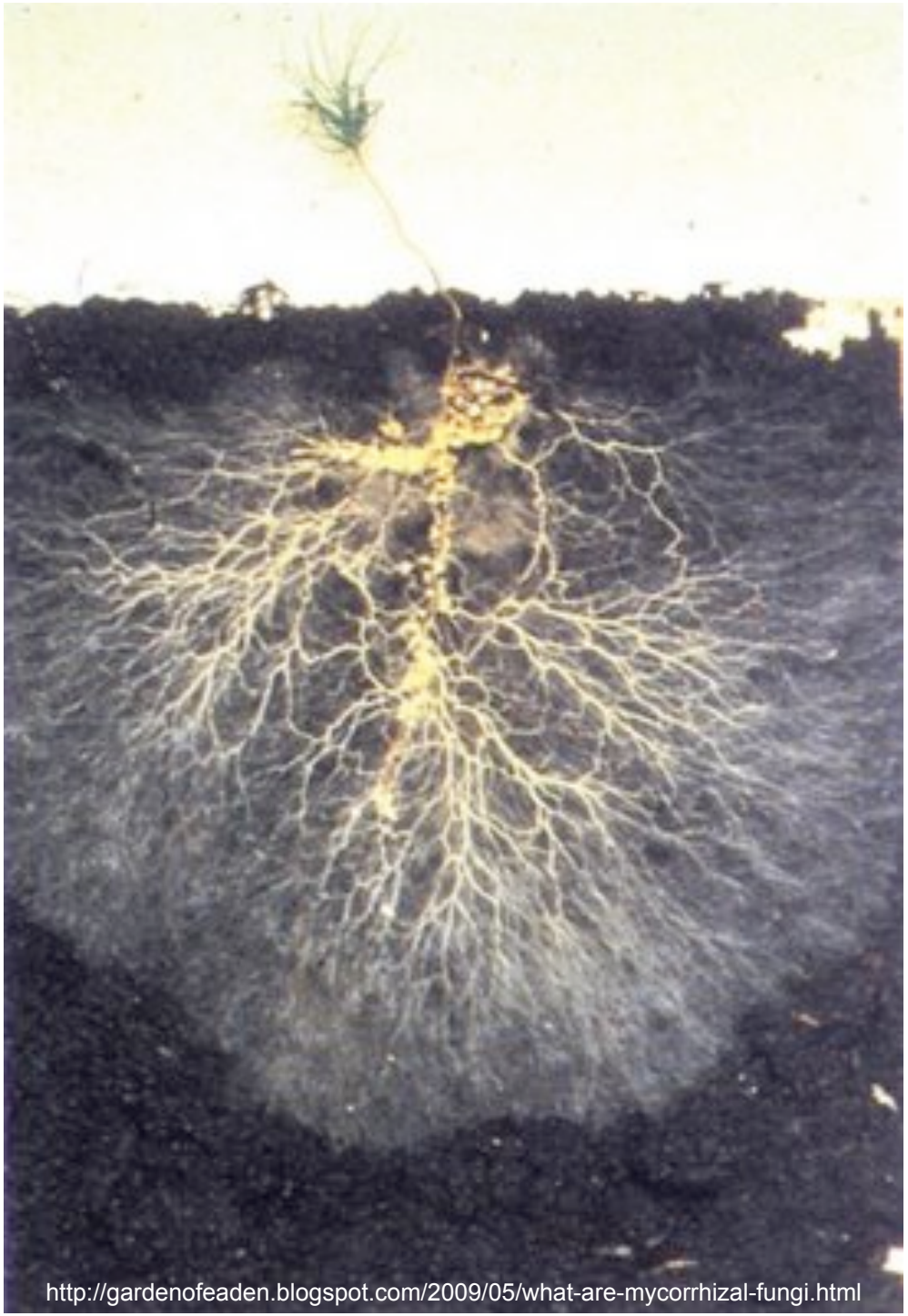

http://gardenofeaden.blogspot.com/2009/05/what-are-mycorrhizal-fungi.html

What's going on down there?

Invisible friends underground

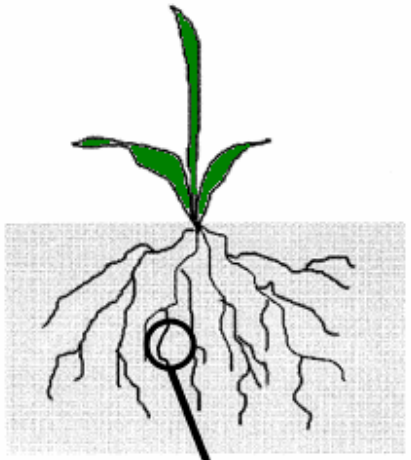
Emily Grman

grmanemi@msu.edu

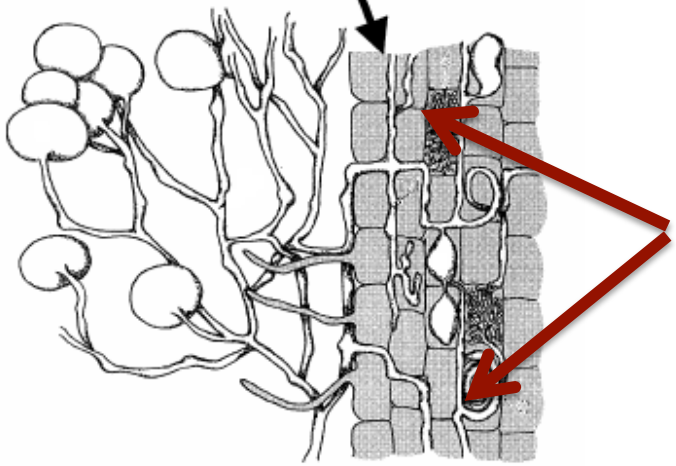
Most fungi are decomposers and make mushrooms

