

## «Resistance» Experiment

**PHYTOVIRUSES AND VIRUS-INFECTED PLANTS  
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The purpose of the experiment is to study how the factors of space flight affect healthy and virus-infected wheat plants.

The main objectives are the following:

- to study viral reproduction and properties of viruses in the leaves of wheat;
- to study ultrastructural, physiological and biochemical characteristics of healthy and infected plants (photosynthetic pigments; photochemical activity of chloroplasts; content of the main macro- and microelements, carbohydrates and dried substance; morphometry);
- to study the features of a tobacco mosaic virus (TMV);

— to determine the presence of the other latent viruses.

The immune-enzymic and immune-fluorescent methods, as well as the methods of atomic-adsorptive analyses, spectrophotometry, light and electron microscopy and morphometry will be used.

It is planned to create a database on physiological and ultrastructural features of cells of healthy and virus-infected plants in microgravity. Revealed features of the mechanism of interaction of the «plant cell-virus» system will be used to increase the resistance of plants to viral infections and to improve life-support systems in space flights.

## «Bacteriophage» Experiment

**VIRUSES OF PHYTOPATHOGENIC BACTERIA  
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Most of all the bacterial cultures are infected by phages. The phage DNA is incorporated in the DNA of a bacterial cell. Prophage is released from a cell as mature phage particles under the influence of various natural and chemical factors. There is evidence that a plant can act as an inductor of prophage transformation in viruses of bacteria. From this point of view, the purpose of the experiment is to study the interaction between macro- and microorganisms under extreme conditions of space flight.

The main objectives are as follows:

- to select the test-cultures of bacteria for revealing the lytic agents;

— to reveal the bacteriolitic agents in the struck tissues of plants;

- to extract phages in the lytic agents;
- to study an impact of phages on phytopathogenic, relative pathogenic and saprophytic microflora.

The classical methods of microbiology and virology will be used.

This integrated ground-based and space flight experiment will enable revealing new interrelations between bacteria and phages in the presence of plants, as well as a role of phages in infection process of plants.