BIOLOGY 1200

VANCOUVER COMMUNITY COLLEGE

Instructor: Maria Morlin

Lab demonstrator: Klaudia

February 2021– hybrid course

Lab: Plant Structure

Outline

- Objectives
- Overview
- Photos
- Demonstrations

Objectives

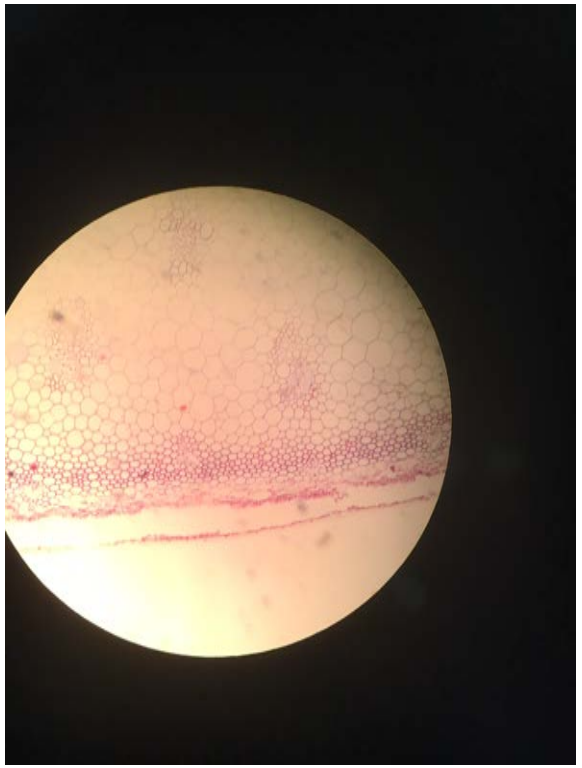
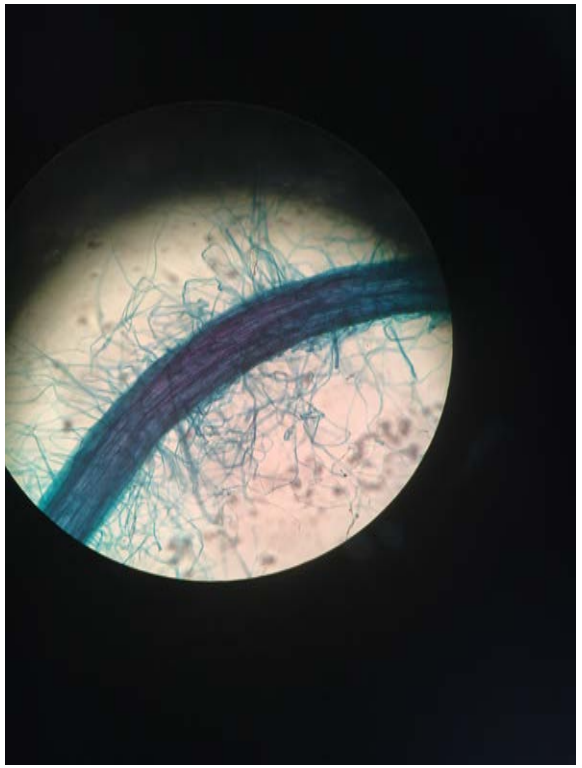
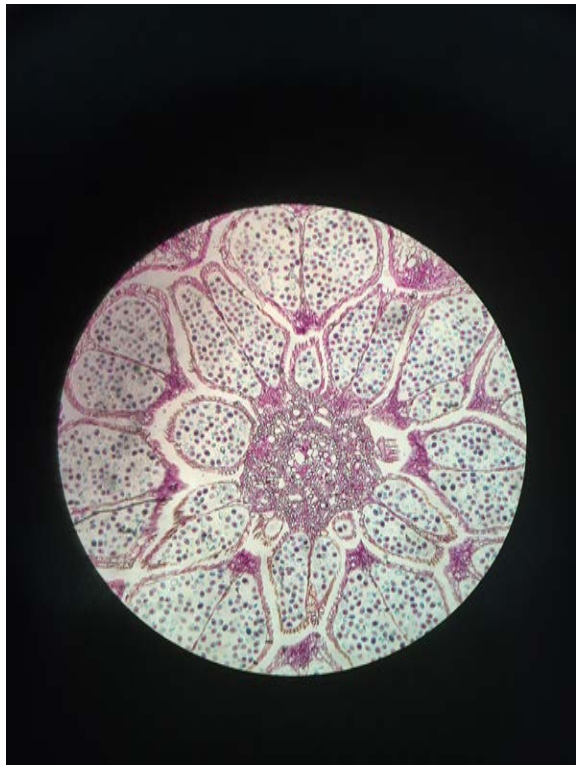
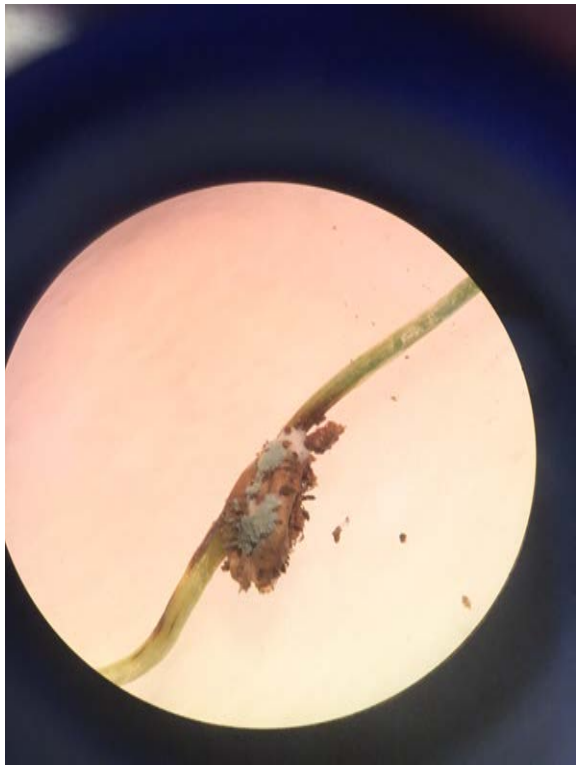
1. Identify plant organs: roots, stems and leaves, distinguishing monocots from dicots.
2. Relate functions of organs to their structures, in the context of adaptations to air, soil and water environments.
3. Describe primary and secondary growth
4. Prepare a slide using the microtome technique
5. Apply knowledge of plant structure to grocery store plants – identifying the main organ of which they consist, and how they are modified for consumption.

