Plant Pathology Lab – Week 2

Welcome!

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QUIZ TIME!!

Meet the TAs!

Shankar K. Shakya (Advisor : Nik Grunwald, USDA)

shakyash@oregonstate.edu

Office Hours: Friday 1-3 PM
Office: Cordley 3077

Alex Wong

wonga4@oregonstate.edu (Advisor : Walt Mahaffee, USDA)

Office Hours: Thursday 2-4 PM and by appointment

Office: Cordley 3077

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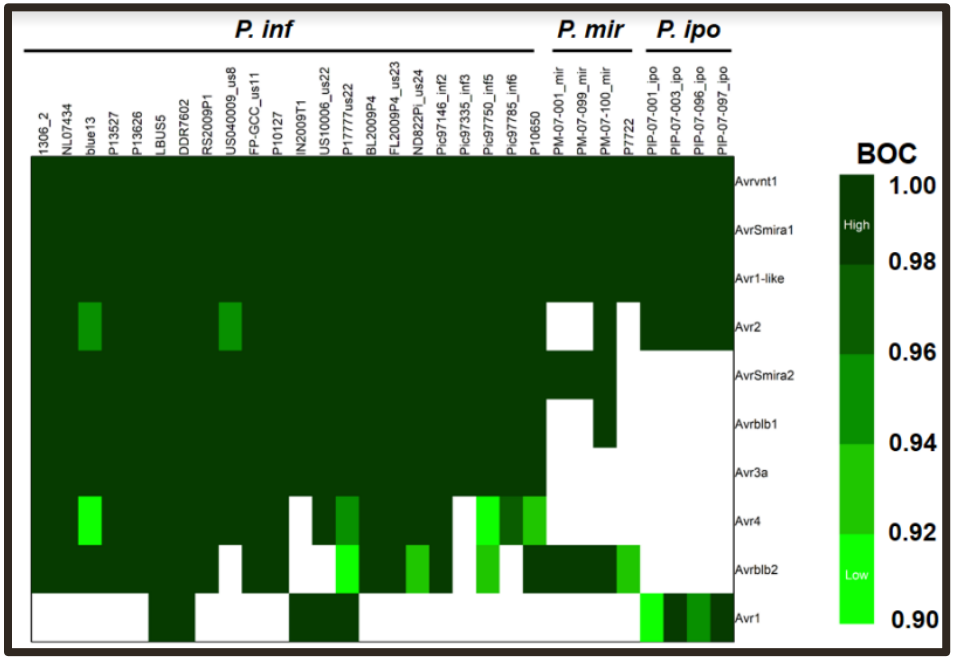
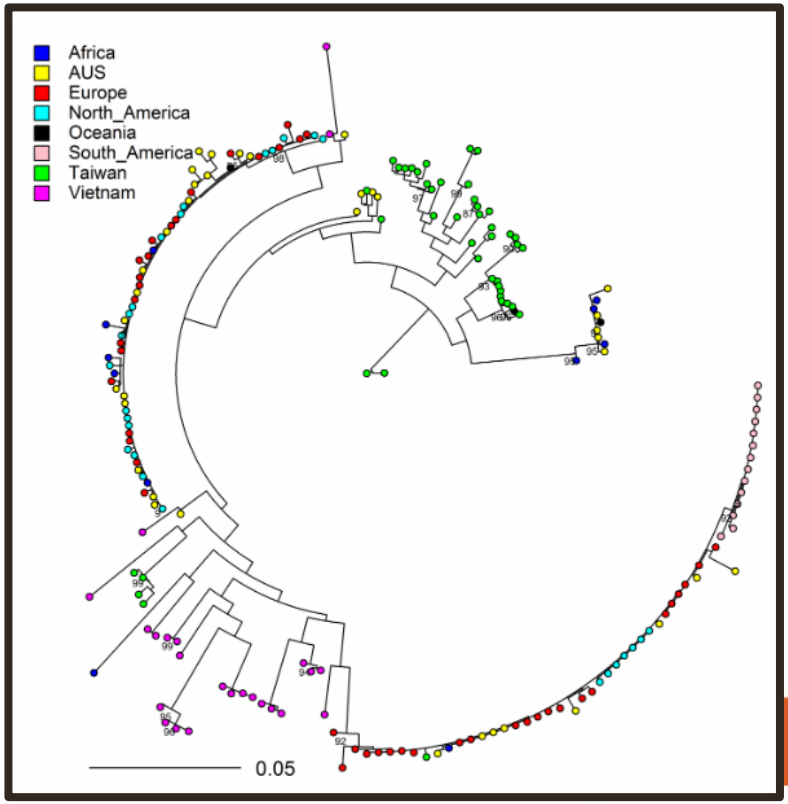
Shankar K. Shakya

