

THE PROTOZOA RACE

Purpose: The purpose of this Laboratory exercise is to determine, then compare, the relative efficiency of two types of protozoan locomotor organelles: the flagellum and cilia.

Approach: The general approach to the problem is as follows:

- (1) Calibrate your microscope so that you know the distance across a field, under both low and high powers. A ruler is used to measure the size of the field.
- (2) Estimate the length of your two experimental animals (Euglena sp. and Tetrahymena sp.).
- (3) Estimate the speed of your two experimental animals, expressed in terms of metric units/unit time.
- (4) Estimate the speed of your two experimental animals expressed in terms of body length displacements per unit time.
- (5) Determine whether mixing the two species of experimental animals, under a single cover glass, has any effect on their speed.
- (6) Compare the rate of speed of your two protozoans, expressed in terms of body length displacements per unit time, with that of an automobile going 60 MPH, also expressed in terms of body length displacements per unit time.

Reference Information:

- (1) The smallest divisions on your ruler are 1 mm.
10mm = 1 cm. In measuring the width of your field, measure from one side of a mark to the same side of the next mark (e.g. from and to the left side of each).
- (2) One mile = 5280 feet
One inch = 2.54 cm
One car = 10 feet long

The calculations necessary to make the required comparisons are right out of 8th grade mathematics.

Conclusions: Reach some kind of conclusion, through discussion as a class about the relative efficiency of the flagellum as opposed to cilia, and about the relative efficiency of these organelles as opposed to the gasoline engine.