Some fungi live inside plant roots

MY-CO-RISE-EE
MY-CO-RISE-AL fungi

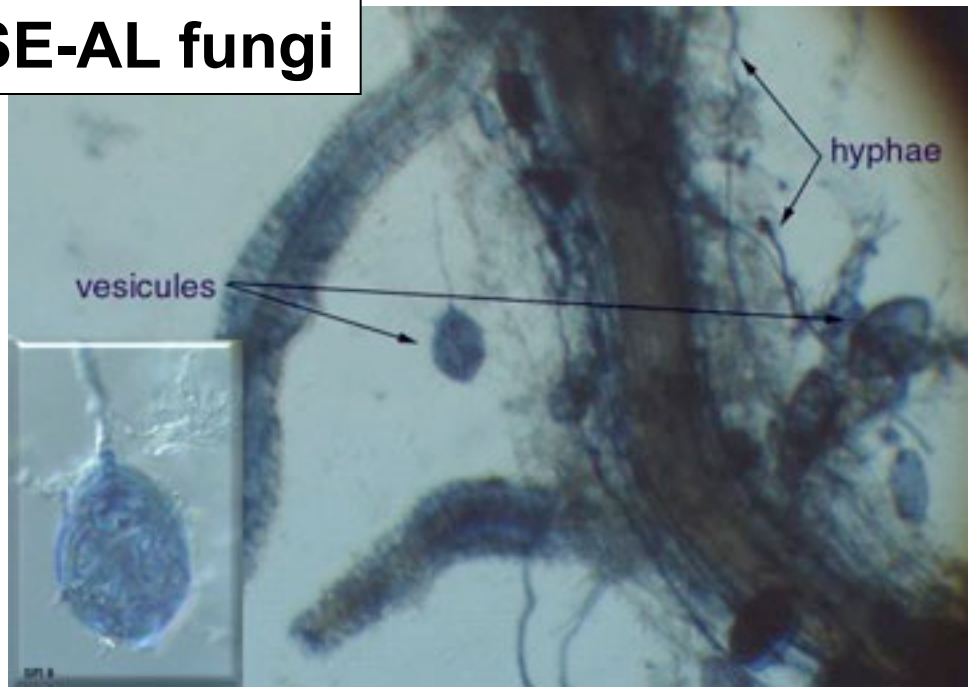


soil root



lots of mycorrhizal fungi inside plant roots

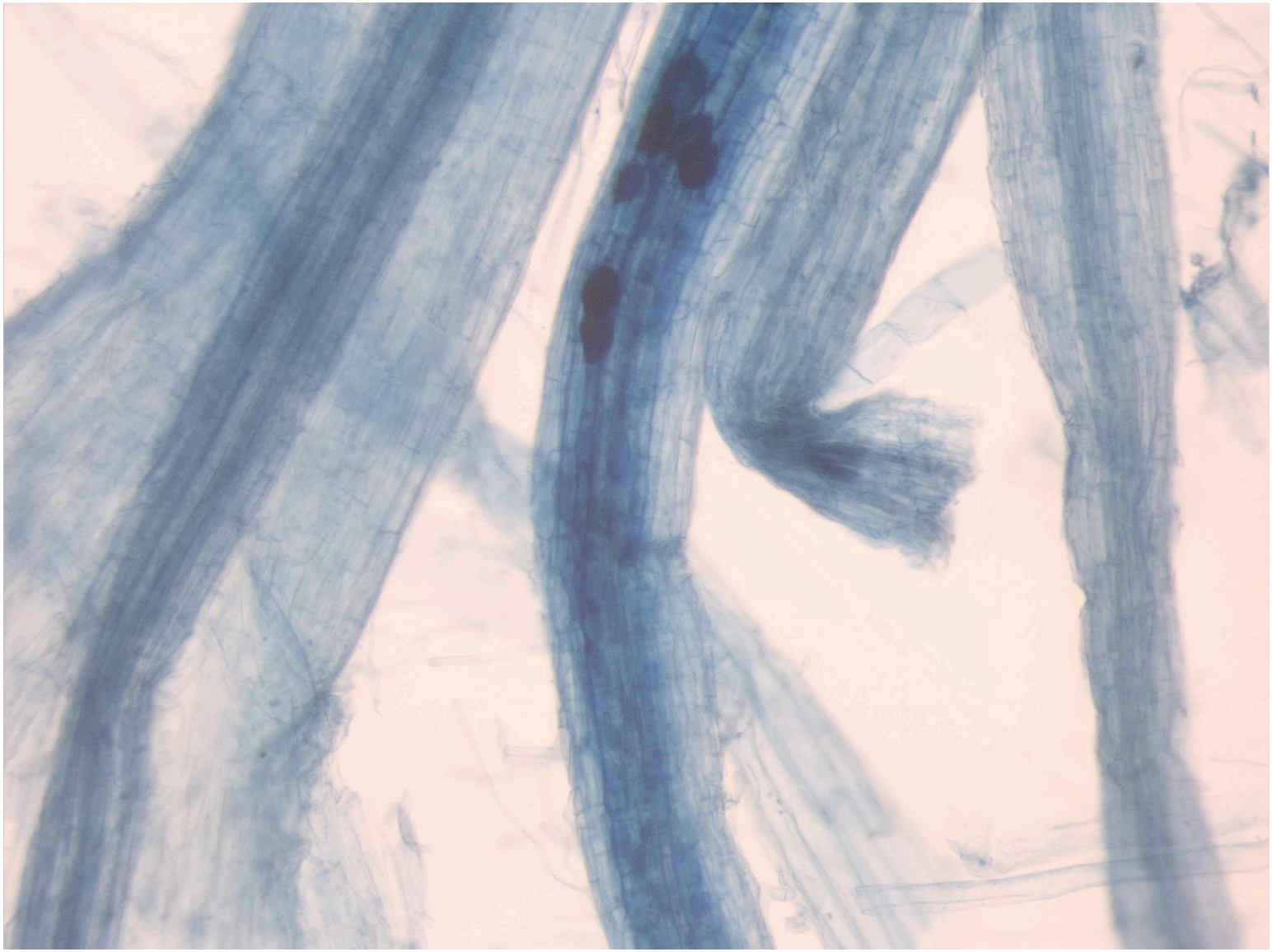
Image from Johnson et al. 2003 *Ecology*



