

P6-Experiment Procedure “Soil Microbiome”

GENERAL INFORMATION

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SHORT EXPERIMENT DESCRIPTION

Similar to “Hygiene Swabs”, students search for life outside of the habitat. They take soil samples and use hygiene swabs on the soil samples, also making use of microscopes to take a closer look at the bacteria and the soil. They then try to classify the samples.

*Experiment can be conducted with OR without suit being on

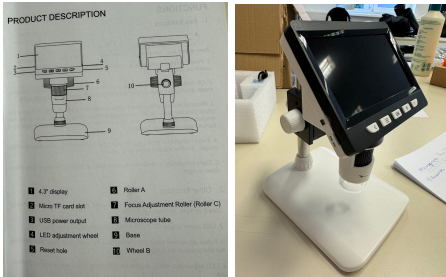
HARDWARE CHECKLIST

	Sterile swabs (x3)
	Soil samples (x3)
	Bio-collection bags (x3)
	Microscope
	Agar plates (x6) (storage between 8-18°C)
	Petri dishes (x6)
	Pipettes (x3)
	Waterproof marker
	Gloves (x how many?)
	Goggles (x how many?)
	Shovel
	Chisel
	Tape
	Cell phone

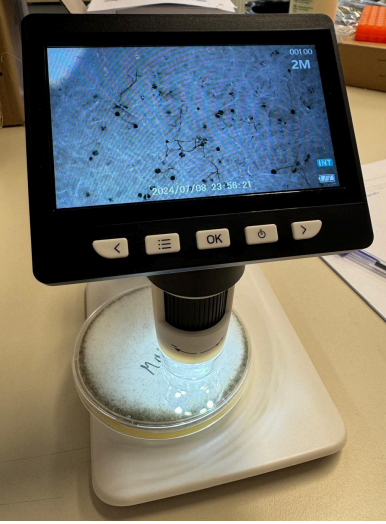
PROCEDURE “SOIL MICROBIOME”

PROCEDURE

SOIL MICROBIOME

Step	Action	NOTES	Duration	Check
1	<p>Let students collect soil samples using gloves and shovel to place them inside petri dishes with names SMs1-SMs3</p> <p>With pipettes, let students collect 3mL water-probes from puddles, etc. and put the probes into petri dishes with names SMw1-SMw3</p> <p>Use cell phone and accompanied spreadsheet to record GPS coordinates from each sample site</p>	<p>Collect soil not only from surface</p> <p>*Sample locations should be at least 100m apart</p> <p>*One scoop of soil should suffice</p> <p>*Use chisel as needed to break up larger soil clumps, ensure no rocks in sample</p> <p>SAMPLE NAME: Soil Microbiome Soil Sample: SMs# Soil Microbiome Water Sample: SMw#</p>	20 min.	
2	<p>Ensure to place a lid on all petri dishes</p> <p>Assemble the microscope according to the accompanying user manual.</p> <p>Let students use microscope to analyze probes</p>	<p>The lids prevent the microscope from becoming contaminated</p> 	10 min.	
3	Open sterile swabs and wipe soil samples SMs1-SMs3 with the soft tip of the swabs		1 min.	
4	<p>Transfer sample to agar plates by placing the tip of the swab onto the agar plate and gently rolling across the plates.</p> <p>Use pipettes to transfer 3mL water samples from SMw1-SMw3 petri dishes onto SMw1-SMw3 agar plates</p> <p>When finished, close agar plates with lids and use tape to seal both sides. Use the waterproof marker to write probe names onto the lids</p>	<p>*Ensure agar plates IDs match SMs1-SMs3 of sample swabs and SMw1-SMw3 of agar plates</p>	4 min.	
5	<p>Place agar plates in warm, dark areas (temperature range 28°C-37°C). Let bacteria grow undisturbed for up to 48 hours</p>	<p>Document and analyze growth at regular 8-hour intervals using accompanying spreadsheets and photos.</p> <p>*Note: Do not unseal/open the samples when observing and recording data.</p>	48 h.	

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<p>6 Let students use microscope to analyze bacteria inside agar plates</p>		<p>10 min.</p>	
<p>7 Let students classify all of the samples</p>		<p>15 min.</p>	
<p>8 Soil and water samples may be disposed of outside.</p> <p>Disassemble the microscope according to the user manual.</p>		<p>10 min.</p>	

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