

How are seeds germinated hydroponically? – Part I

Mr. González

Do now (5 min.)

- Review the Lab Safety Contract in your portfolios.

HW

- Begin a lab report on germinating seeds.
- You can start the following chapters:
 - Background Information
 - ????
 - Safety symbols
 - Initial hypothesis
 - Initial materials

Objectives

- I can describe the anatomy of a seed.
- I can list the requirements of a seed in order to germinate.
- I can prepare the sponge substrate for seed germination.

Background Information

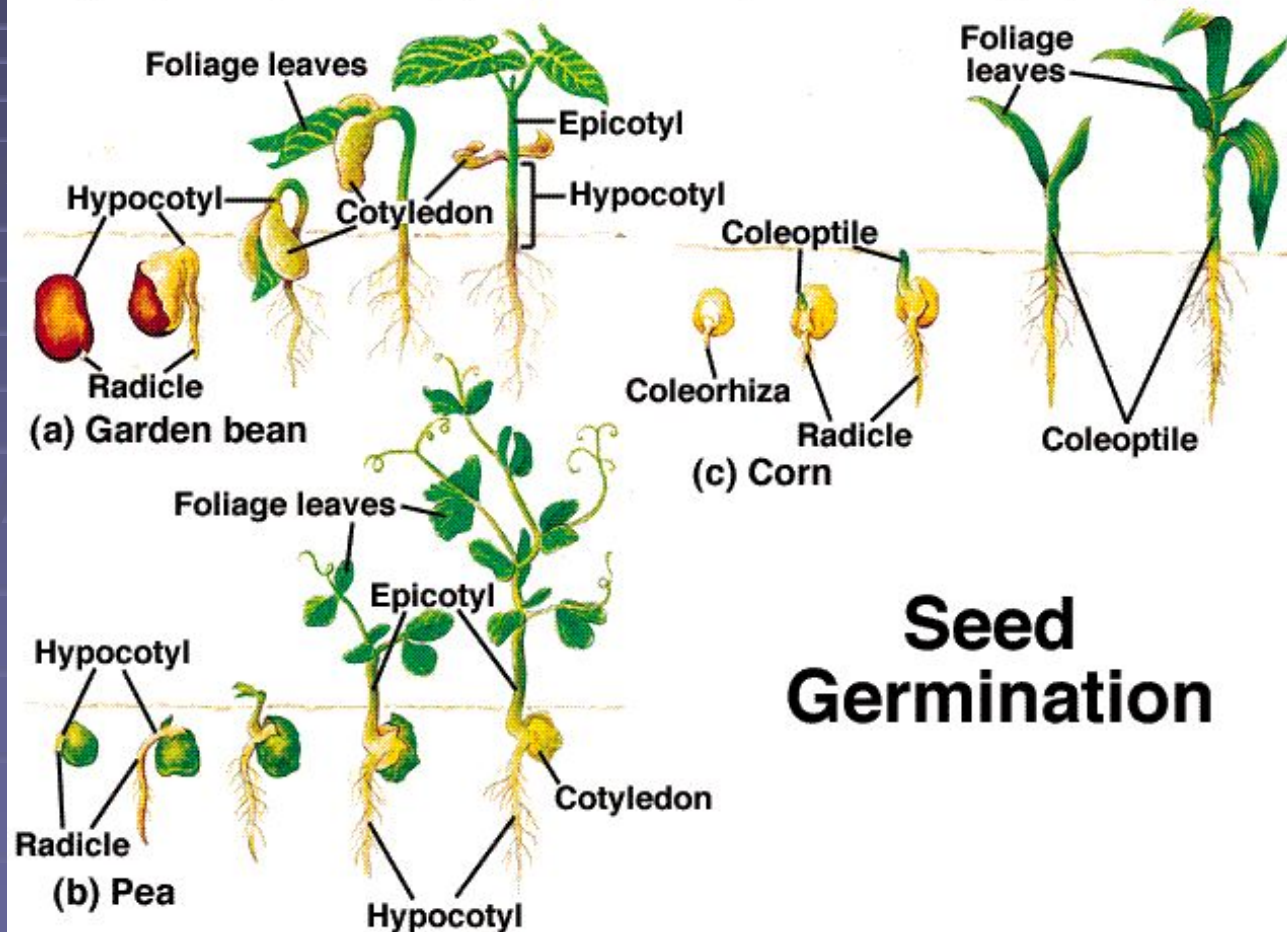
- Germination process
- Anatomy of a germinating seed
- Germinating requirements
- Seed selection
- Germination time of various plants

The Germination Process

- Emergence of radical.
- Emergence of cotyledon and hypocotyl.
- Emergence of foliage leaves.

