INSTITUTE OF PLANT GENETIC RESOURCES “KONSTANTIN MALKOV”

Development of methods and technologies for in vitro propagation and storage of vegetatively propagating cultivated and wild plant species

The Institute of Plant Genetic Resources "Konstantin Malkov" was established in 1902 - as an experimental agricultural station, which in 1977 grew into the Institute of Plant Genetic Resources.

The National Seed Genebank is located on the territory of the Institute, which stores 57,684 seed samples out of the total of 62,131 registered as a gene pool in the country . The long-term storage of the seed samples is carried out at

- active collection for medium term storage (+6°C)
- base collection for the long term storage (-18°C) in a specially designated chamber.

The Plant Biotechnology Laboratory in the city of Sadovo was established in 1977. The founder is Prof. Chavdar Chavdarov, who was involved in the healing of potato seedlings through meristem tissue.

For the first time in Bulgaria, the methods for in vitro micropropagation of vegetatively propagating species are being developed here. The possibilities for long-term storage of plant species in vitro are being tested.

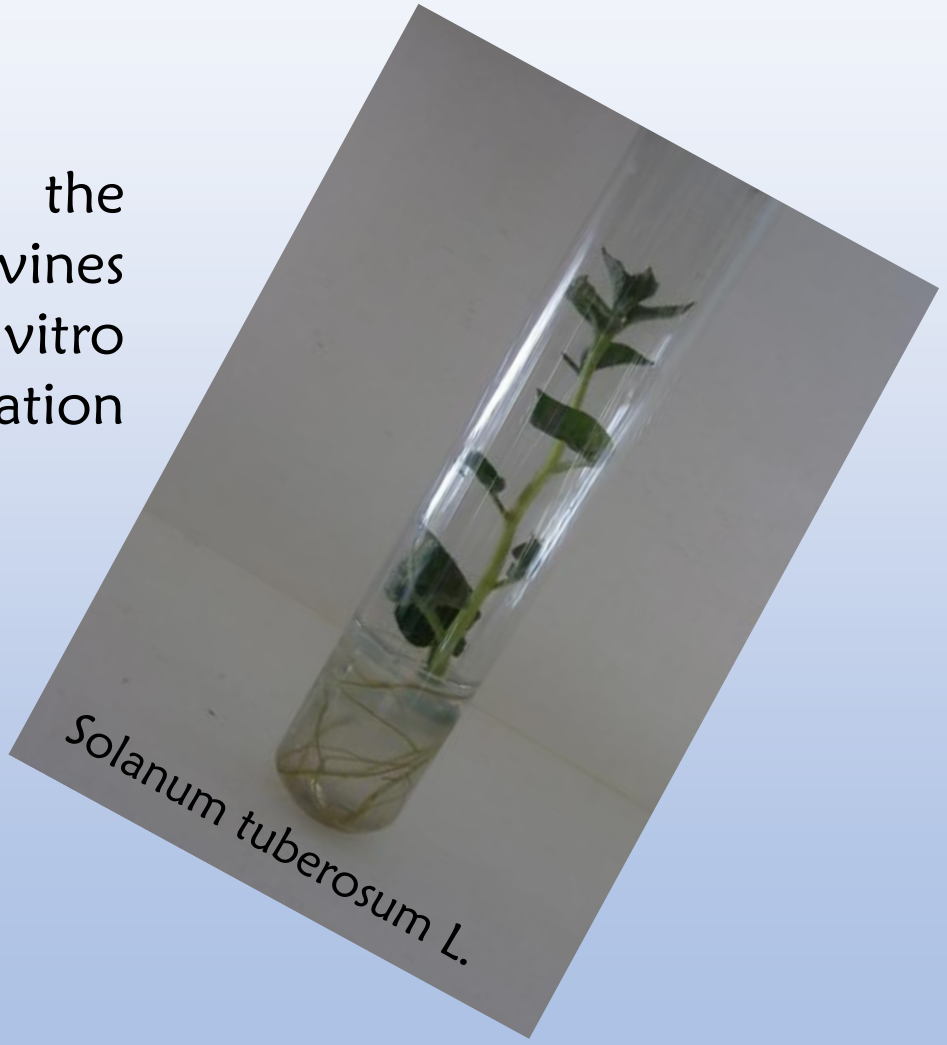
The first experiments are being conducted to create cell suspension cultures from valuable plant species from the Bulgarian flora.