- M.S Plant Pathology, 2014 (University of Florida)
- B.S Plant Pathology , 2011 (Nepal)
- Epidemiology, population genetics and genomics of *Phytophthora* species





Alex Wong

- M.S Plant Pathology, 2018 (Virginia Tech)
- B.S Molecular Cell/Developmental Biology, 2016 (University of Pittsburgh)
- Fungicide resistance of *E. necator* powdery mildew of grape

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Laboratory Expectations

What you can expect from your TAs:

- Laboratory prepared with clear instructions
- PowerPoint with necessary information and review
- Clear due dates
- 10 point quiz promptly at beginning of lab
- Return grades promptly
- Create an enjoyable plant pathology laboratory experience

Laboratory Expectations

What we expect from you:

- Show up on time – Quizzes will be the first 10 minutes of class
- Have read required lab manual pages **BEFORE** class
- Ask questions
- Be responsible students
- Follow the University Code of Student Conduct
- Create an enjoyable plant pathology laboratory experience

IMPORTANT QUIZ INFORMATION

First quiz missed is a zero.

Second quiz missed will be made up on your own time.

Quiz questions cover the introductory lab material for the current week and one or two questions from the previous lab material.

Make sure you read the introduction from your lab manual *before coming to class*

DOING A GOOD JOB ON YOUR LAB NOTEBOOK IS KEY TO GETTING A GOOD GRADE ON THE QUIZZES AND IN THIS CLASS

Field Trip Review

Primary Symptom: Symptom induced by a plant pathogen where you are able to locate the pathogen itself

(Necrosis, leaf spot)

Secondary Symptom: Symptom caused by damage from the pathogen yet distal from the site of infection

(wilt, chlorosis, defoliation)

Sign: Direct evidence of the pathogen itself

(fruiting bodies, mycelium, bacterial ooze)

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Isolation of Fungal Pathogens
pp. 7-11 (Baiting)

Oomycota
p.27-34

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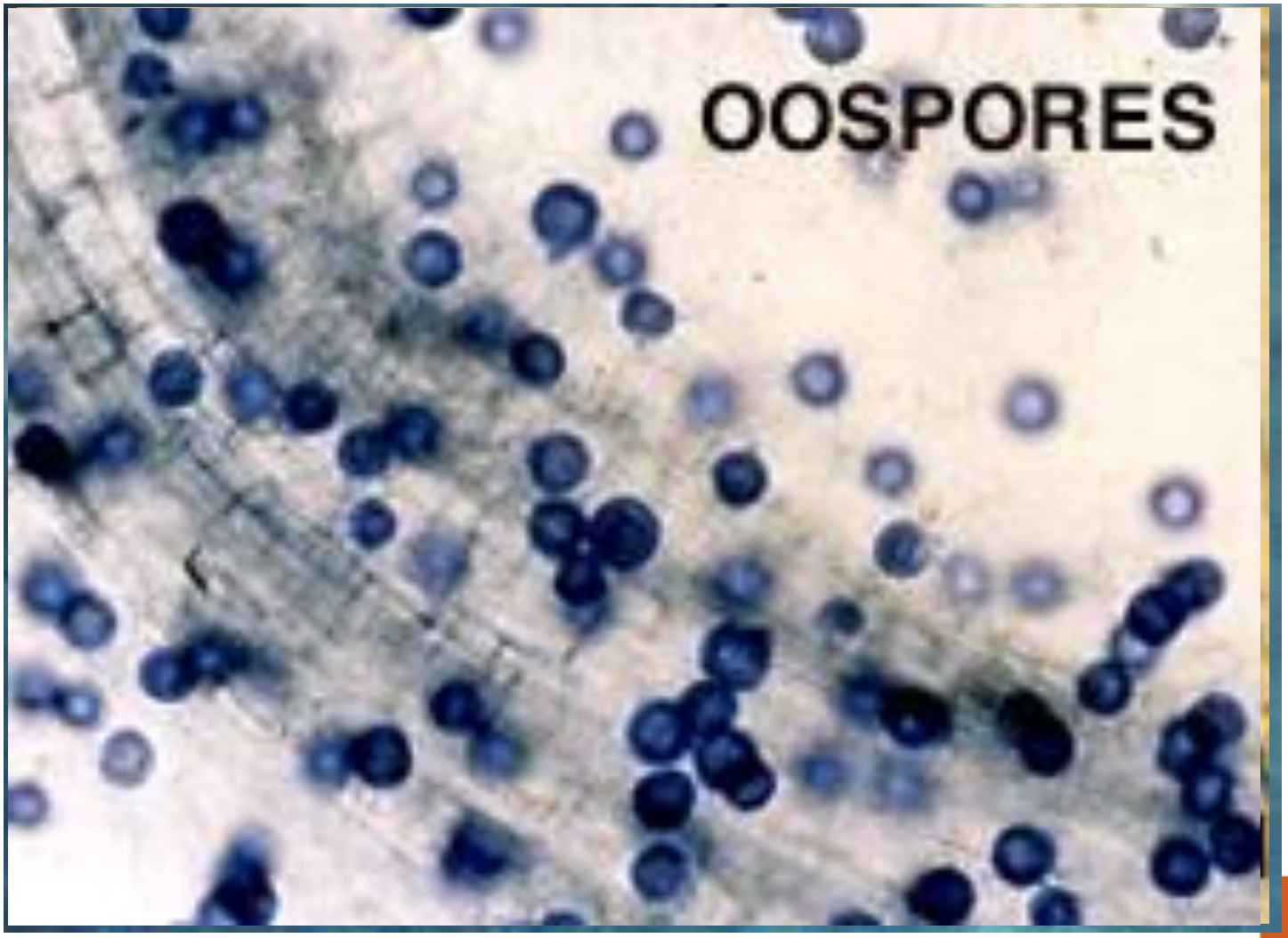
Major Differences Between Oomycota and True Fungi