Germinating Seed Anatomy

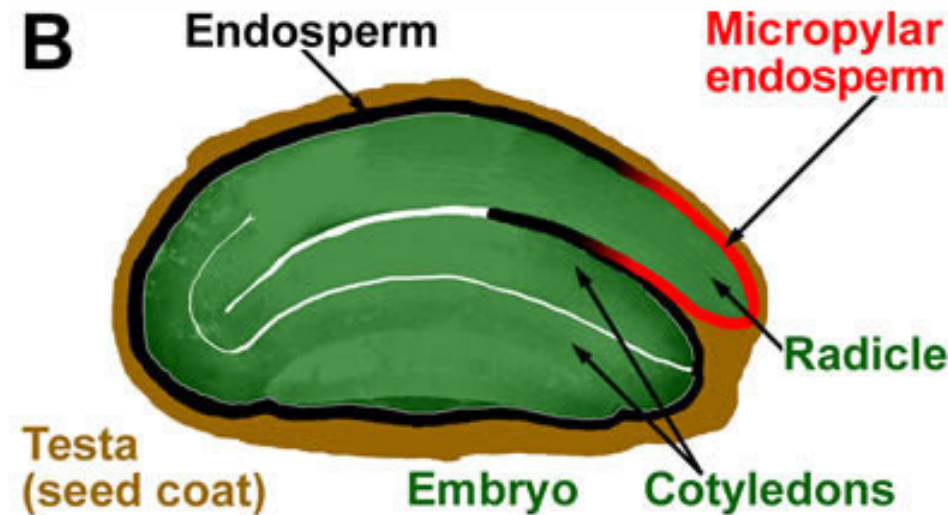
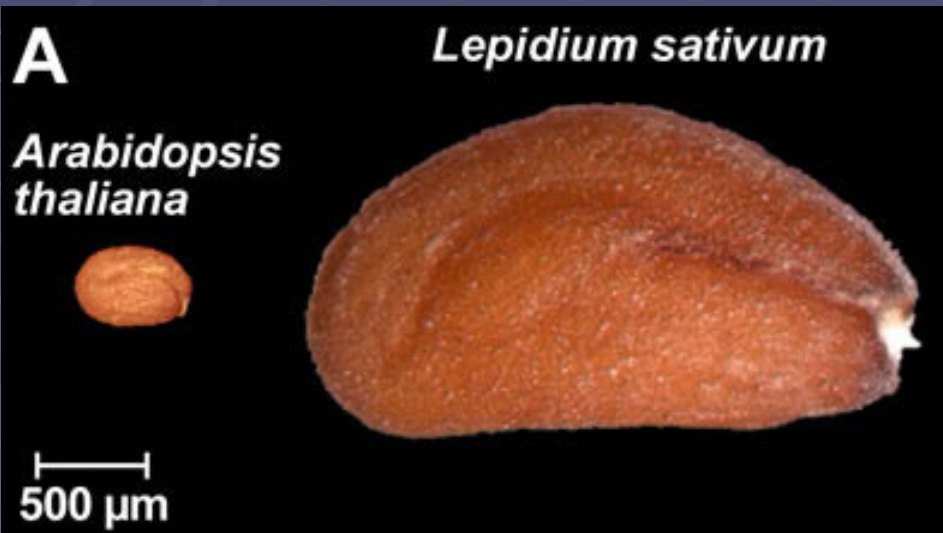
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Seed Germination