The research work is conducted in the following directions:

- Introduction, study and application of protoplast culture methods for breeding purposes.
- Introduction to in vitro culture and development of micropropagation methods of various vegetatively propagating species.
- Elucidation of the methodological steps of the complex of factors allowing multiple subcultivation in vitro conditions.
- Study of the factors and conditions for long-term in vitro storage.
- Development of methods for obtaining cell suspension cultures from plant species from the Bulgarian and foreign flora for the extraction of valuable chemical compounds.
- Application of embryo and anther culture methods to obtain new selection forms and combining the methods with traditional selection.

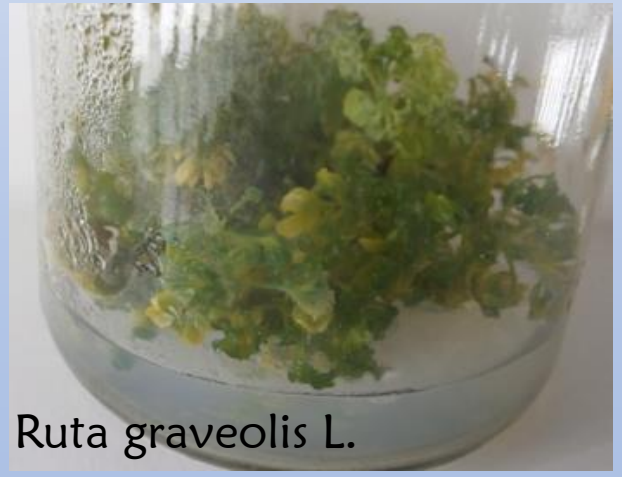
Achieved scientific results that were first for the scientific community in Bulgaria

Proven technologies for the propagation of potatoes, vines and mint conditions in vitro with a high multiplication factor.