Overview

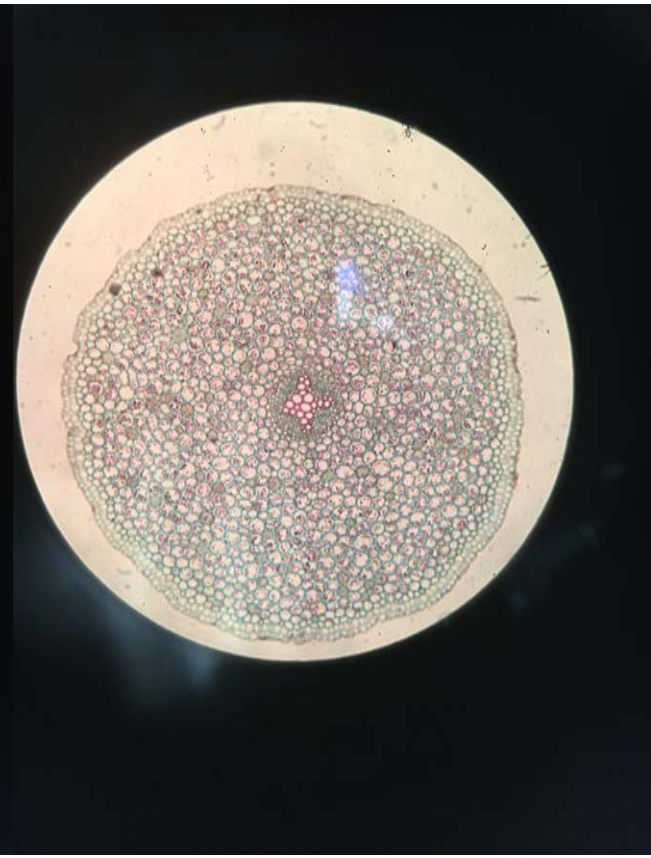
- In this lab, students work with living plants grown by our lab demonstrator, Klaudia, to identify their structures, tissues and functions.
- Sections of the three organs are supplied on prepared slides, showing the difference in organization of monocots and dicots.
- Students use a microtome to make their own sections of stems, and stain them for viewing under the light microscope.
- Both the light microscope are used for slides, and the dissecting scope for plant specimens.
- A tray of produce is provided for identification.