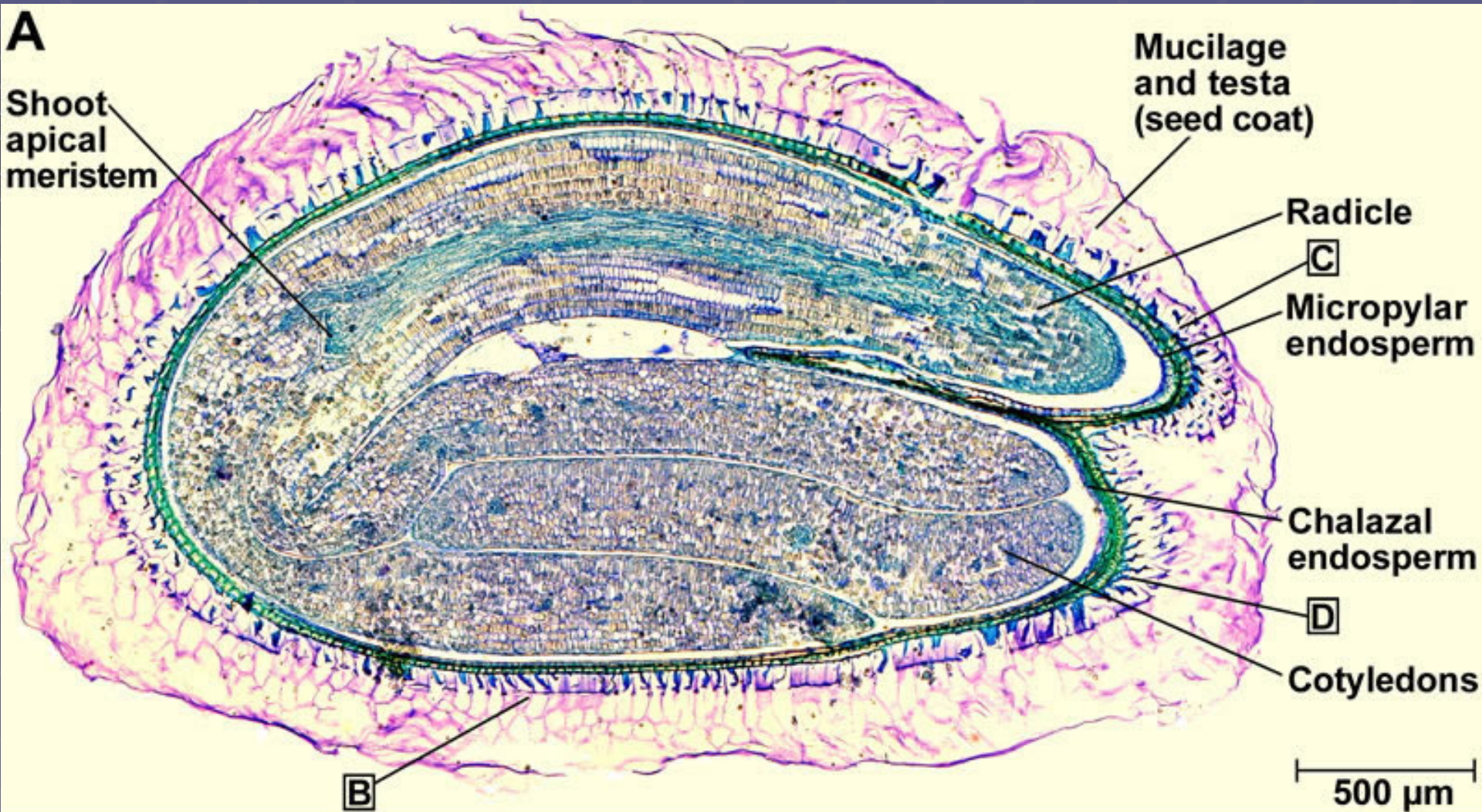
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The Germination Process