http://www.soilfoodweb.com/images/scope_pics/09_b-vescls.jpg

hyphae
arbuscules
vesicles

Plant roots are not all plant!



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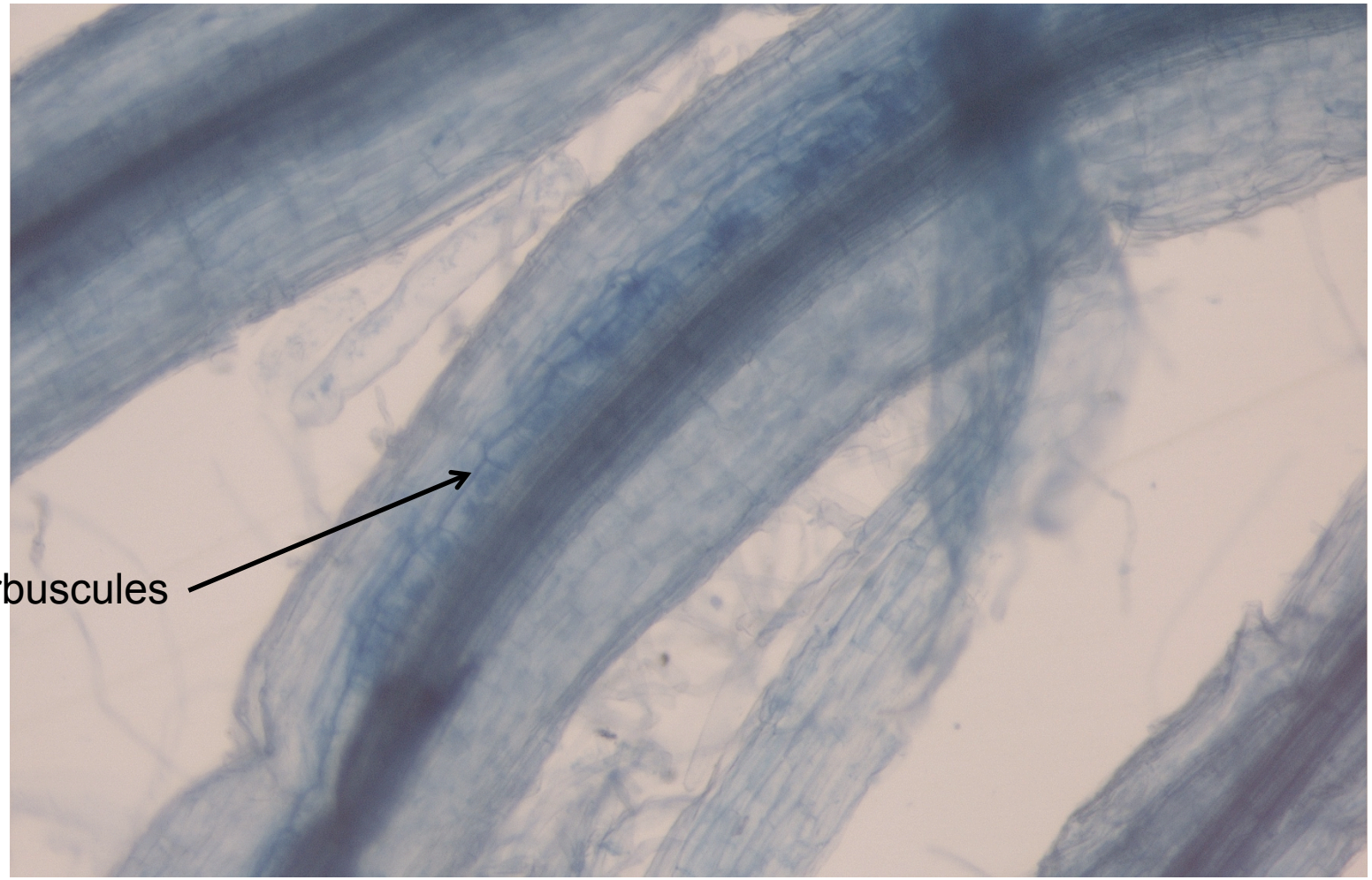

