

Leading Scientists Discussed the Situation in the Field of Systems Biology and Bioinformatics

On June 30 Saint-Petersburg international symposium «Systems biology and bioinformatics» opened in SPbPU. The themes of the conference touch upon a whole range of interests of these disciplines, embracing many aspects and problems. The main themes of the symposium are: medical systems biology; signaling pathways and regulation mechanisms in cells; data analysis of high-production experiments; new mathematical methods and algorithms; mechanisms of pathogen-host cell interactions; coding and non-coding RNA; evolutionary bioinformatics; microscopy and analysis of intact biological systems.



The wide range of the issues are to be discussed by respectable participants: about 80 leading scientists and researchers from Russia, Kazakhstan, Israel, Saudi Arabia, India, France, Spain, Germany, Canada and USA assembled in the Polytechnic University in order to discuss the situation in systems biology and bioinformatics. It should be noted that the official language of the symposium is English. Due to this fact all presentations, discussions and communications are only in English.

Systems biology is a fairly new area of science that studies consistent patterns in organization and functioning of biological systems at different hierarchy levels and integrate the received data. Systems biology also studies biological processes and phenomena as systems of interconnected components. It uses a integrated approach that includes experimenting and mathematical simulation. The key task of research in systems biology is to develop new methods of diagnostics and treatment and also to create new medications.



Over the last years information explosion occurred in molecular biology: there appeared new high-performance devices and technologies which make it possible to receive enormous amounts of molecular and biological data. Sequencing of the first human genome cost about 1 billion dollars and took about 15 years. Today we are close to the situation when the fourth generation sequencers can decipher a human genome for about 500 dollars and over a few minutes. If you can imagine this incredible amount of information that will appear in the nearest future, you may understand that the answer to this challenge has been bioinformatics and informational biology. As the result, bioinformatics focuses on computer-based data analysis and algorithm development.



As a true interdisciplinary approach that combines life sciences and theoretical disciplines, successes in systems biology and bioinformatics will help us understand better the nature of such illnesses as cancer, neurodegenerative and cardiovascular diseases and also to decipher viral infection mechanisms.



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