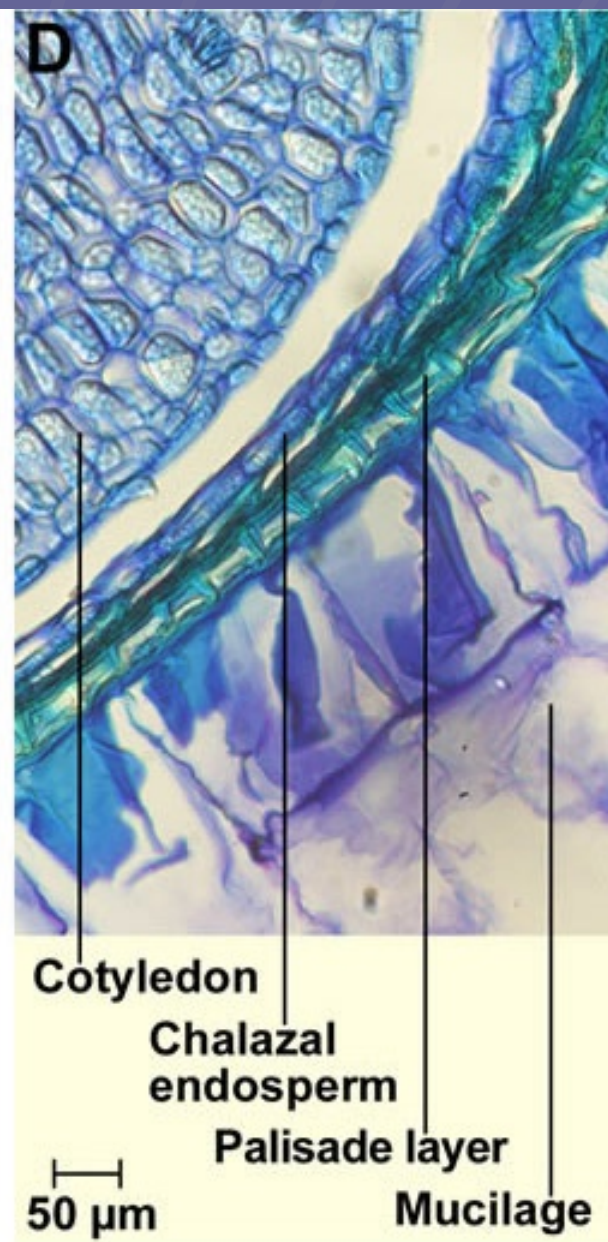
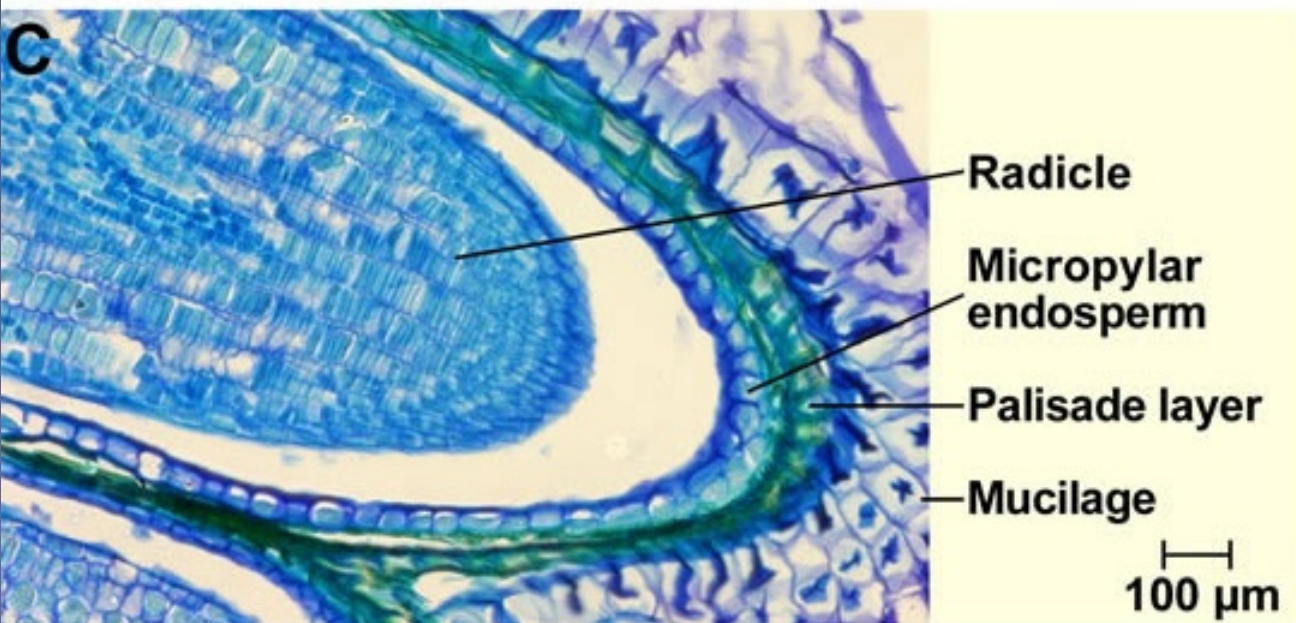
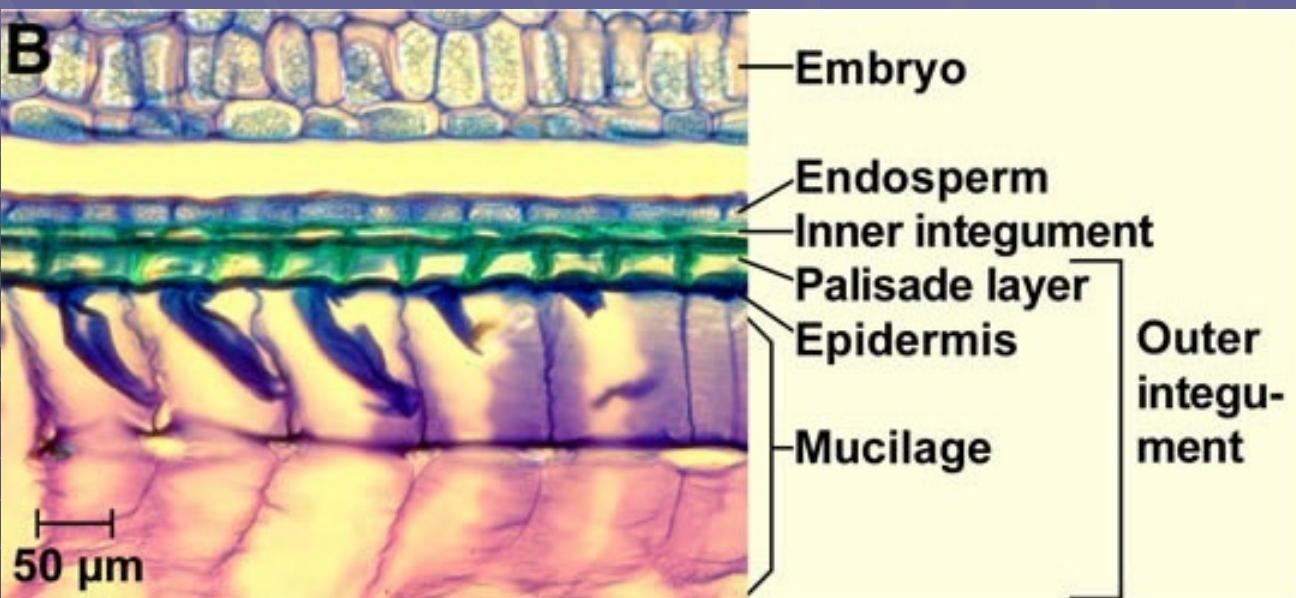
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A**Shoot
apical
meristem****Mucilage
and testa
(seed coat)****Radicle****C****Micropylar
endosperm****Chalazal
endosperm****D****Cotyledons****B****500 μ m**