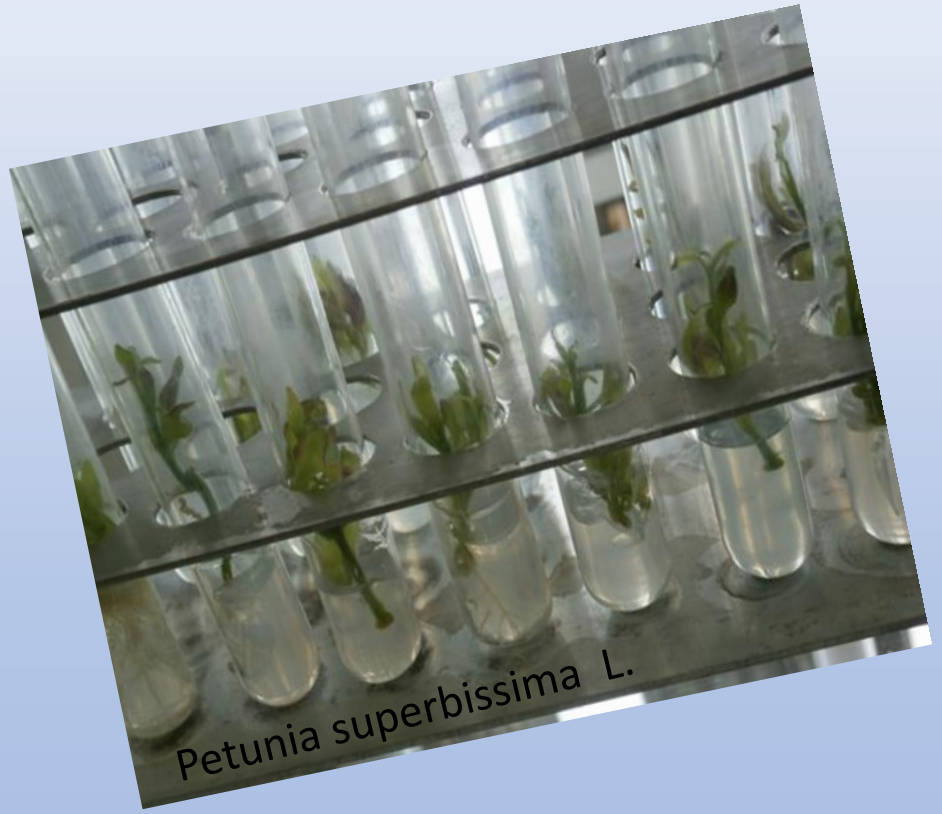



Chrysanthemum carinatum L.

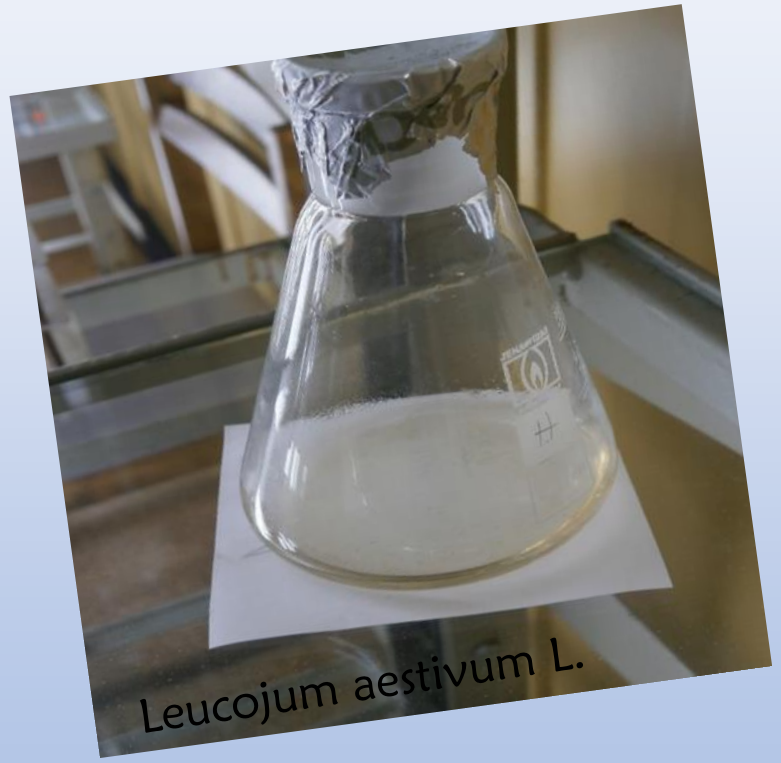
In vitro methods for accelerated reproduction and rooting of essential oil, decorative, technical and medicinal plant species have been studied and optimized.


Ruta graveolis L.


Gypsophila muralis L.


Petunia superbissima L.

Cell suspension cultures were obtained from the leaves, roots and flowers of the marsh snowdrop /L. aestivum L./, mursal tea /S. scardica L./, sweet root /G. glabra L/, with multiple subcultivation possibilities.


Leucojum aestivum L.


Glycyrrhiza glabra L.