Oomycota	True Fungi
• Produce coenocytic mycelium	• Many have septate mycelium
• Cell walls made of cellulose	• Cell walls made of chitin
• Heterokont flagella	• Lack heterokont flagella
• Vegetative state is diploid	• Vegetative state usually haploid

Oomycota Reproduction



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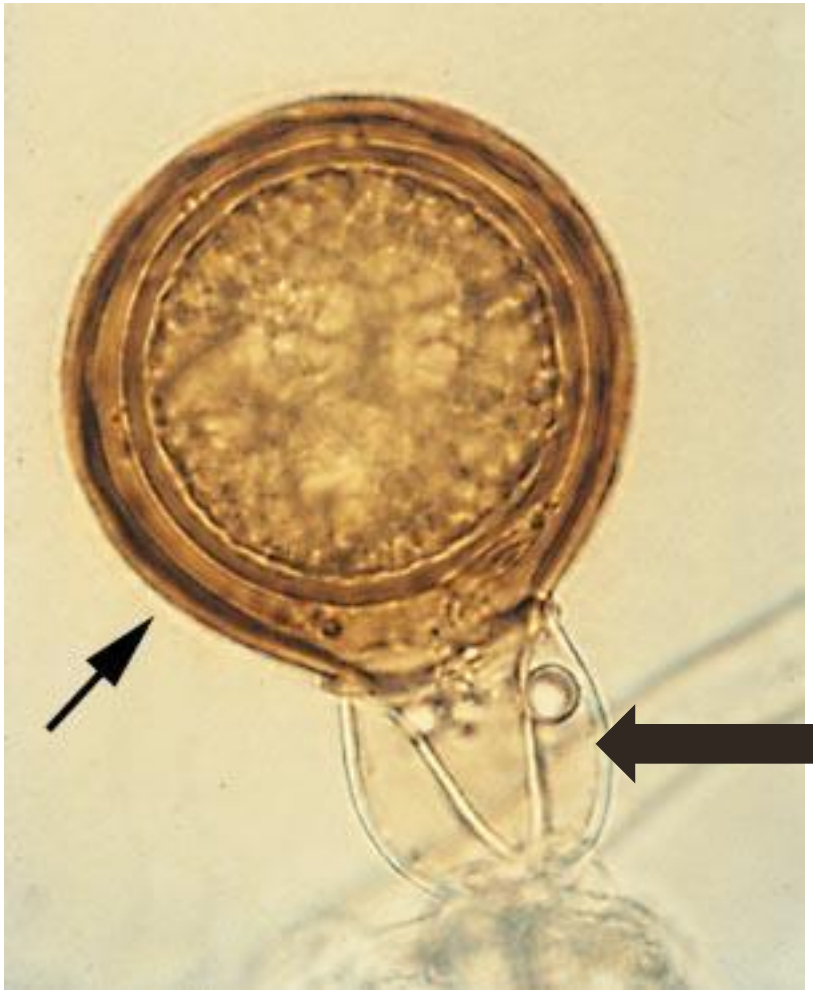
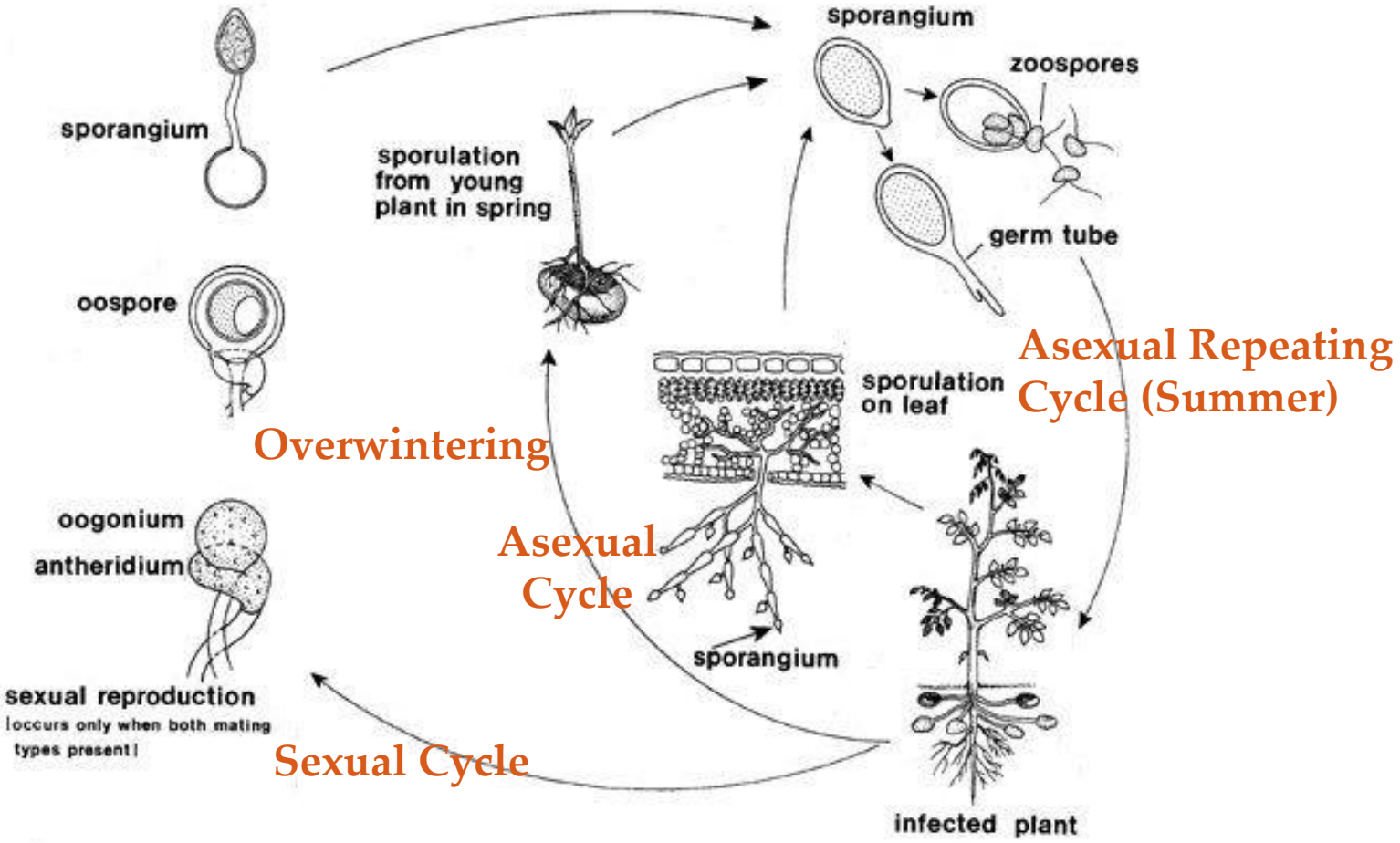
Sexual Reproductive Structures