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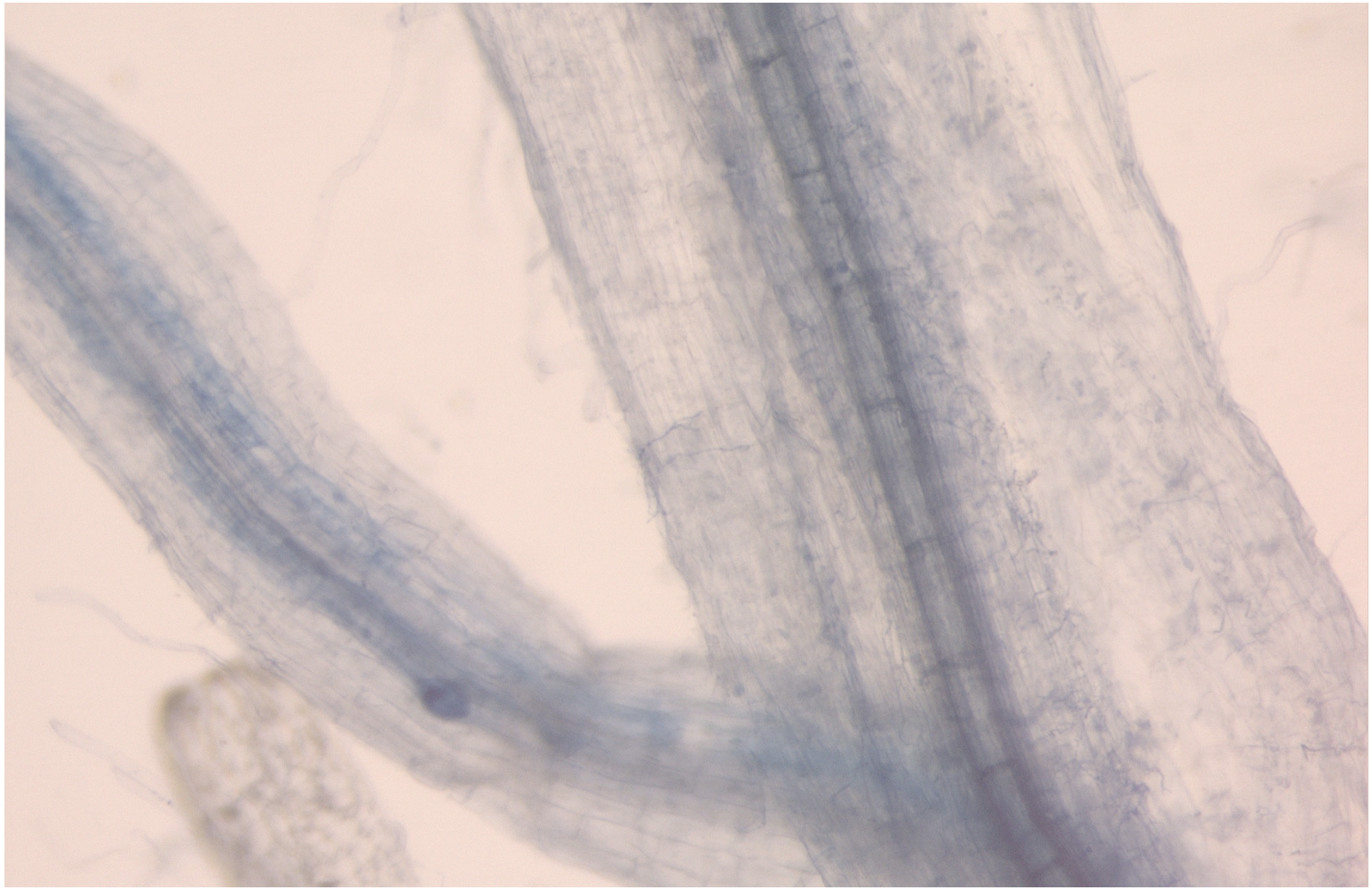

