

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

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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.

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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.

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N.W. TIMOFEEFF-RESSOVSKY'S VIEWS AND IDEAS AS THE BASIS OF THE RADIOECOLOGICAL INVESTIGATIONS

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Theoretical fundamental and methodological approach to the investigations of the radionuclide behaviour in biogeocenosis was made by the outstanding researcher N.W. Timofeeff-Ressovsky. He used fundamental natural-historical doctrine for the soils, landscapes and biosphere elaborated by the Great Russian scientists: V.V. Dokuchayev, V.I. Vernadsky, B.B. Polynov, V.N. Sukachev. Considering the experience acquired during centuries of observing harmful environmental impacts of industrial waste, Timofeeff-Ressovsky aimed at a complete study of all possible effects of the development of the nuclear industry on the biosphere. He performed and supervised the first investigations of the radionuclide behaviour into the simple links as soil-solution, soil-plant, water-hydrobionts. He has emphasized the main role of the processes soil formations and runoff in the radionuclide distribution into terrestrial biogeocenosis, of the processes sediment formations and input of the radionuclides into water biogeocenosis. Later his students and adherents started a new trend in radioecology, i.e. a continental radioecology, studying the radionuclide migration and biological effects on natural ecosystems of land and internal reservoirs. The natural ecosystems, owing to their structural and functional properties involve radioactive substances into biogeochemical migration cycles and, as consequence, the accumulation of rather high concentrations of the radionuclides in some links of an ecosystem is being observed. Based on this statement one of the main paradigms of radioecology was formulated: a natural environment can not be considered as a passive diluents of radioactive contaminants. An extensive release of radionuclides of various origin leads to the formation of both "hot" spots (impact zones) and buffer territories. Owing to separating of these territories the peculiarities of the radionuclide migration and their biological effects into terrestrial and water ecosystems on the concentrations gradient are investigated. N.W. Timofeeff-Ressovsky's views and ideas are corresponded with the theory of the sick plates of the planet which is being elaborated as a part and a parcel of the contemporary ecological doctrine of Russia.