

Conference on *Ontogeny and Evolution* (Moscow, May 14–15, 2008)

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The Conference on *Ontogeny and Evolution* was held at the Kol'tsov Institute of Developmental Biology (IDB) of the Russian Academy of Sciences (RAS). Researchers from a number of institutes of the RAS and Russian Academy of Medical Sciences (RAMS), as well as Moscow State University, took part in the conference.

More than 20 years ago, two meetings (roundtable discussions) on the evolution of ontogeny were held in Leningrad and Moscow. At these meetings, the state of the art in the evolution of ontogenies, where Russian embryologists have always been pioneering, was discussed in the form of reports and informal exchange of views. The resolutions of these meetings emphasized that the time had come for revising the basics of comparative and experimental embryology and that researchers in the evolution of ontogenetic mechanisms played the key role in this field.

In addition to the Conference on *Ontogeny and Evolution*, problems of the evolution of ontogenies were discussed at two other large-scale conferences in Moscow in the past two years: the Conference on *Cellular, Molecular, and Evolutionary Aspects of Morphogenesis* at the IDB of the RAS and International Conference on *Current Problems of Biological Evolution* dedicated to the 100th anniversary of the foundation of the Darwin Museum. This shows that the problem remains topical, with the proceedings of the conferences demonstrating considerable achievements in this field. Studies on embryology, molecular genetics, evolutionary and functional morphologies, and paleontology have been

integrated to form a new branch of life science, evolutionary developmental biology (evo–devo). The current achievements are related to the recent deciphering of the genomes of many organisms; breakthroughs in studying gene expression in the course of ontogenies, proteomics, epigenetics, and evolution of the genetic control of morphogenesis; determination of the role of stem cells in development; simulation of cell self-organization and morphogenesis; and the discovery of heterochronisms in the origin of taxa. The view on evolution as an infinite succession of changes in developmental programs raises no doubt any longer. Since elementary evolutionary processes are initiated at the ontogenetic level, these studies should form the basis for a novel concept of evolutionary theory in the near future.

At the conference, many of these issues were considered in reports presented by renowned specialists from the IDB of the RAS, Zoological Institute of the RAS, Institute of Gene Biology of the RAS, Institute of Higher Nervous Activity and Neurophysiology of the RAS, Institute of Paleontology of the RAS, Research Institute of Human Morphology of the RAMS, and Moscow State University.

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