

Fungal Fighters Lab Worksheet

Microbiology Vocabulary

Fill in the term: recall from in-class slides and/or refer to the lab procedures

_____ free from bacteria, fungi, viruses, or other living microorganisms

_____ to make impure by contact or mixture with something unclean (such as from surfaces or airborne spores)

_____ the growth of microorganisms, such as bacteria, fungi, or tissue in laboratory conditions

_____ the solidified growth medium used to grow microorganisms on

_____ to separate a strain from a natural, mixed population of living microbes in order to identify the microbe(s) of interest

_____ the population of microbes introduced to the culture medium for reproduction

Fungal plant diseases

Types of fungi living inside plants - fill in the term

	Pathogens that consume living plant tissue, therefore keeping its host alive
	Pathogens that actively kill host tissue as they colonize
	A fungus that lives within a plant without causing disease

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How did we visually identify diseased plants for this lab? *1 sentence answer*

Plant disease researchers

What are some other microbes that cause disease in plants? *List one.*

Give an example of a research method for studying plant diseases.

Isolate a pure culture

Observations on fungi cultured from your leaf sample

Each leaf sample could have one or multiple fungi living inside

How many distinct fungal colonies do you see growing on your plate? _____

Describe the colors, textures, and growth patterns of the different fungi you observed (you might not have as many as 3)

1.

2.

3.

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Isolate a pure culture

After growing a single fungal culture for 5 days, observe and take notes about your species

Color(s)

Texture

Shape/size

Growth rate

Predict

How long do you think your fungus will take to grow 1 cm?

Brainstorm: What traits could make a fungus especially good at growing fast?

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Measure growth

Record the distance grown each day, measure centimeters to one decimal point (eg 2.5 cm)

Days since start	Distance grown

Calculate growth rate

Growth rate measures the change in size [distance] over a period of time [days]. Using this equation, Growth rate = $\frac{\text{(total distance grown)}}{\text{days}}$ fill in numbers and calculate:

Early growth rate = $\frac{\text{distance grown in 3 days}}{3 \text{ days}}$ = _____

My early growth rate: _____

Later growth rate = $\frac{\text{distance grown in 7 days} - \text{distance grown in 3 days}}{7 \text{ days} - 3 \text{ days}}$ = _____

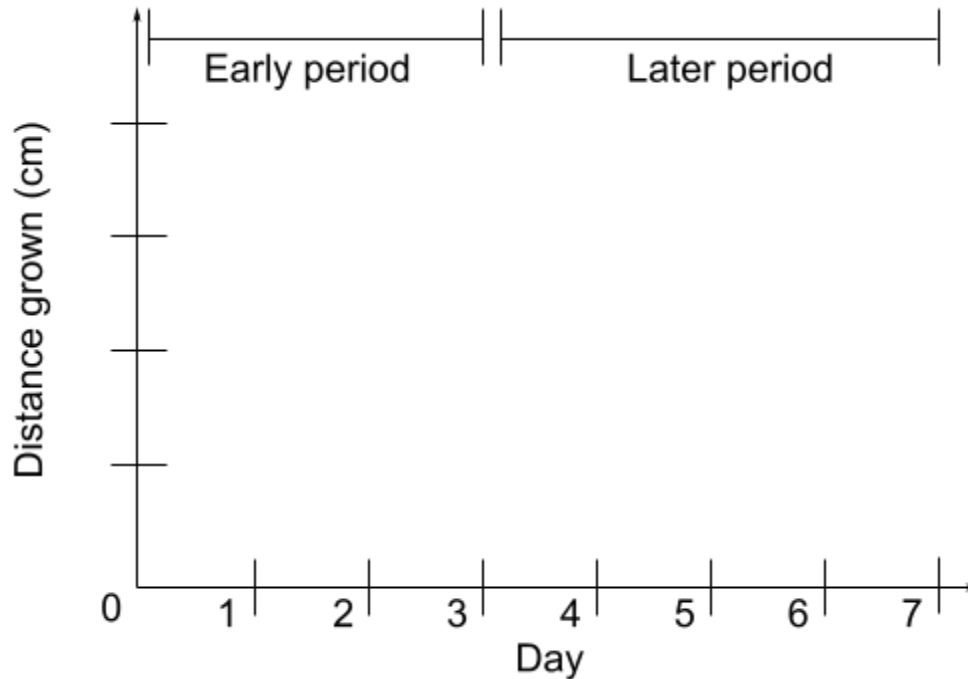
My later growth rate: _____

Growth rate is (circle) **faster**, **slower**, or **the same** at the early period relative to the later period.

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Plot your data

Label the y-axis with centimeter values based on your measurements and plot the distances grown by day 3 and by day 7. Draw one straight line from (0,0) at the bottom left corner to the day 3 distance, then draw a second straight line from the day 3 distance to the day 7 distance.



Compare with labmates

Whose fungus grew the fastest? _____

How close was your prediction to your actual growth rate? _____

Whose guess was closest to their actual growth rate in your group? _____

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Fungal fights

Predict

Based on observations of the growth of your group's fungi so far, guess whose fungus in your group will win the fungal fights:

Brainstorm: What other traits could make a fungus good at competing with other fungi?

Lab group identification

Have each member of your lab group select a sharpie color to mark their fungal competitor.

Make sure to label each plate to keep track of your matchups.

Name	Color

Fungal match-ups

Calculate the total number of paired match-ups based on the number of people in your group

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Outcomes

Trace the shape of each fungal colony onto a clear sheet and calculate the areas

Matchup 1	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:
Matchup 2	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:
Matchup 3	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:
Matchup 4	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:
Matchup 5	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:
Matchup 6	Name:	Grid squares:	Final area:
	Name:	Grid squares:	Final area:

Is there a clear fight champion?

Whose fungus is the winner of your group? _____

Was the fastest growing fungi also the best competitor in your group? _____

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Viewing Fungi with a Microscope

Station 1:

Observe your fungus under the microscope. Describe what you see here:

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____

Station 2:

Take descriptive observation notes of your fungus

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____

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Station 3:

Take descriptive observation notes of your fungus

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____

Station 4:

Take descriptive observation notes of your fungus

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____

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Station 5:

Take descriptive observation notes of your fungus

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____

Station 6:

Take descriptive observation notes of your fungus

Color, dark or bright _____

Shape(s) _____

See if you can find these structures (use reference images to help) and draw them here

Spores

Hyphae

Magnification: _____

Magnification: _____