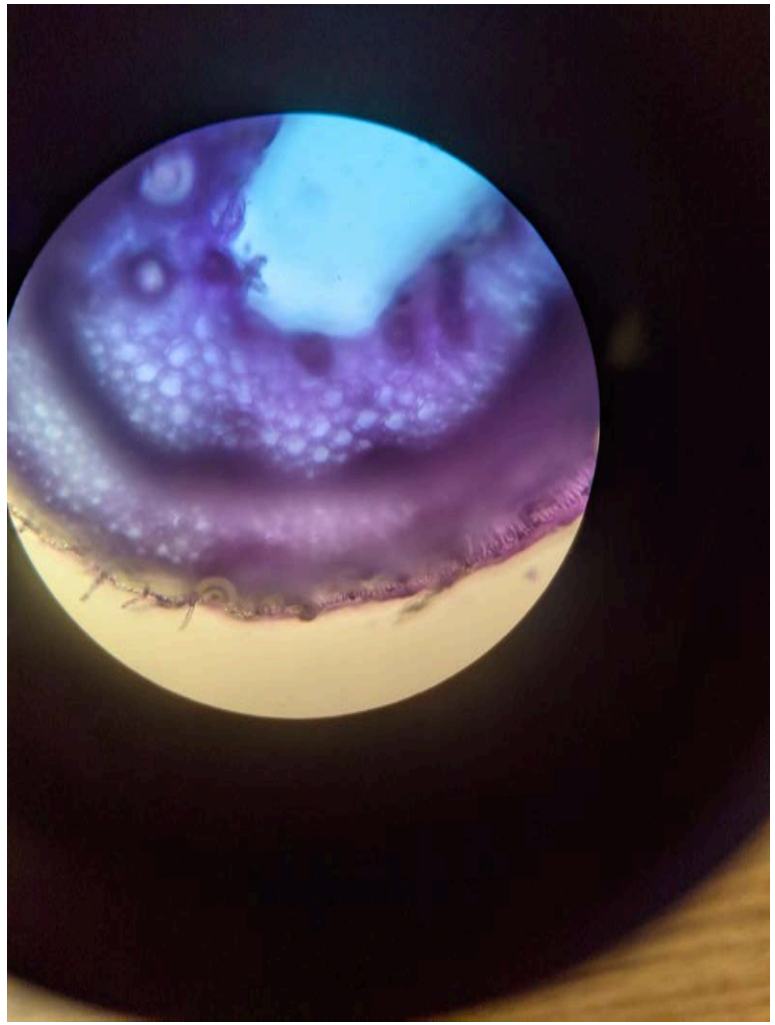
Identify the following specimens shown under a dissecting microscope (submitted by Edoardo)

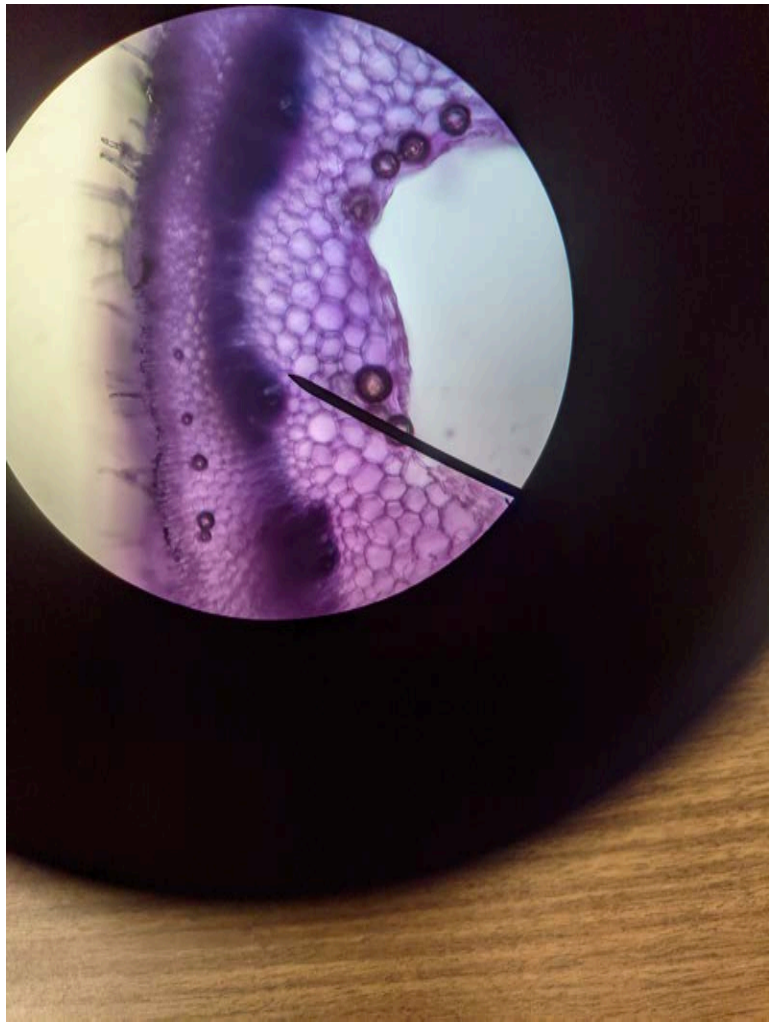
Identify the following specimens photographed under the light microscope (submitted by Andrea & Edoardo)

