

BE 727 Principles and Applications of Tissue Engineering Labs

Overview

In BE726 labs, we learned techniques in biomaterial synthesis and characterization. The focus was on the material itself. In BE727 labs, we will learn techniques in mammalian cell culture and tissue engineering. The focus is on cell-material interactions. In Lab 1, we will study how protein deposition on the material surface can affect cell adhesion. In Lab 2, we will investigate the effect of substrate stiffness on cell growth. In Lab 3, we will go through the procedures of soft lithography and use micro-printing technique to align cells on the substrate.

Lab Syllabus

Date	Lab title
Jan 23&25	Introduction
Jan 30 & Feb 1	Lab 1 Material Surfaces and Cell Adhesion I
Feb 6&8	Lab 1 Material Surfaces and Cell Adhesion II
Feb 13&15	Lab 1 Material Surfaces and Cell Adhesion III
Feb 20&22	No lab Presidents' Day
Feb 27 & Mar 1	Lab 2 Substrate Stiffness and Cell growth I
March 6&8	No lab Spring break
March 13&15	Lab 2 Substrate Stiffness and Cell growth II
March 20&22	Lab 2 Substrate Stiffness and Cell growth III
March 27&29	Lab 3 Soft Lithography and Cell Alignment I
April 3&5	Lab 3 Soft Lithography and Cell Alignment II
April 10&12	Lab 3 Soft Lithography and Cell Alignment III

When, where and who

Time: Tuesday and Thursday 12:30-3:15pm
Location: ERB B06 and B08
Instructor: Dr. Xin Brown (xinq@bu.edu)

Laboratory Information

Attendance

Laboratories will commence on time and are expected to take three hours to complete. You will need the full three hours to adequately complete the lab exercise. Therefore, you are expected to be prepared by reading the appropriate chapters in the textbook and the laboratory manual.

You are expected to be punctual to every laboratory meeting. This is to ensure minimal disruption of the class, your preparedness for the day's activities and your safety. Because the instructor reviews safety procedures at the start of the class, you are a safety hazard to yourself and your classmates if you miss these instructions because you are late.

Attendance in laboratory is required. You may turn in lab report pertaining only to the laboratories for which you are present. Makeup labs are at instructor's discretion.

Safety

Because of chemical and biological hazards encountered in the laboratory, you are expected to wear pants or long skirts and closed-toed shoes in this class. Students not properly dressed may be asked to leave the laboratory at the instructor's discretion. Gloves are available in the lab. Lab coats and goggles are not required, but you are encouraged to wear them if you have them already.

If you have a medical condition that requires special precautionary measures in the laboratory, notify your instructor as soon as possible so that alternative arrangements can be made.

Eating, drinking, inserting/removing contact lenses or applying makeup are not permitted in the lab. If you need to use your laptop or cell phone to record your lab result, make sure you take off your gloves and wash your hands to prevent contamination of your laptop and cell phone.

Waste must be disposed of appropriately. All liquid waste must be collected in the liquid waste container on the bench. All sharps, including needles, razor blades, Pasteur pipettes, pipette tips and glass slides, must be disposed of in the sharps container (usually made of red rigid plastic). All solid, non-sharp biohazard waste, including contaminated gloves and paper towels, must be disposed of in the biohazard waste container (usually a big cardboard box lined with red plastic bag). If you are not sure where to dispose your waste, ask.

Maintenance

You are responsible for keeping your bench neat and clean. At the end of every laboratory:

- Place dirty glassware and utensils in the grey plastic tray
- Wipe down the bench and discard trash
- Turn off any equipment at your bench
- Label and arrange your samples in an orderly fashion
- Follow any other directions from the instructor

Assignments

Academic Conduct Policy

The assignments are designed to help you understanding the material and practice for scientific writing. It is expected that you will work independently on the completion of all written assignments. We encourage you to collaborate with your classmates in brainstorming ideas, but the written work must be your own.

Final Laboratory Grades

- Lab grade is 25% of final course grade.
- Lab grade is divided equally among 3 labs.
- For each lab:
 - Lab participation 20%
 - Lab report turned in on time 10%
 - Lab report 70%

You must have a passing grade in the laboratory (60%) in order to pass the course.