeast is visible inside food vacuoles.

5) Examine the drawing below. The appearance of a yeast-filled food vacuole "over time" is indicated by the colored circles (labeled due to black and white drawing) inside the paramectum. Each arrow indicates movement and that time has passed.

![Diagram of Paramecium with colored circles and arrows]

Critical thinking

Analyze what happens to the pH in the food vacuole over time. Explain your conclusions about the sequence of different digestive enzymes that function in paramecium digestion.

Prepared by: B. Eredia, Louisville HS
N. Maupin, Louisville HS
T. Edgmon, Paramount HS
M. Bernstein, Business Magnet HS