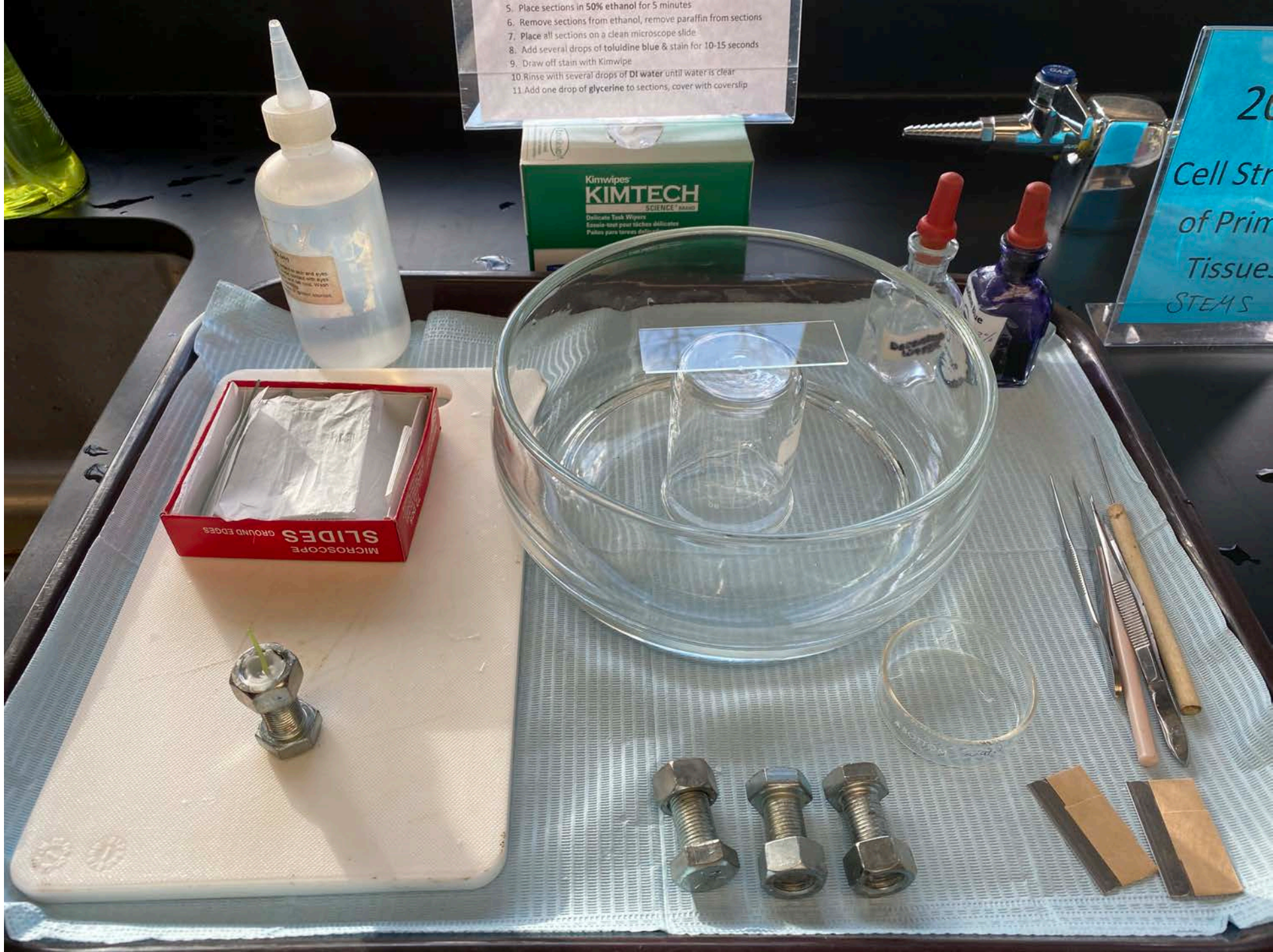






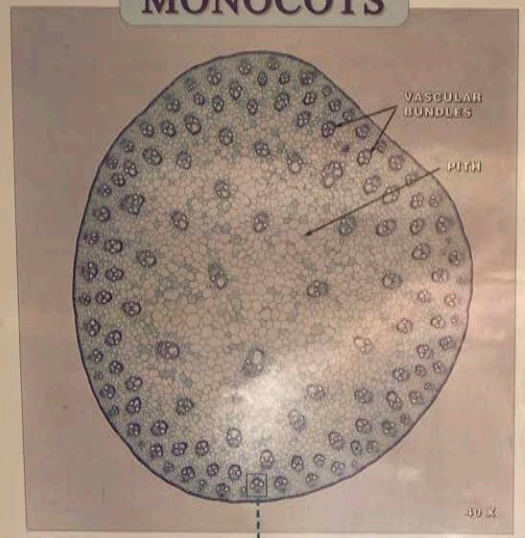
Microtome sectioning station

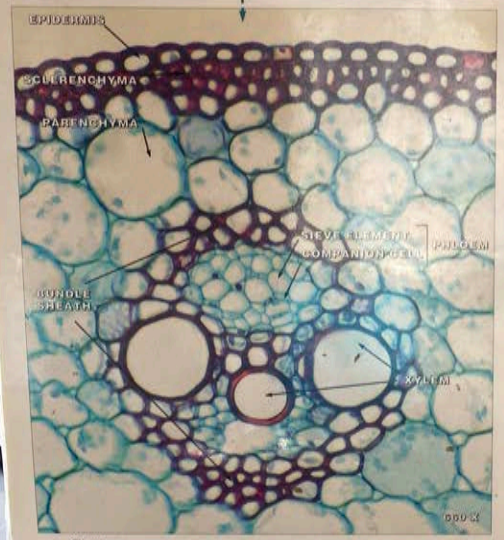


HISTOLOGY OF THE STEM

BioCam

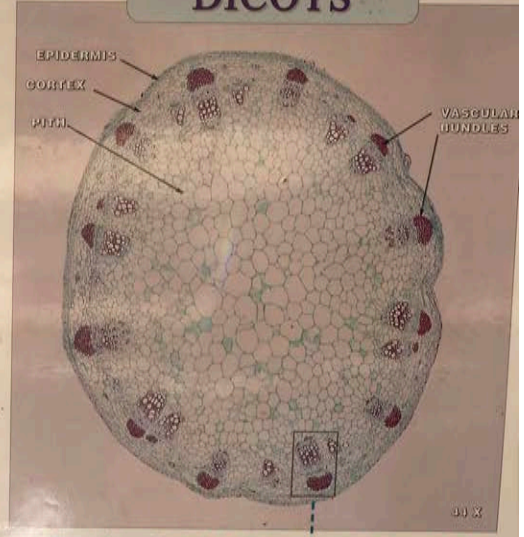
MONOCOTS

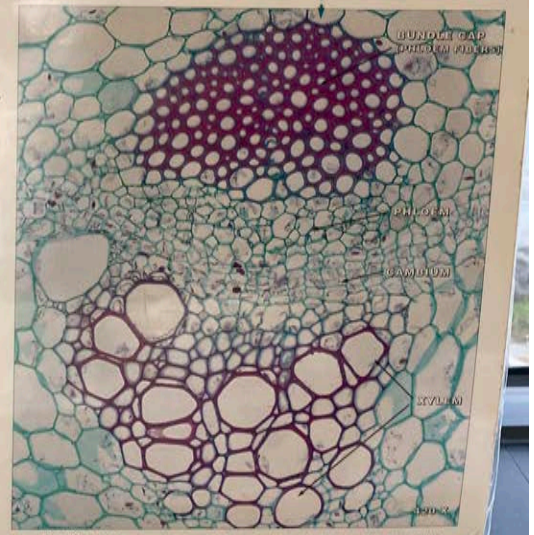




Corn The top photograph shows a low magnification view of the cross section of a corn stem. The bottom photograph shows a single vascular bundle from this stem.