After fertilization, Oogonium matures into an oospore.



Late Blight of Potato Disease Cycle



This is a simplified disease cycle for late blight of potato.

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Plant Pathogenic Oomycetes

Pythiaceae – non-obligate parasites or saprobes

- *Phytophthora* spp. - root rots, late blight
- *Pythium* – damping off, seed decay, fruit rots

Plant Pathogenic Oomycetes

Peronosporaceae – downy mildews

Peronospora, Plasmopara, Pseudoperonospora, Bremia, Sclerospora

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Plant Pathogenic Oomycetes

Albuginaceae – White rusts

Albugo spp.

- Chains of sporangia rupture host epidermis

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MICROSCOPE TUTORIAL

https://www.youtube.com/watch?v=WP9ebxtcLhQ

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In Lab Today

1. Look at plant specimens, note **signs** and **symptoms**
2. Make slides to observe Oomycota structures
3. Recognize **sporangia, zoospores,** and **oospores** and understand their function
4. Label a pear for Oomycota baiting experiment
5. **Fill in the answers** to the questions at the end of the lab
6. Begin to work on **Disease of the Week** #1

Disease of the Week

- Look at the plant material – what is the crop?
- Look at sample (dissecting scope)
- Make slides (compound scope)
- Reference books
- Internet search
- If necessary look at related host plants for more clues
- Fill in disease of the week sheet
- **Due in 2 weeks (October 16th) at the beginning of lab**
- **25 points**