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Introduction: The 60th Anniversary of the Institute of Evolutionary Physiology and Biochemistry, Russian Academy of Sciences, Saint Petersburg

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1. Introduction

The history of evolutionary physiology as an independent branch of general physiology goes back more than 100 years. In the USSR, until the first third of the twentieth century, the problems of evolutionary physiology were addressed mainly by individual scientists and small groups scattered in different research and academic institutions. In October 1950, one of such groups had emerged in Leningrad under the leadership of Academic Leon Abgarovich Orbeli; in September 1954, it was transformed into a small laboratory. Over many years, L.A. Orbeli sought to create in the country a large multidisciplinary research center that would be united by a common idea and focused entirely on evolutionary problems in all their diversity. The first attempt to establish such a center in Koltushi Village near Leningrad (Institute of Evolutionary Physiology and Pathology of Higher Nervous Activity) ended with failure—the Institute was liquidated. After all, thanks to Orbeli's great efforts, the Sechenov Institute of Evolutionary Physiology of the USSR Academy of Science (presently Sechenov Institute of Evolutionary Physiology and Biochemistry of the Russian Academy of Sciences, IEPB) had been founded in Leningrad – see **Figure 1**.

Soon after that, in March 1956, L.A. Orbeli articulated the main tasks and methods of evolutionary physiology at the First Session on Evolutionary Physiology, and this was actually a manifesto of the new branch of domestic physiology (historical article of L.A. Orbeli, see below). Four months later, in April 1956, the Presidium of the Russian Academy of Sciences approved the structure of the new Institute and its research plan for the coming years.

A first large-scale attempt to generalize the achievements and prospects of evolutionary physiology in collected reviews of its major divisions was made more than 30 years ago by



Figure 1. Sechenov Institute of Evolutionary Physiology and Biochemistry of the Russian Academy of Science at present.

Academic E.M. Kreps, who then headed the IEPB. He was an inspirer and editor-in-chief of the multi-volume series of books issued under the common title “Handbook of Physiology.” Two volumes of the series were devoted to domestic and foreign achievements as well as major trends and prospects in evolutionary physiology (Evolutionary Physiology, Pt. 1, 2, *Handbook of Physiology*, E.M. Kreps, ed., 1979, 1983).

Thirty years after the publication of this Handbook, the present compendium offers the reviews of some aspects of evolutionary physiology that have been tackled for the last six decades and are still under study at the IEPB. The reviews are preceded by a verbatim report of that momentous Orbeli’s speech, which became a Bible of domestic evolutionary physiology and retains its importance undiminished thus far. The content and rhetoric of this document can be regarded, on the one hand, as a monument to that epoch and, on the other hand, as a brilliant foresight of the developmental pathways and principles of evolutionary physiology for many years to come.

Unfortunately, the limited volume of the present publication does not allow us to cover the variety of evolutionary studies being successfully conducted at the IEPB. Such important areas such as evolutionary physiology of sensory and visceral systems, evolutionary immunology, endocrinology, neuroendocrinology, psychoneuroendocrinology, somnology, and some others have to be left beyond the scope of this book. The multiple evolutionary studies performed on invertebrate animals are also omitted. Without question, further publication of relevant reviews would be extremely useful for the popularization and promotion of evolutionary studies and evolutionary physiology in general.

The research status quo at the IEPB is presented on the site <http://iephb.ru/> as well as in the Journal of Evolutionary Biochemistry and Physiology [ISSN: 0022-0930 (Print) 1608-3202 (Online)], <http://link.springer.com/journal/volumesAndIssues/10893>. The Journal was founded in 1965 by the then Director of the IEPB Academic. E.M. Kreps.

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