DICOTS





Sunflower The top photograph shows a low magnification view of the cross section of a sunflower stem. The bottom photograph shows a single vascular bundle from this stem.

HISTOLOGY OF THE LEAF

BioCam

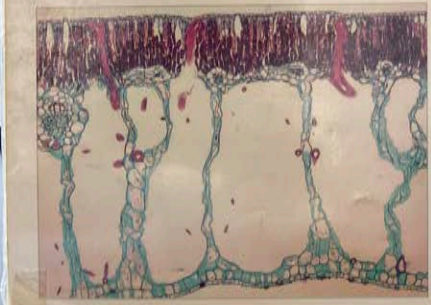
MONOCOTS

Corn Leaf 440x

This form of monocot leaf is typical of those found in C_4 plants.

DICOTS

Lilac Leaf 430x

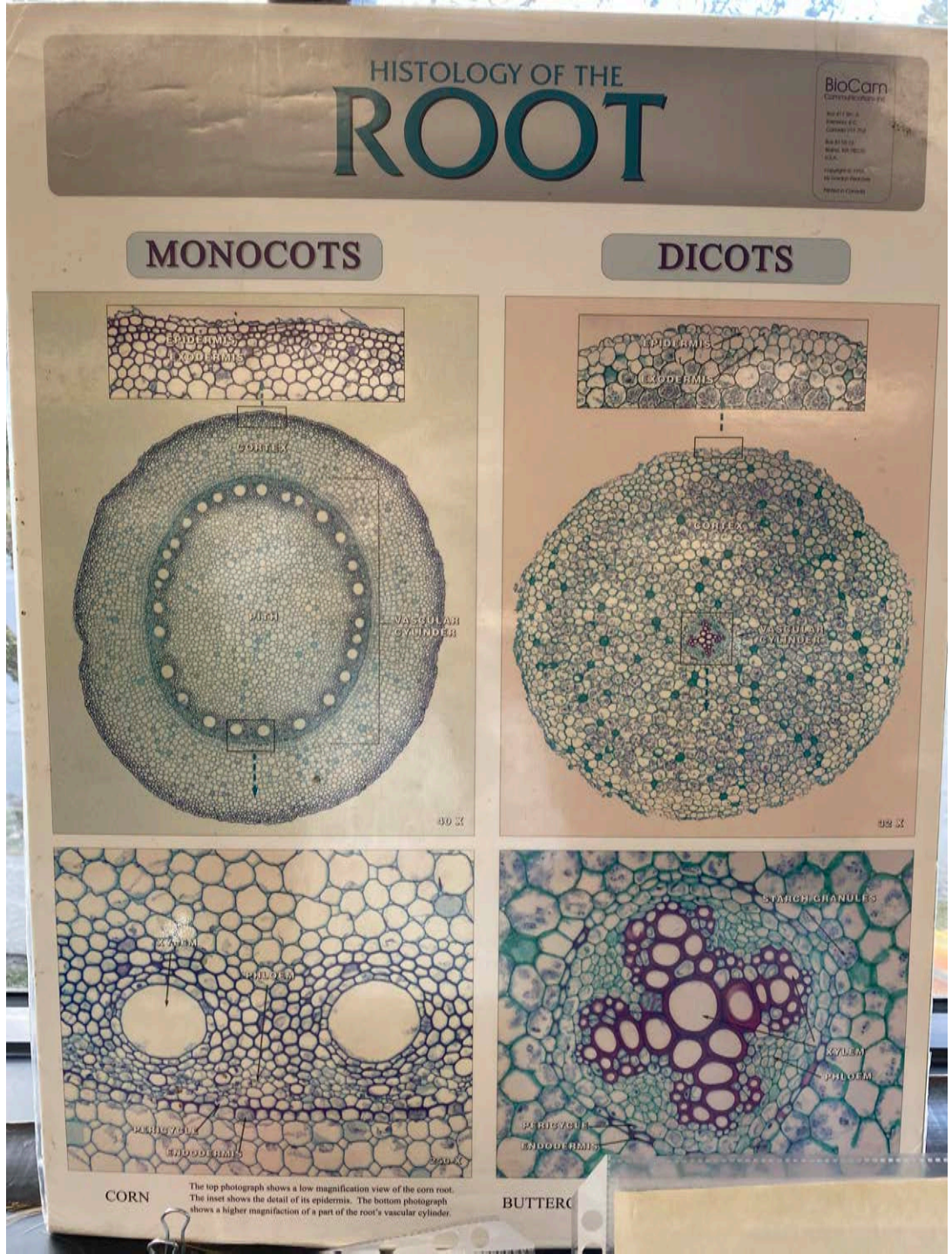