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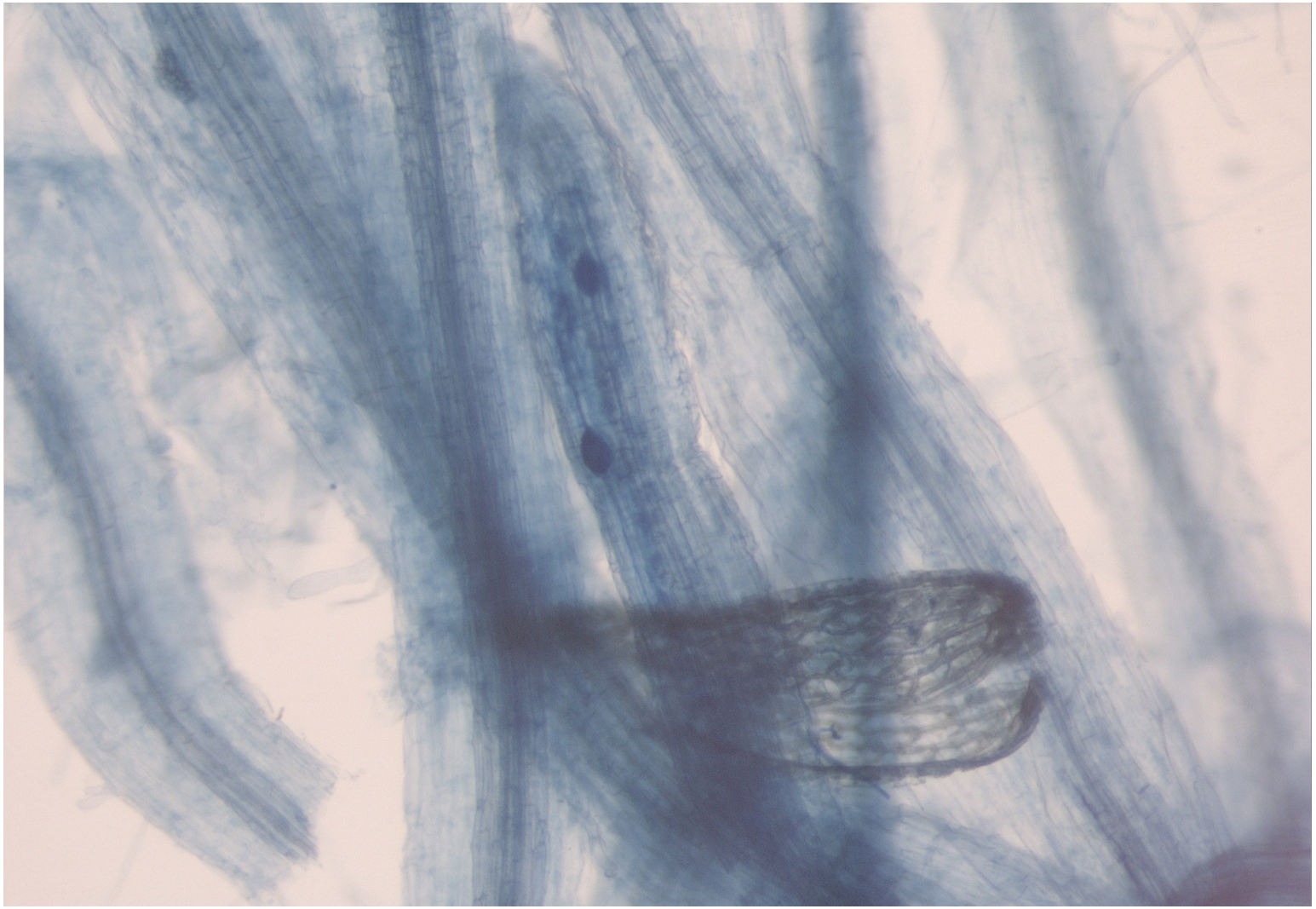
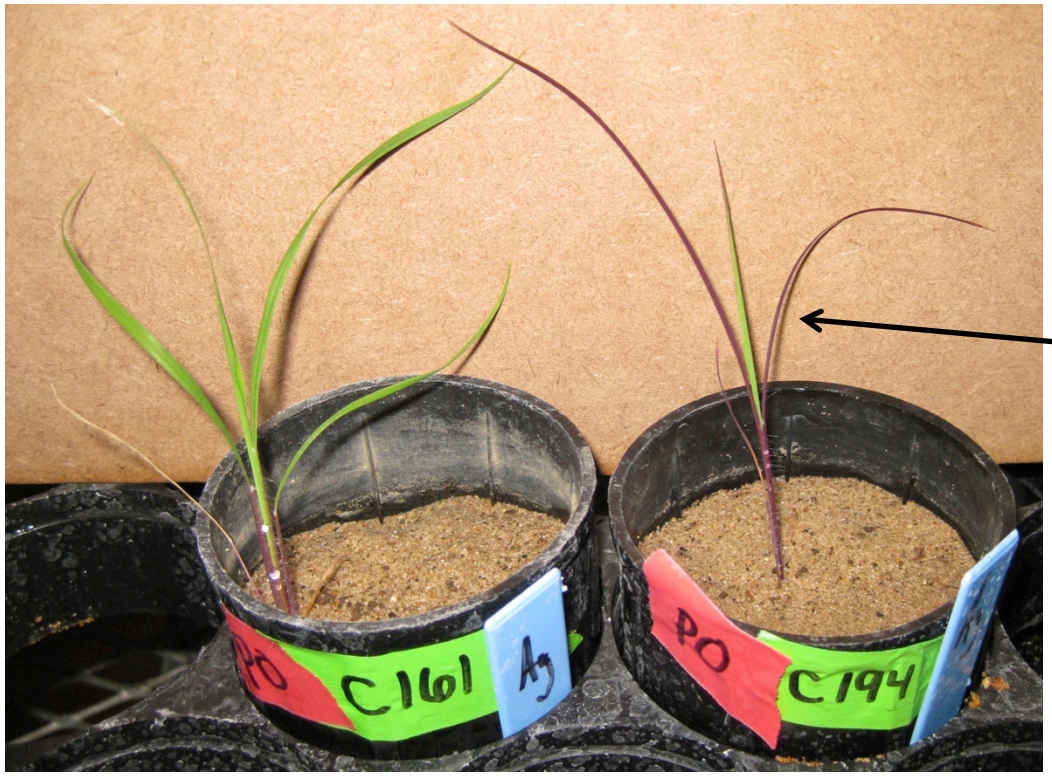


