Griffiths, A. J. F.

A Neurospora experiment for on introductory biology course.

For the past two years the procedure described below, has been used at this University as an investigative exercise in a first year biology course. The success of this lab in a course of well over 1500 students illustrates that Neurospora can in fact be used on a large scale in teaching with none of the horrors usually anticipated with this species. The secret is to use aconidial fluffy strains, which virtually eliminates the risk of cross-contamination.*

For the student, the purpose of the exercise is to determine the life cycle of on unnamed mold. Each group of four students is given a plate of crossing medium, two cultures labelled A (fl A, FGSC #3249) and B (fl a, FGSC #3250), ond a small bundle of sterile toothpicks wrapped in aluminum foil. The students are instructed to examine strains A and B for any visible differences. Unsing the toothpicks. the strains ore then inoculated onto the-medium as shown in figure 1. The plates, kept in drawers, ore observed weekly for three weeks ond a record is kept of events occurring at the macroscope level, and, as far as available equipment allows, at the microscopic level. Obviously, details such as ploidy levels, and meiotic sequences cannot be determined, but intelligent guesses based on careful observations con be mode, and a reasonable facsimile of the Neurospora life cycle can be derived.

One intriguing complication arises since the plates show a double line of perithecia bordering a zone of what is presumably vegetative incompatibility (figure 1). This striking 'racing stripe' down the middle of the plate gives the students another puzzle to think about.

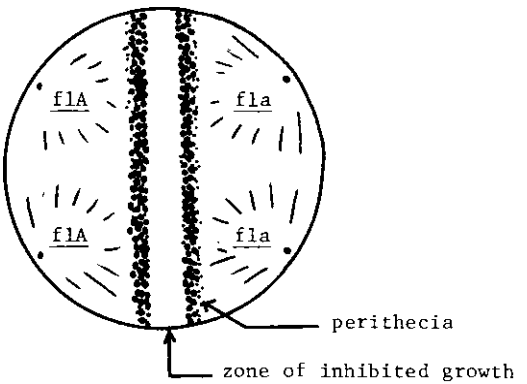

Figure 1.

This exercise has produced a favorable student response and stimulated much useful discussion. It is a simple, reliable, and challenging experiment and the students' goals are clearly defined and generally well understood. The exercise con be used as a vehicle tor a variety ot teaching purposes, not the least of which is to introduce haploids and microbes at an early point in the curriculum.

*The cross-contamination problem could be solved in other ways. For example, the use of conidial separation - defective (csp) mutants considerably reduces the risk of dispersal of aerial particles. However, only fluffy has been tested on a large scale.

- - - Department of Botany, University of British Columbia, Vancouver, B.C., Canada V6T 1W5.