Hydrophilic leaves are adapted to very wet environments. This water lily leaf on the left has stomata only on the top surface, large air spaces for flotation and reduced vascular tissue.

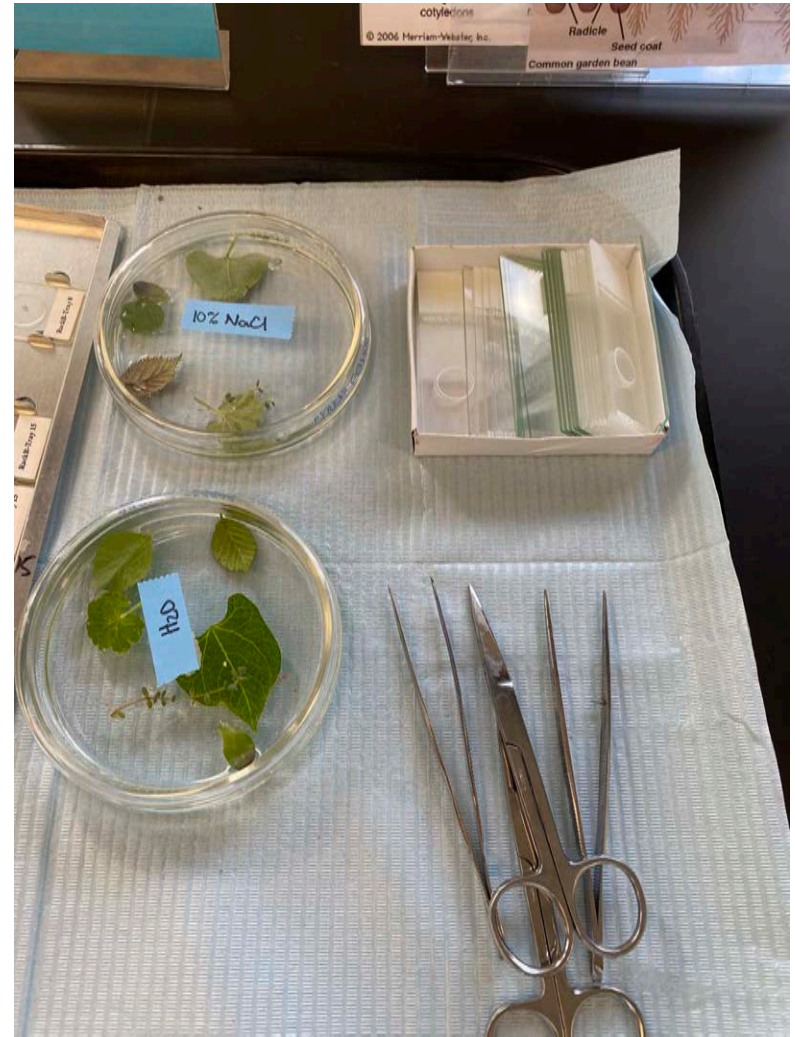
Water Lily Leaf , 120x

Xerophytic leaves are adapted to very dry environments. This grass on the right has a curled leaf shape, many hairs (h) over its surface, stomata buried in deep pits(p) and a thick cuticle (c) and epidermis.

