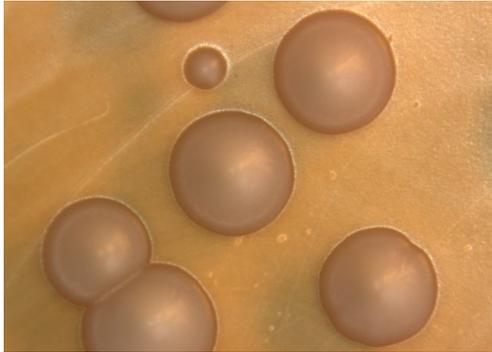


WHY WE CONSERVE GENETIC RESOURCES OF MICROORGANISMS?



A colony of yeast *Saccharomyces pastorianus*,
credit Dr. D. Matoulková

Fifty percent of the living biomass on the planet is said to be microbial and microorganisms have the potential to provide solutions to many problems in agriculture, industry, plant, animal and human health and many biotechnological applications.



Ascomycete fungus *Sordaria fimicola*, credit Dr. D. Novotný



Conservation of fungi on agar slant, credit L. Lisá

They are involved in nutrient recycling, beneficial mutualistic relationships, and production of atmospheric oxygen; some are pathogens causing diseases of man, plants or animals. An adult human of average weight carries about 1.5 to 2 kg of microorganisms on her/his body.



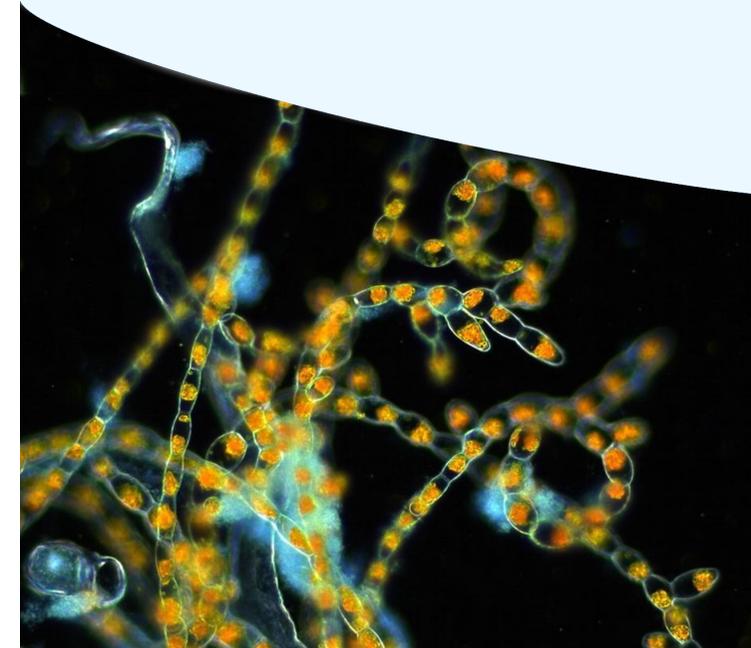
Work with infectious agents in BL3 laboratory, credit Dr. J. Pročálová



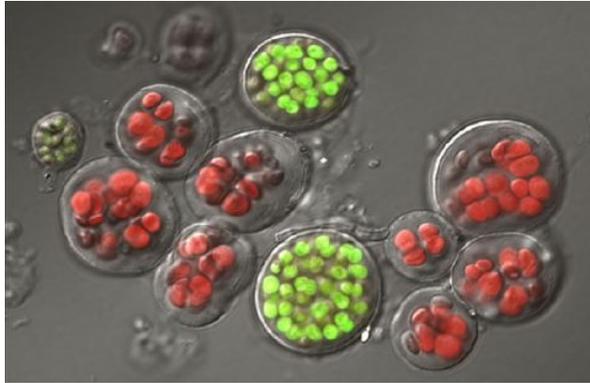
Parsley affected by nematode *Meloidogyne hapla*, credit Dr. O. Douda



THE NATIONAL PROGRAMME ON THE CONSERVATION AND USE OF GENETIC RESOURCES OF MICROORGANISMS AND TINY ANIMALS IMPORTANT FOR FOOD AND AGRICULTURE



The National programme on the conservation and use of microbial genetic resources important for food and agriculture



Cyanobacteria of genus *Gloeocapsa*, credit Ass. Prof. M. Sedlářová

The aim:

- conservation of genetic resources of microorganisms *ex situ* in collections, safe maintaining of the genetic resources and their biodiversity
- record keeping and documentation of genetic resources, their evaluation on molecular level and possibility of utilization for food and agriculture,
- enhancing the international cooperation, exchange of genetic resources

The programme consists of network of twenty collections, specialized on either harmful organisms of animals (viruses and bacteria useful for veterinary practice) and agriculture crops (viruses, bacteria, phytoplasmas, rusts, powdery mildews, oomycetes, basidiomycetes and other fungi, insects, nematodes and mites) or utilizable microorganisms like dairy microorganisms, brewery yeasts and rhizobia.



Puccinia striiformis, credit: Prof. K. Veverka,

What is genetic resource?

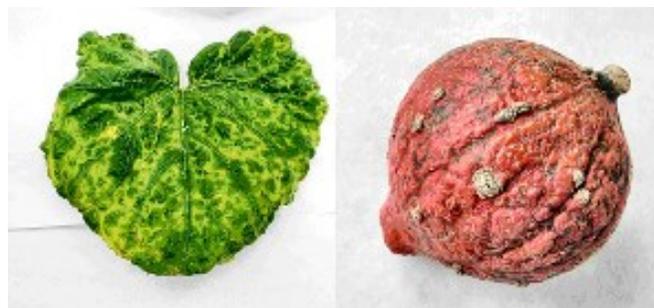
"Genetic resources" means genetic material of actual or potential value.

"Genetic material" means any material of plant, animal, microbial or other origin containing functional units of heredity.

These terms are defined by International Convention on Biological Diversity, signed also by the Czech Republic. National programme fulfills obligations arising from the Convention.



Bacteria *Escherichia coli*, credit: Dr. M. Reichelová



Zucchini yellow mosaic virus on pumpkin cv. Hokkaido, credit: Dr. J. Svoboda

What is the importance of microbial genetic resources for agriculture?

Microorganisms have been used as tools for the production for millennia. Their various properties can be utilized in a wide range of possible applications, such as biological control of pests and diseases in agriculture and horticulture; production of natural products for pharmaceuticals, food industry and other applications, composting, bioremediation of soil and detoxification of wastes. They play a major role in soil fertility and plant, animal and human health and are employed in diagnostics, efficacy testing of drugs, biocides, vaccine production and disinfectants or as reference strains.



Sitophilus oryzae, credit Dr. R. Aulický

Picture on a title page: *Trentepohlia*, aerophytic green alga from tree bark, credit: Ass. Prof. P. Hašler

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