

Mitosis in the Meristem of Jonquil Root Tips

by Tania Blanksby

Experiment Overview

Students are able to observe the stages of mitosis under a compound microscope by preparing squashes of onion or jonquil root tips and staining with aceto-carmine. Students are to produce labelled diagrams of examples of each phase of mitosis from their preparation.

Students also estimate the relative length of time of each phase of the cell cycle by recording the frequency with which they find each phase in regions where cell division is actively taking place. The frequency of a phase is an indication of the relative length of that phase. The cell cycles for onion and jonquil are about 16 hours.

Learning Experience

This experiment is one of the highest scoring labs from the survey. Would like to see if educationally sound as well as 'popular'.

Aims and Objectives

Aims:

his practical class aims to consolidate the principles of the cell cycle introduced in lectures by preparing and examining cells undergoing stages of mitosis.

Objectives:

- At the end of this class the student should be:
- competent in slide preparation and the use of the light microscope
- able to apply their knowledge of chromosomal changes during the cell cycle to identify different stages of mitosis

Level of Experiment

First year undergraduate

Keyword Descriptions of the Experiment

Specific Descriptors

Genetics, mitosis, cytogenetics, cell cycle

Course Context and Prerequisite Knowledge and Skills

This experiment is traditionally the first wet lab for first year Genetics students. The majority of students will have already completed their first semester Biology subjects including Cellular organization and function and will be familiar with the use of the compound microscope. Students who are new to the lab can complete the online microscope introduction.

Prior to the lab students will have covered cell cycle, mitosis and meiosis in lectures.

nbsp;

Time Required to Complete

Prior to Lab: 30 minutes

In Laboratory: 90 minutes

After Laboratory: 0

Experiment History

This experiment has a long history in the Genetics Department at LTU; whilst the authors listed in section 1.9 are responsible for the educational analysis of this experiment, their submission of it to ASELL is done on behalf of all academic staff.