Grass Leaf , 130x



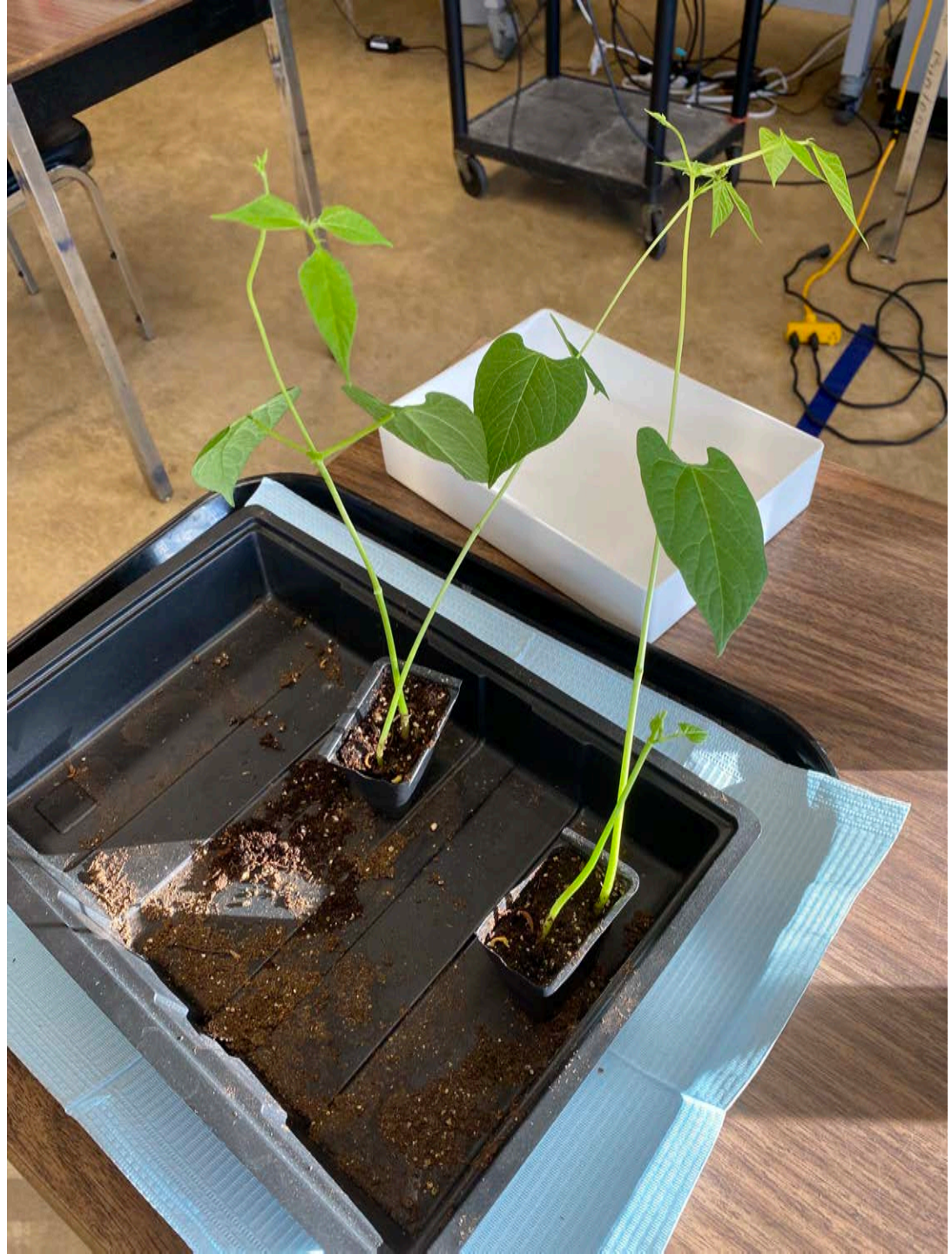
Leaves in two different solutions station




20.4
Cell Structure of Tissues Produced by Secondary Growth


20.3B
Plant Roots
WARM
DICOTS
Dicot Roots
Monocot Roots
Figure 6.7 T.S. of stem : (a) Dicot
Figure 6.7 T.S. of stem : (b) Monocot


Germination
MSKENZIE
TOMATO
TOMATE
Lima bean / Feb.14
Tomato / Feb.14
Tenderlong Imperator
Tenderlong Imperator
VEGETABLE · LÉGUME
50-55
Okra / Feb.14
Carrot / Feb.14
Beet / Feb.14
Lentil / Feb.14



Grocery Store Botany

Demonstrations

- Klaudia demonstrated:
  - The procedure to make a stem section with a microtome and stain.
  - The stations containing:
    - Monocot and dicot roots
    - Monocot and dicot stems
    - Monocot and docot leaves
    - A variety of germinated seeds