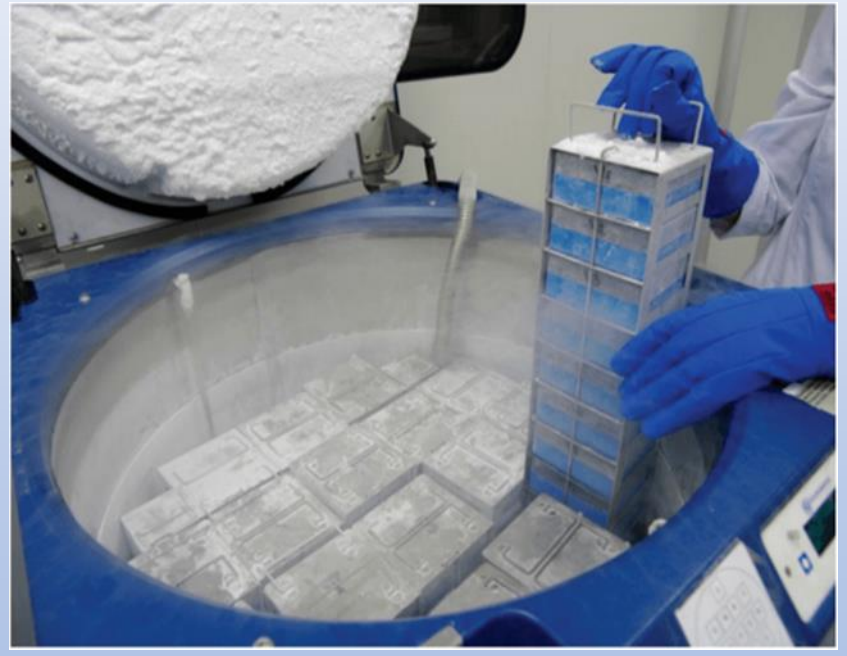
Creation of new varieties of wheat by the methods of embryo and anther cultures

Successfully completed research on processing plant tissues from wheat and obtaining protoplast cultures, with a subsequent regeneration process until the selection of new lines in this culture.

A methodology has been developed for combining somaclonal and combinatorial variability in common winter wheat.

A technology for targeted stem shortening is applied in wheat plants.

Recognized by IASAS are 2 varieties of wheat - "Zdravko" and "KM-135" and one variety of rice "Mariana".

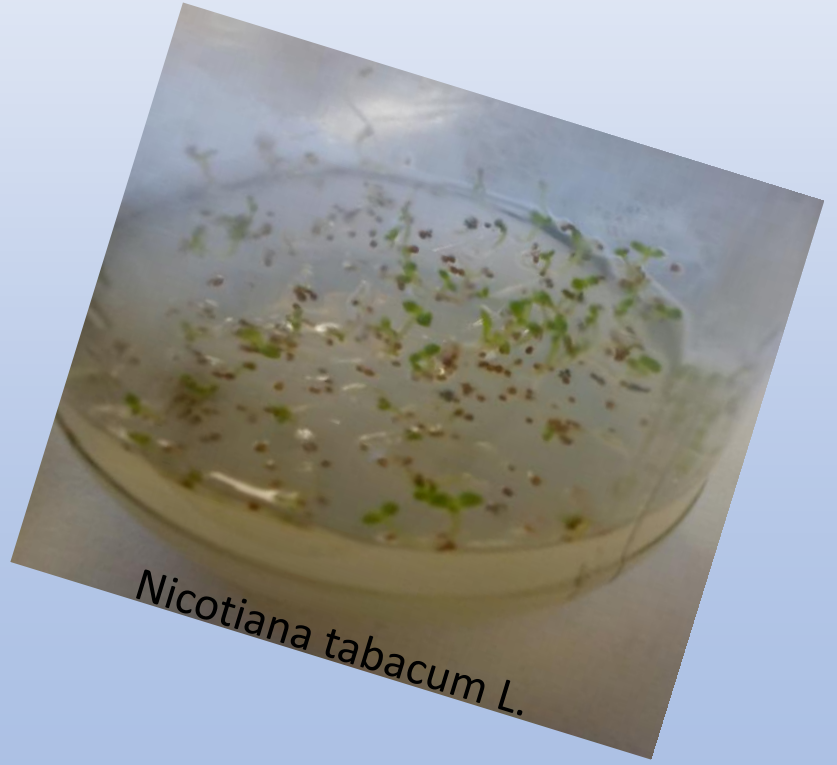


In order to be able to preserve for a longer period the collection of potatoes, medicinal and flower plants, it is planned to create a cryobank.

Applying this technology is an opportunity to preserve the gene pool, as well as to ensure at any time a genotype that has the desired characteristics.


Petunia hybrida L.

Thank you for your attention!


Nicotiana tabacum L.