What are they doing?
A clue from the greenhouse



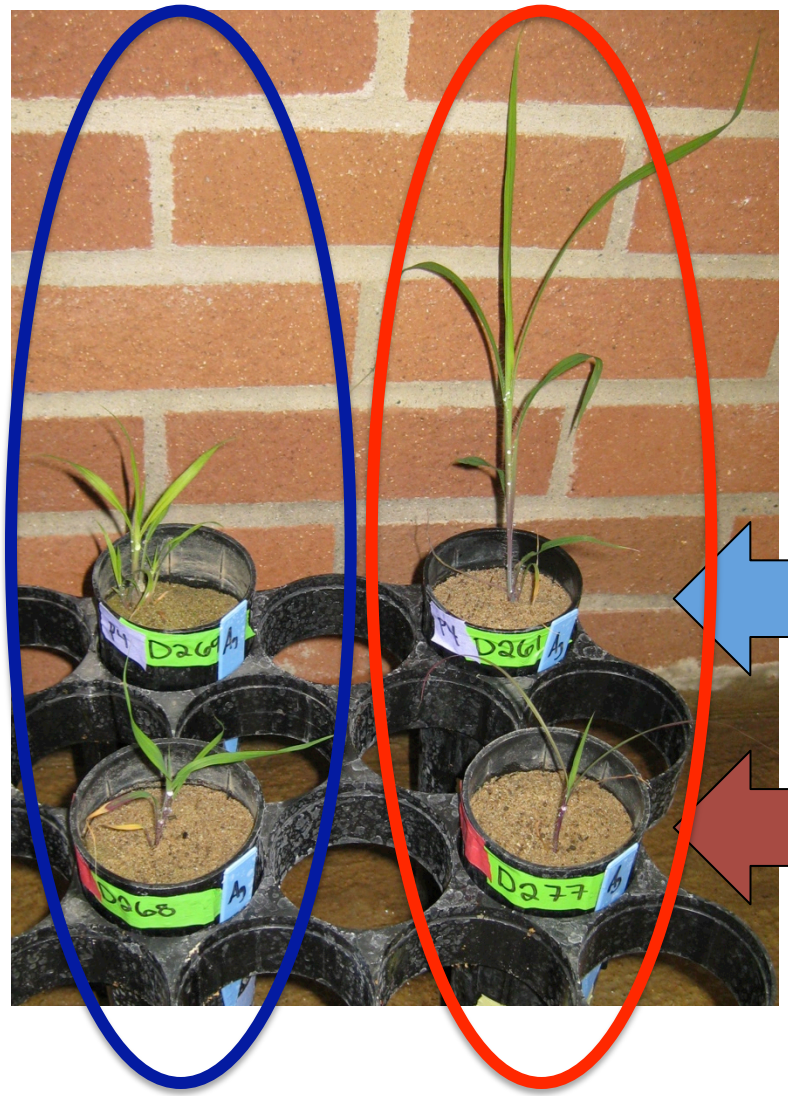
Plant with mycorrhizal fungi

Plant without mycorrhizal fungi

Purple leaves: Looks like phosphorus starvation . . .

