Joint Institute for Nuclear Research

MODERN PROBLEMS OF GENETICS, RADIOBIOLOGY, RADIOECOLOGY AND EVOLUTION

The Second International Conference
dedicated to the 105th anniversary of the birth
of N. W. Timofeeff-Ressovsky and the 70th anniversary
of the paper «On the Nature
of Gene Mutations and Gene Structure»
by N. W. Timofeeff-Ressovsky, K. G. Zimmer,
and M. Delbrück

Yerevan, September 8–11, 2005

ABSTRACTS, PAPERS BY YOUNG SCIENTISTS

Dubna • 2005

УДК 577.391(042+091)
ББК 28.071.2я434+28.081.28я434
М78

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Title page design: *V. L. Korogodina* and *B. V. Florko*

Modern Problems of Genetics, Radiobiology, Radioecology and Evolution: Second
М78 Intern. Conf. dedicated to the 105th anniversary of the birth of N. W. Timofeeff-Ressovsky and the 70th anniversary of the paper «On the Nature of Gene Mutations and Gene Structure» by N. W. Timofeeff-Ressovsky, K. G. Zimmer, and M. Delbrück (Yerevan, September 8–11, 2005): Abstr., Papers by Young Scientists. — Dubna: JINR, 2005. — 318 p.

ISBN 5-9530-0087-1

The collection contains theses of the reports and competition papers by young scientists presented at the conference. The theses and young scientists' papers are published in the authors' wording.

Современные проблемы генетики, радиобиологии, радиоэкологии и эволюции: Вторая междунар. конф., посвященная 105-й годовщине со дня рождения Н. В. Тимофеева-Ресовского и 70-летию публикации статьи Н. В. Тимофеева-Ресовского, К. Циммера и М. Дельбрюка «О природе генных мутаций и структуре гена» (Ереван, 8–11 сентября 2005 г.): Аннот. докл. и статьи молодых ученых. — Дубна: ОИЯИ, 2005. — 318 с.

ISBN 5-9530-0087-1

Сборник содержит аннотации докладов, представленных на конференцию, а также короткие исследовательские статьи, включенные в конкурс молодых ученых в рамках конференции.

Издание представляет интерес для специалистов в области генетики, радиобиологии, радиоэкологии и эволюции.

УДК 577.391(042+091)
ББК 28.071.2я434+28.081.28я434

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ON THE PREHISTORY OF MOLECULAR BIOLOGY

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It was x-ray crystallography that made, in early 1950s, a decisive contribution to the deciphering of the structure of DNA. But for the first time x-ray crystallographers (Astbury and Bernal) and geneticists (Timoféeff and others) jointly discussed the problem of the chromosome and the gene in Klampenborg in April 1938, on the first of the meetings initiated by Timoféeff-Ressovsky. While visiting Niels Bohr, Timoféeff admired the scientific style of Bohrs Kreis. Back home, he started discussions of the nature of gene mutation and the structure of the gene. They resulted in 1935 paper by Timoféeff, Zimmer, Delbrück, which later has been discussed by E. Schrödinger in his 1944 *What is Life?* Brilliant scientist and a charming personality, Timoféeff became the moving spirit of the new discipline in mid-1930s. In TZD he has formulated the central problem of "convariant reduplication" which permitted to consolidate efforts of experts in genetics and x-ray crystallography, cytology and electron microscopy, cell physiology and embryology, chemistry and biochemistry, theoretical and experimental physics, with the end to lay the bases of what he provisionally called "biophysics". Timoféeff's project to make cooperation more efficient, by having four meetings during two years, 1938-1939, found financial support from the Rockefeller Foundation. While drafting 1938 annual report, RF director of natural sciences Warren Weaver entitled the section, on the Klampenborg and Spa conferences, "molecular biology". The 3rd conference scheduled for Melrose (near Edinburgh), August 31 – September 1, 1939, became impossible because of WWT. In war-time Germany Timoféeff summed up his view of the new science in *Biophysics*, vol. 1 (co-authored by Zimmer). Written in 1944, the book was published in Leipzig in 1947, and had an interesting history in America. In September, 1945, a *donos* made by Nuzhdin, a Lysenkoite who visited Berlin, resulted in the arrest of Timoféeff, who had to spend several months in Karlag concentration camp. Joliot Curie sent a letter to L.P. Beria, and Timoféeff was released from the camp. In August, 1948 his genetics was outlawed. (Buzzati-Traverso and Cavalli dedicated their 1948 *Teoria dell'urto*... to Timoféeff, "amico e maestro", with hope that he will possess a possibility to continue his work.) Still there remained his radiobiology and biophysics. His standing was announced by a 1949 article accompanied by cartoons ordered by Stalin himself, which presented his negative personal attitude towards both Timoféeff and the RF. In 1950, while prisoner at a *sharashka* Timoféeff was nominated the Nobel prize for his research in biophysics/molecular biology.