

Selection of mycelium strains
(Level 3 – mushroom expert)

If you cultivate mushroom mycelium on agar medium there will appear different forms of mycelium. The two main forms are: rhizomorph mycelium and 'fluffy' mycelium (looks like cotton). For further cultivation and introduction of fruiting only the rhizomorph mycelium is suitable. The rhizomorph mycelium looks like the roots of plants. The primordia, later to become fruit bodies, are built from it. If you cultivate mushroom cultures on petri dishes, you have to select the rhizomorph mycelium from the fluffy. Only the rhizomorph growing mycelium is used for further cultivation.



Rhizomorph and fluffy mycelium strains on one petri dish.

selected for one time.

Recommended Tools:

- Hairnet and face mask
- Latex gloves
- Alcohol lamp
- Scalpel with sterile blades
- Workspace disinfect
- Hand disinfect
- Petri dishes with agar medium
- Parafilm to seal the petri dishes
- Glove Bag (sterile workspace)

Transferring rhizomorph mycelium

As soon as an entire petri dish is overgrown by mycelium it should be processed. If you wait too long, the fluffy mycelium outreaches and overgrows the rhizomorph form and the petri dish becomes unusable. As in every laboratory working step during the life cycle of mushrooms, clean and sterile working is essential for success!

Put on face mask, hairnet and gloves; clean the working area in front of the HEPA-filter or the Glove Box in-depth and disinfect working area and gloves.



This petri dish is ready for selection.

If you intend to clone more than one fruiting body, scrap the used blade; disinfect the working space and change gloves. Flame-sterilise the scalpel over the alcohol lamp until it is glowing red, let cool down to room temperature and put on a fresh blade before carrying on. Do not get the mycelium in contact with hot tools!

Please be cautious when flame-sterilising. Alcohol-containing disinfectants and gloves easily catch fire!

Choose a rhizomorph growing mycelium strain from the petri dish and slice it into pieces 3x3 mm. Skewer one piece with the blade and transfer it to a fresh petri dish containing agar medium. Seal the petri dishes with Parafilm; handle them with care, because the piece of mycelium should not slip out of place!



This petri dish is selected for the first time,



and this one is selected for the second time.

Advice: It is easier to distinguish between rhizomorph and fluffy growing mycelium, if you hold the petri dish in front of a lamp.

It has proven practical to inoculate several Petri dishes with pieces of the same mycelium, since the results can strongly vary. Even under best laboratory conditions you will have to face failure rates of 10%. Newcomers should not lose courage if they have to cope with failure rates up to 25% or even beyond.

Usually it is necessary to select a strain several times to get petri dishes with rhizomorph mycelium only. Moreover, the selected mycelium is able to mutate, for example grow fluffy again, and become unfit for further cultivation.

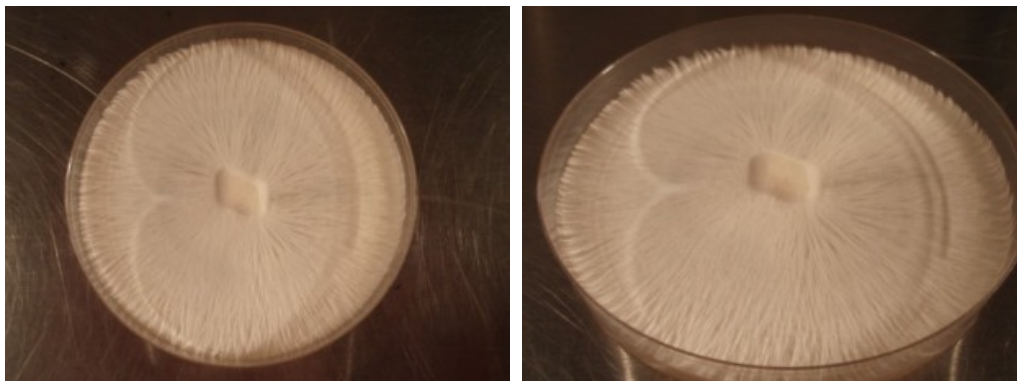
Label the petri dishes giving information about date, genus name, strain (strain means different type species within one genus – comparable with different kinds of apples) and consecutive number. A CD marker or permanent marker will do.



The mycelium pieces are placed on petri dishes filled with agar medium.

Mycelium growth

During the spawn-run (development and growing of the mycelium) the sealed petri dishes are stored in a dark and neat place. The appropriate temperature depends on the genus being cultivated. Ensure that the incubator in which the mycelium is grown provides enough ventilation. After three to five days new mycelium filaments will start to grow out of the piece you transferred. As soon as you have gained a petri dish almost completely overgrown with rhizomorph mycelium, it is ready for inoculating grain spawn.



The mycelium has to be selected as long as it grows uniformly rhizomorph.

References:

„Mycelium running/ How mushrooms can help save the world“, Paul Stamets; Ten Speed Press, Berkeley/Toronto;

„The Mushroom Cultivator: A Practical Guide to Growing Mushrooms at Home“, Paul Stamets, Agarikon Press; First Edition (December 1983);

„Growing Gourmet and Medicinal Mushrooms“, Paul Stamets, Ten Speed Press, Berkeley/Toronto;