What are they doing in there?
A clue from the greenhouse

Mycorrhizal fungi



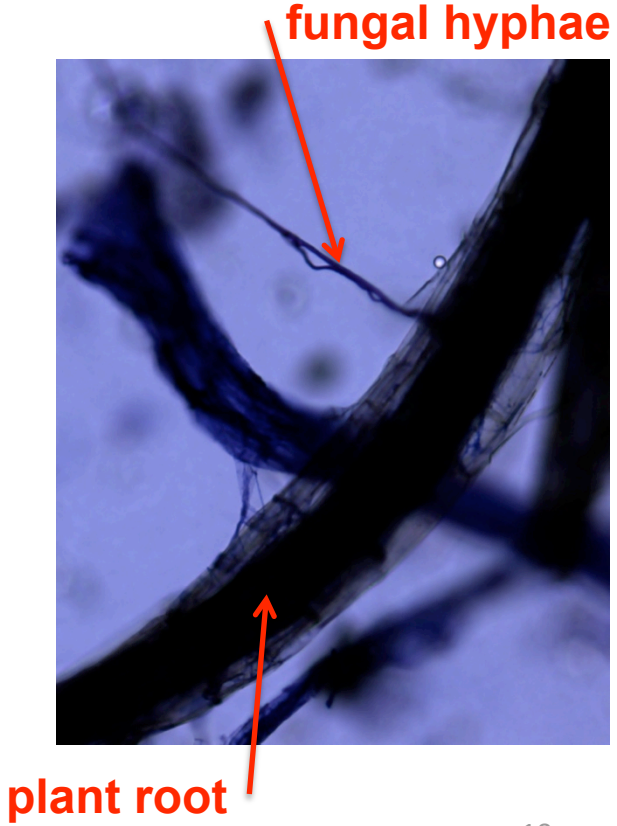
NO mycorrhizal fungi

Very high phosphorus soil

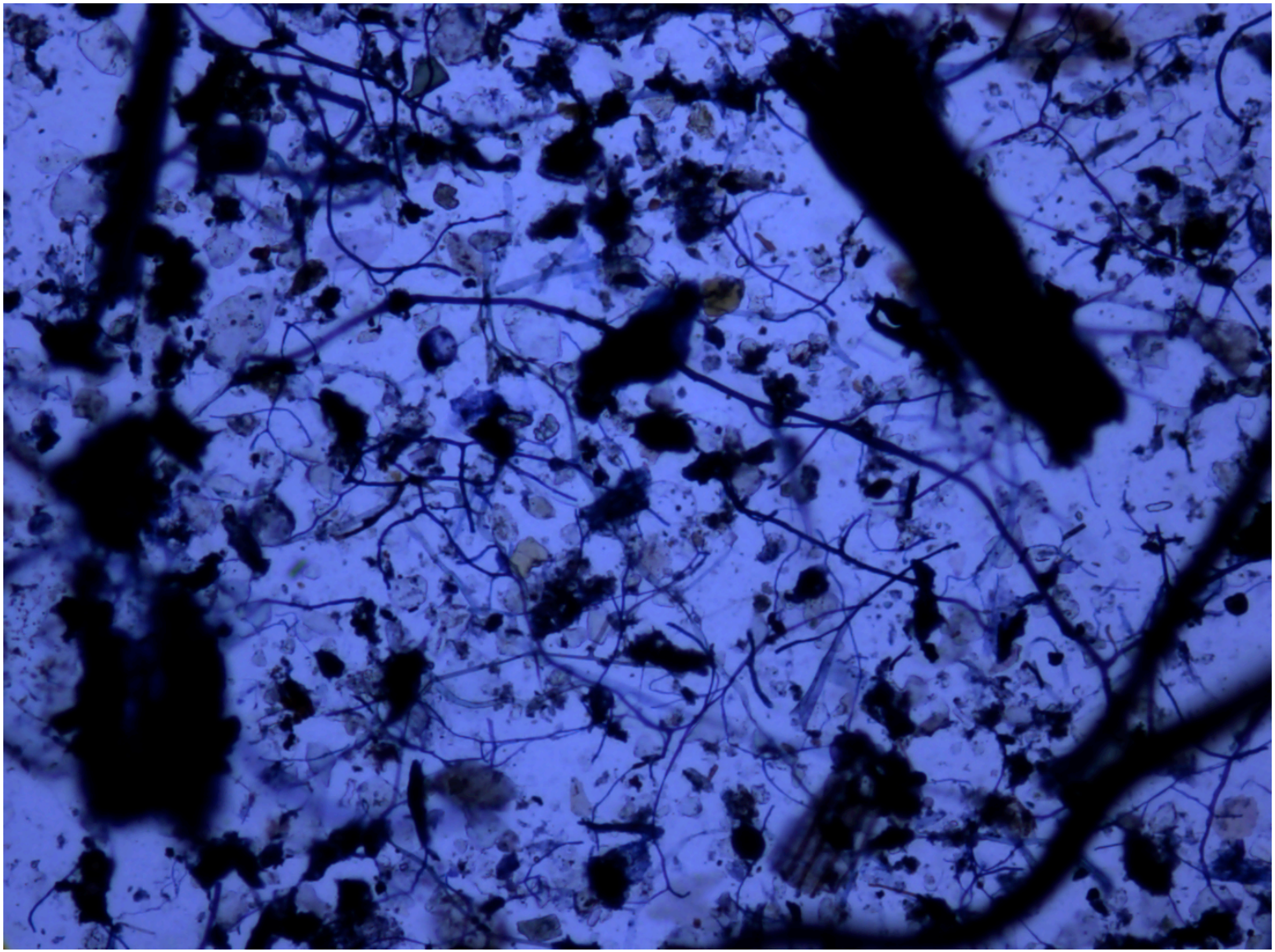
Very low phosphorus soil

Some fungi are mutualists (helpers)

- Mutualism happens two partners increase each other's success
- Mycorrhizal fungi are one example of mutualistic fungi
- Nutrients:
  - Plants need them.
  - Mycorrhizal fungi are good at taking them up from the soil.
- Sugar:
  - Fungi need it.
  - Plants are really good at getting it. (Where do plants get sugar?)



Fungi doing their job in the soil



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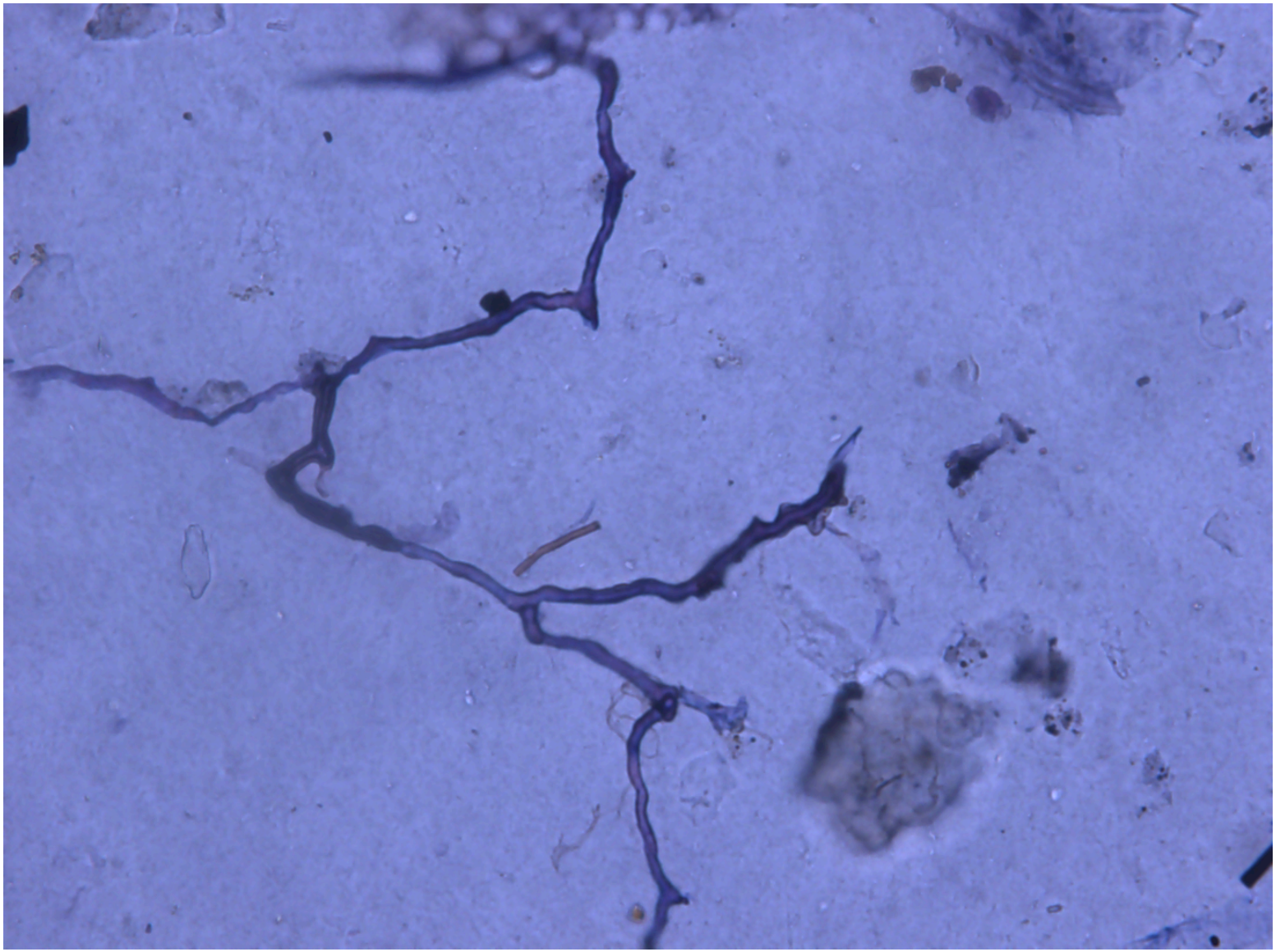