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Germinating Requirements

- Seeds don't need light or nutrients to germinate.
- Seeds only need warm water ($\sim 27^{\circ}\text{C}$)

Seed Selection

- One way to select viable seeds is to soak them in a cup of water.
- Works best for large seeds
- Unfortunately, this trick doesn't work with lettuce seeds or basil.

Days it takes for commonly used seeds to germinate.

Plant	Days to germinate
Lettuce*	4 – 8
	7 – 14
Cilantro	14
Peppers	6 – 14
Basil	6 – 10

*Depending on variety

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Activity


- Formulate two hypothesis in your group to answer the following problem questions:
 - How long will it take for 50% of your seeds to germinate?
 - How many seeds will germinate after 10 days?
- Keep these hypothesis in mind as your seeds develop.

Initial Materials Per Group

- Air conditioner (weather) sealer sponge 1 ¼ inches x 1 ¼ inches x 42 inches.
- Rulers
- Scissors
- Permanent markers
- Grids
- Germinating trays
- Tray cover

Procedures

- Measure 3 cm down the long side of the sponge.
- Each student should end up with only **2 cubes**.
- Cut sponge into a 3cm x 3cm cube.
- Cut a “cross” halfway into on face of the sponge.
- Label your sponges with a SMALL unique symbol like your initials.
- Place sponges in tray until tomorrow.



1) Cut sponge into a 3cm x 3cm cube.

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2) Cut a cross on one side of the sponge halfway into the sponge itself.



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