

Boreyko Alla V., Doctor of Biological Science.

Date and place of birth:

14 May 1960, Dubna, Moscow region

Education and degrees:

- **1978 -1984** Moscow Engineering Physics Institute, Faculty of Experimental and Theoretical Physics
- **1991** Candidate of Biological Sciences ("Posthyperthermic and post-radiation recovery of yeast cells (comparative analysis)").
- **2005** Doctor of Biological Sciences ("The genetic effect of accelerated heavy ions")

Professional career:

- **1984-1986** JINR Research Assistant
- **1986-1992** Engineer
- **1992-1995** Researcher
- **1995-2009** Senior Researcher
- **2009-2015** Leading Researcher
- **Since 2015** Head of Sector

Scientific and organizational activity:

- Member of the program and organizing committees of international workshops and conferences
- Member of the editorial board of the journal PEPAN Letters
- Member of the STC LRB

Educational activity:

- Deputy Head of the Department of Biophysics, Dubna State University
- Supervisor of theses and diploma papers
- Professor, Biophysics Department, State University «Dubna»

Scientific interests:

- Mechanisms of the formation and repair of molecular abnormalities in the DNA of cells of higher eukaryotes and humans
- Analysis of disorders of genetic structures in mammalian and human cells using immunocytochemical and immunohistochemical methods
- Expression of the genes of mammalian and human cells under the action of ionizing radiation with different physical characteristics

- Molecular disorders in the neuronal structures of various parts of the mammalian brain under the action of heavy charged particles
- Molecular-radiobiological aspects of radiation therapy

Scientific publications:

Author and co-author of more than 130 papers.

Grants and awards:

- **1987** JINR Prize for research work.
- **2008** JINR Prize for research work.
- **2016 - 2019** RFBR Grant (OFI-M) “Studies of molecular physiological disturbances in the structures of the nervous system under the action of accelerated charged particles”.

SELECTED PUBLICATIONS for 2014-2019

1. M. Falk, E. Lukasova, et al., *Primary and Secondary clustering of DSB repair foci and repair kinetics compared for γ -rays, protons of different energies, and high-LET ^{20}Ne ions*, Journal of Radiation Research (Impact Factor: 1.45). 03/2014; 55 Suppl 1:i79-i80. DOI:10.1093/jrr/rrt210.
2. M. Falk, E. Lukasova, et al., *Chromatin differentiation of white blood cells decreases DSB damage induction, prevents functional assembly of repair foci, but has no influence on protrusion of heterochromatic DSBs into the low-dense chromatin*, Journal of Radiation Research (Impact Factor: 1.45). 03/2014; 55 Suppl 1:i81-i82. DOI:10.1093/jrr/rrt194
3. Jezkova L., Falk M., et al., *Function of chromatin structure and dynamics in DNA damage, repair and misrepair: γ -rays and protons in action*, Applied Radiation and Isotopes, 2014, Jan; 83 Pt B:128-36.
4. Falk M., Hausmann M., et al., *Determining Omics Spatiotemporal Dimensions Using Exciting New Nanoscopy Techniques to Assess Complex Cell Responses to DNA Damage: PART A—Radiomics*, Critical Reviews in Eukaryotic Gene Expression, 2014, 24(3): p. 205-223
5. Falk M., Hausmann M., et al., *Determining Omics Spatiotemporal Dimensions Using Exciting New Nanoscopy Techniques to Assess Complex Cell Responses to DNA Damage: Part B—Structuromics*, Critical Reviews in Eukaryotic Gene Expression, (IF=2.065), 2014, 24(3): p. 225-247.
6. Борейко А.В., Красавин Е.А. и др., *Формирование и репарация повреждений днк в клетках человека при действии ускоренных тяжелых ионов*, Вестник Международного университета природы, общества и человека «Дубна», №2 (30), 2014, с.5-12.
7. Dubničková M., Kuzmina E.A., et al., *The Effects of Lipid A on Gamma-Irradiated Human Peripheral Blood Lymphocytes in vitro*, Physics of Particles and Nuclei, V.13, №2, 2016, p. 274-278.

8. Е.К. Козлова, В.А. Сергунова и др., *Локальные дефекты наноструктуры мембран эритроцитов при действии ионизирующих излучений на кровь*, Письма в ЭЧАЯ, 2016, т.13, №1, с. 140-148
9. T. S. Bulanova, M. G. Zadneprianet, et al., *Induction and Repair of DNA Double-Strand Breaks in Rat Cerebellar Cortex Exposed to ^{60}Co γ -Rays*, Physics of Particles and Nuclei Letters, 2018, Vol. 15, No. 1, pp. 121–126.
10. Jezkova L., Zadneprianetc M., et al., *Particles with similar LET values generate DNA breaks of different complexity and reparability: a high-resolution microscopy analysis of $\gamma\text{H2AX}/53\text{BP1}$ foci*, Nanoscale. 2018. V. 10. P. 1162–1179.
11. Заднепрянец М.Г., Борейко А. В. и др., *Закономерности формирования и элиминации $\gamma\text{H2AX}/53\text{BP1}$ фокусов при действии γ -квантов и ускоренных тяжелых ионов*, Радиационная биология. Радиоэкология. 2018. т. 58, № 2. с.146-156.
12. Заднепрянец М.Г., Борейко А. В. и др., *Анализ структуры комплексных повреждений ДНК при действии ускоренных ионов ^{11}B и γ -квантов ^{60}Co* , Радиационная биология. Радиоэкология. 2018. Т.58, № 3, с.1-9.
13. A.V. Boreyko, A.N. Bugay, et al., *Clustered DNA double-strand breaks and neuroradiobiological effects of accelerated charged particles*, PEPAN Letters, 2018, Vol. 15, N. 5, pp. 551-561.
14. Заднепрянец М.Г., Борейко А. В. и др., *Влияние физических характеристик ускоренных тяжёлых ионов на формирование и репарацию двунитевых разрывов ДНК*, Письма в ЭЧАЯ, 2018, т. 15, №6, с. 682-688
15. Е. А. Красавин, А. В. Борейко и др., *Влияние ингибиторов синтеза ДНК на биологическую эффективность модифицированного пучка протонов в пике Брэгга*, Письма в ЭЧАЯ, 2018 (в печати)
16. В. Н. Чаусов, А. В. Борейко и др., *Формирование прямых и энзиматических двунитевых разрывов ДНК в условиях влияния ингибиторов репарации при действии излучений разного качества*, Письма в ЭЧАЯ, 2018, т.15, №6, с. 689-699.
17. D. Depes, J.H. Lee, et al., *Single-molecule localization microscopy as a promising tool for $\text{H2AX}/53\text{BP1}$ foci exploration*, The European Physical Journal D. 2018. V. 72. P. 158- 169.DOI:10.1140/epjd/e2018-90148-1
18. Bulanova T. S., Boreyko A. V., et al., *Formation of DNA Double-Strand Breaks in Rat Brain Neurons after Irradiation with Krypton Ions (^{78}Kr)*, Physics of Particles and Nuclei Letters, 2019, Vol. 16, No. 4, pp. 402–408.
19. Красавин Е. А., Борейко А. В. И др., *Влияние ингибиторов синтеза ДНК на биологическую эффективность пучка протонов в модифицированном пике Брэгга*, Письма в ЭЧАЯ, 2019, т. 16, № 2, с. 182-191
20. Е. А. Красавин, А. В. Борейко и др., *Способ повышения частоты образования двунитевых разрывов ДНК в клетках человека при действии ионизирующих излучений в условиях влияния радиомодификаторов*, Патент на изобретение №2699670, Российская Федерация , 09 сентября 2019 г.