INTERACTION OF EUKARYOTIC (PLANTS, ANIMALS, HUMAN), PROKARYOTIC (PATHOGENIC, SYMBIOTIC AND ASSOCIATED) ORGANISMS AND VIRUSES IN MICROGRAVITY; CHANGES OF MICROFLORA AND ITS PATHOGENIC PROPERTIES IN THE CABIN OF SPACE VEHICLES («Biolaboratory» Project)

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Introduction. Changes of interrelations of pathogenic fungi and prokaryotic organisms with eukaryotic ones under microgravity intensify the infection process. Therefore, it is necessary to clarify the mechanism of this phenomenon, i. e., possible decrease of the immunity of plants, animals and humans and/or increase of the aggression of pathogenic organisms. It will be important for prognosis of a sanitary-hygienic situation in a cabin of space vehicles and for working out methods of protection of plants and animals from different diseases. The influence of space flight factors on adenoviruses, plant viruses, pathogenic bacteria and fungi, phage induction in plant bacterial diseases, level of spontaneous induction of temporal viruses and their genome expression, development of pathogenic processes, will be also studied in the experiments proposed in this division of the Program.

«Virus» Experiment

INFLUENCE OF SPACE FLIGHT FACTORS ON DNA AND RNA GENOMIC VIRUSES AND THE «VIRUS — CELL» SYSTEM

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The purpose of the experiment is to study the influence of space flight factors on viruses and their interaction with cells. The main objectives are as follows:

— to study the influence of the space flight factors on the biological properties, structure, antigenic composition and infection of viruses;

— to study the influence of microgravity on the «virus-cell» system: reproduction of adenoviruses (AD) in cells (epithelium cells and lymphocytes) and reproduction of Curly Potato Dwarf Virus (CPDV) in plants after space flight.

Why shall we use AD and CPDV as objects of study? AD have some unique properties and a wide spectrum of pathogenicity at the cellular and organism levels. AD are widely spread pathogens for human. They have such biological features as a capacity to be in the latent state, to infect the lymphocytes and to suppress the immunity. CPDV belongs to the family of rhabdoviruses, which unites some viruses of human, animals and plants.

The methods of virology and molecular biology will be applied.