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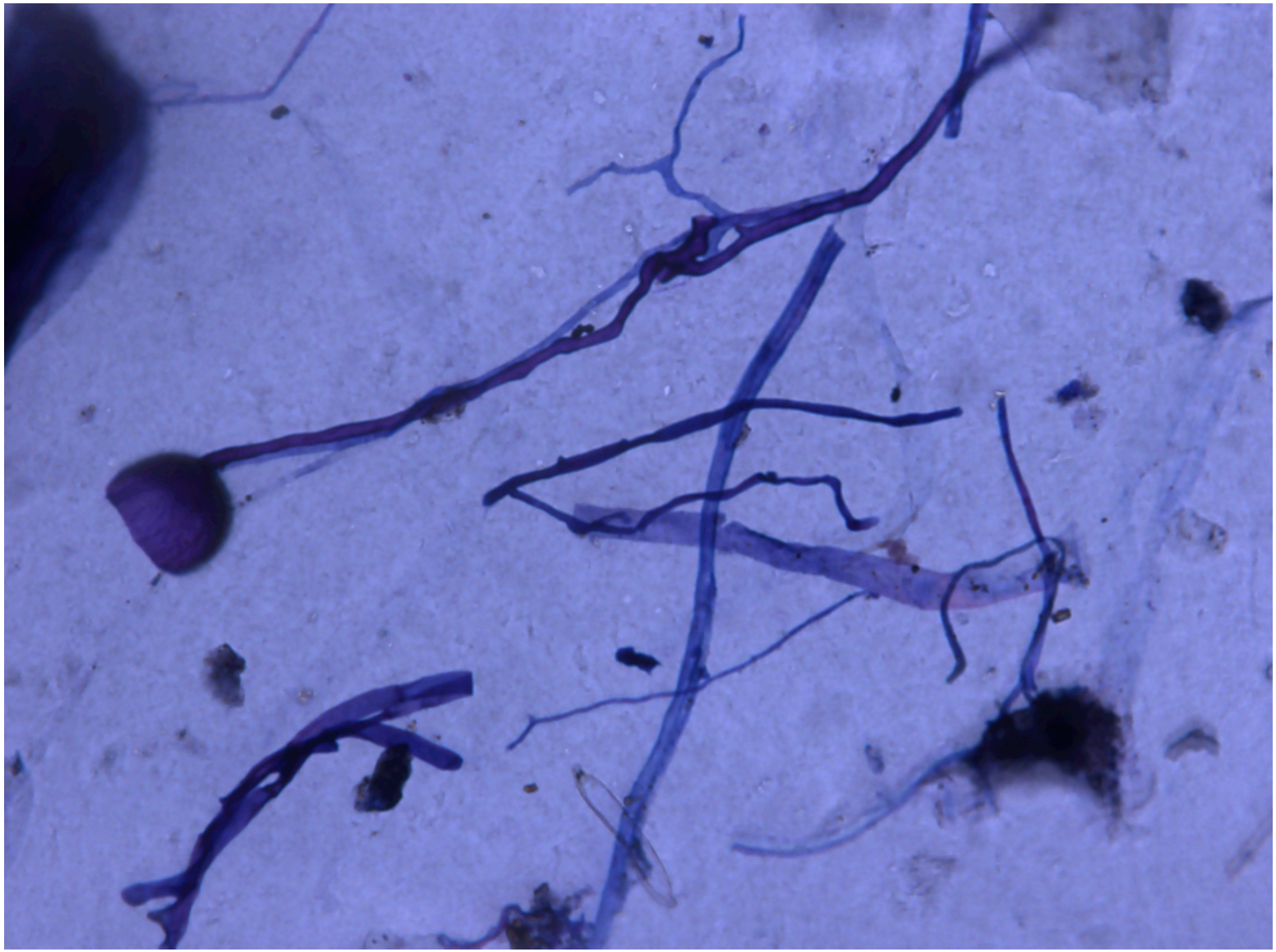
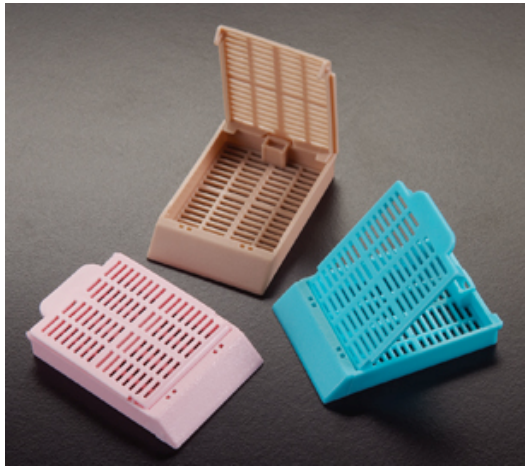


How to find mycorrhizal fungi:



1. Get some roots
2. Put them in tissue cassettes
3. Wash them off gently
4. "Clear" them with hot KOH
5. Stain them with ink and vinegar
6. Put them on a microscope slide with a drop of water and a coverslip
7. Look at them under the microscope (100x is best but 40x will do)

Where do you expect to find more mycorrhizal fungi?

- In high nutrient soils or low?
- In sunny or shady areas?
- In disturbed soils (like a farm field) or undisturbed soils?
- In grasses or flowering plant roots?
- In annual or perennial plants?
- In native or exotic plant species?

Great resource for fungal photos: INVAM http://invam.caf.wvu.edu/