The Kazan Institute of Biology was established in 1945. In 1998 it was renamed as the Kazan Institute of Biochemistry and Biophysics of the
Kazan
Scientific
Center
of the
Russian Academy
of Sciences.

The first director of the Institute was an outstanding morphologist – evolutionist professor N.A. Livanov. Then the Institute was headed by professor A.V. Kibyakov (1949-1953) consequently elected Corresponding Member of the Academy of Medical Sciences of USSR, professor A.M. Alekseyev (1954-1960), professor Gusev (1960-1975). Under their guidance the Institute held a leading position in the country in the study of water regime of plants.

Academician of the Russian Academy of the USSR I.A. Tarchevsky was the director of the Institute from 1974 to 1992 and under him the investigations in the fields of biochemistry, biophysics, molecular biology and genetics began to develop. From 1992 – 2002 the director of the Institute was professor V.D. Fedotov. At present the head of the Institute is academician of RAS A.N. Grechkin.

From the day of the establishment of the Institute all traditional for the Kazan biological school lines of investigation have been developed: physiology of plants (prof. A.M. Alekseyev), zoology (prof. V.A. Popov and prof. V.V. Izozimov), physiology of animals (prof. A.V. Kibyakov), agrochemistry and soil sciences (prof. M.A. Vinokurov). Much attention was given to the research, related to the problems of the region.

In recent years the investigations in the fields of biochemistry and physiology of plants, animals and microorganisms, molecular biology and genetics are being dynamically developed.

The main achievements of the Institute in the field of biochemistry and physiology of plants are related to the investigation of plant cell signaling systems. A new and unique family of pathogen-inducible complex oxylipins, linolipins, has been found. The mechanisms of biosynthesis of biologically active lipid compounds, as well as the mechanisms of catalysis of

lipoxygenases and CYP74 family enzymes were investigated; the role of oxylipins as mediators of plant lipoxygenase signaling system of plants was revealed. Previously unknown features of the functioning of other signaling systems were studied.

The concept that different regulatory signaling systems of plant cells are interdependent and participate in the common signaling network responsible for the manifestation of immunity to pathogens and resistance to adverse/stress factors was experimentally substantiated. The basic laws of the intrusive plant growth playing a key role in the differentiation of plant fibers and determination of their properties have been described for the first time. The data on molecular and genetic bases of the system “host - parasite” formation under the interaction of mycoplasms with plants – proteins and genes, defining the adaptation of mycoplasms to stressors and responses of plants to mycoplasma infection were obtained.

In the field of molecular biophysics by the complementary experimental physical methods and theoretical calculations new data about structure, dynamics and intermolecular interactions of proteins as a part of complexes with various ligans, including proteins macromolecules, inhibitors and protectors non- protein nature, substrates and solvating solvent were obtained.

While studying synaptic processes new data on mechanisms of the information transfer in the central and peripheral nervous system, pathogenesis of a number of neuromuscular diseases and the molecular mechanism of the action of some physiologically active compounds were obtained.

The staff of the Institute consists of three academicians of RAS,16 Doctors of Sciences, 73 Candidate of Sciences, 13 post-graduate students.

The Institute trains highly skilled specialists in five specialties: biochemistry, biophysics, microbiology, physiology and biochemistry of plants, physiology. There is the Dissertation Council in biophysics, biochemistry and physiology of plants. Four Scientific Research and Education Centers have been created together with the Kazan (Volga Region) FederalUniversity(-2), the Kazan National Research Technological University (-1) and the Kazan State Power EngineeringUniversity(-1). There are two leading scientific schools at the Institute. The first is headed by academician of RAS A.N Grechkin and academician of RAS I. A. Tarchevsky, the second one by academician of RAS E.E.Nikolsky.

The researchers of the Institute participate in the fulfillment of the Programs of the fundamental research of the Presidium of RAS and Divisions of RAS, Federal purposive **programs** "Researc h and developments on priority directions of development of scientific-technological complex of Russia for 2007-2012 " and «Scientific and scientific-pedagogical personnel of innovative Russia for 2009-2013 ». The investigations carried on by the researchers of the Institute are supported by the grants of the President of the Russian Federation for the leading scientific schools and young scientists, grants of the Russian Foundation for fundamental research and by the international grants.

The scientists of the Institute are actively cooperate with the colleagues from many Institutes and Universities of Russia, as well as from the leading science centers of Germany, France, Sweden, the USA, the Czech Republic, Great Britain and other countries.

The main lines of investigations of the Institute.

1. Signaling systems of plant cells and their role in adaptation and immunity.
2. Mechanisms of growth and differentiation of plant cells.
3. Elucidation of the role of molecular mobility and intermolecular interactions in the mechanisms of proteins functioning.
4. Intercellular interactions and molecular mechanisms of neuromediation and chemoreception.
5. Mechanisms of transport processes in animal and plant cells.