



# All-Russian Research Institute for Agricultural Microbiology

## Russian Collection of Agricultural microorganisms (RCAM)

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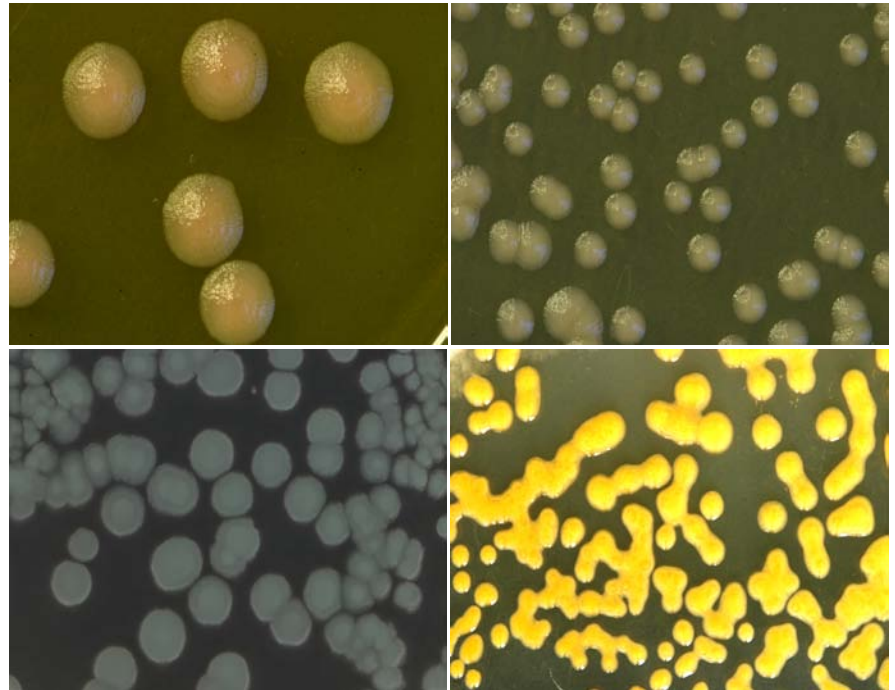
**Vera Safronova, PhD, Head of RCAM**

***Use of automated  $-80^{\circ}\text{C}$  Tube Store for long-term maintenance and safe depositing of microorganisms***

**Saint-Petersburg, Pushkin**

# *Basic methods for storage of microorganisms at laboratory conditions:*

- **Subcultivation**  
(periodical incubation)
- **Lyophilization**  
(vacuum-sublimation drying)
- **Cryopreservation**  
(freezing below  $-80\text{ }^{\circ}\text{C}$ )



# *Cryoconservation takes substantial advantages as compared to other methods*

- **Uniformity for most groups of microorganisms and methodical simplicity (unlike lyophilization)**
- **Viability of microorganisms during decades without subculturing (unlike subcultivation)**
- **Genetic stability, maintenance of valuable properties (unlike lyophilization and subcultivation)**
- **Genetic stability of strains during storage is the basic requirement for their practical use and molecular characterization**



# *Lacks of the use of Dewar vessels and freezers*

- **fluctuation of temperature inside a store during opening operation**
- **high percentage of errors during sample manipulations**
- **possibility of unauthorized selection of strains out of a store**






# *Automated -80°C Tube Store is the latest system for reliable maintenance of microbial strains*

## Store features:











- Automated system, carrying out identification, placing and delivery of tubes;
- Stable -80 °C storage, minimal temperature fluctuation inside the store;
- Sample management software;
- Capacity (200 000 samples);
- Compactness;
- Three-level protective back-up systems



# *Sample management software provides*

- **Three level of access to deposited strains (open  , restricted  and closed  ).**
- **Simple searching of strains in the computer data base by key words (number of strain, genus or species of microorganisms, properties of interest).**
- **Automated registration of any actions performed on each sample, leading to complete audit trail.**
- **Control of temperature conditions inside the store.**
- **E-mail and SMS notification about a state of the equipment.**

# System of passwords at different access level

	open access	restricted access	closed access
depositing and unloading of samples	 A  B1  B2 ...	 A	  A+C1   A+C2   A+C3 ...



A - password of a head of RCAM



B1, B2 ... - passwords of employees of RCAM



C1, C2, C3 ... - passwords of depositors

# *Conclusions*

- **Automated  $-80^{\circ}\text{C}$  Tube Store gives unique possibilities for storage of microorganisms at optimum conditions without the loss of their valuable properties.**
- **Authorized storage provides the safe depositing of commercial strains belonging to biotechnological companies.**

