BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors

NAME	POSITION TITLE
Alexey A. Moskalev	Head, Department of Ecology Head, Laboratory of Molecular Radiobiology and Gerontology Head, Laboratory of Genetics of Aging and Longevity
Institutional affiliation Syktyvkar State University; Institute of Biology, Komi Science Center of the Ural Division of the Russian Academy of Science; MIPT (State University)	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Syktyvkar State University, Syktyvkar, Russia	B.S./M.S.	1999	Biology, Animal Physiology
Moscow State University, Moscow, Russia	Ph.D.	2001	Radiation biology
Moscow State University, Moscow, Russia	D.Sc. (biol.)	2004	Radiation biology

A. Personal Statement

I have been working in the area of genetics of aging, focusing on the effect of low doze ionizing radiation on lifespan and aging of Drosophila strains with defects in apoptosis, DNA repair and defense genes. Specialist in the field of genetics of longevity and aging. He studies regulation mechanisms of the rate of aging, longevity and stress resistance in animal models (DNA repair, heat shock proteins, NF-kB, Tor- and PI3K-signaling cascade, apoptosis). Geroprotective properties of PI3K, TOR, NF-kB. This inhibitors were identified in his works using fruit flies Drosophila as a model. Alexey participated in the work of identifying mechanisms of exceptional longevity of Myotis brandtii bats. He was a contributor in creating a database of biomarkers of aging Digital Ageing Atlas. Provides evidence for the hypothesis that low doze ionizing irradiation during early development led to selective elimination (by apoptosis) of weakened cells in several tissues that in turn delayed aging during the later stages of life. We also characterized the remote effects of low doze irradiation on mice (apoptosis, genetics instability, senescence, lifespan). Several years ago, we initiated studies on the role of DNA repair, epigenetic regulation, xenobiotic detoxification, and cytokines on lifespan using Drosophila as a model system. As a part of a group of authors sequenced the genome and transcriptome of smallest lived mammal - a Brandt's bat. My lab is supported by grants from the Russian Basic Research Foundation and Presidium of the Russian Academy of Sciences, and previously received support, in the form of three grants, from President of Russian Federation in the program that funded leading young scientists. I am a Vice-President of the Syktyvkar Branch of Russian Gerontology Society, President of Komi branch of Vavilov Society of Geneticists and Breeders, member of the editorial boards of Aging (Impact Journals), Biogerontology (Springer), Frontiers in Genetics of Aging (Nature Publishing Group), Aging and disease, Genes&Cells, SM Journal of Food and Nutritional Disorders (SM Journals). Co-chair of the International Symposiums “Genetics of Aging and Longevity” and “«Biomedical Innovation For Healthy Longevity»”.

B. Positions and Honors

09/99-07/04	Lecturer, Department of Chemistry and Biology, Syktyvkar State University
06/01-12/04	Research Fellow, Institute of Biology, Komi Science Center, Ural Division, RAS
09/04-present	Professor, Department of Chemistry and Biology, Syktyvkar State University
01/05-present	Principal Investigator, Institute of Biology, Komi Science Center, Ural Division, RAS
01/11-present	Head, Laboratory of Molecular Radiobiology and Gerontology, Institute of Biology, Komi Science Center, Ural Division, RAS
03/12-present	Head, Ecological Department, Syktyvkar State University

03/13-present Head, Laboratory of Genetics of Aging and Longevity, MIPT (State University)

Honors and activities

1. Organizer and co-chair, International Symposium “Genetics of aging and longevity”, 2008, 2010, 2012, 2014
2. Soros graduate student, 1999, 2000, 2001
3. Winner of the young scientist competition for the best study in the field of biology of the Ural Division of the Russian Academy of Science, 2000
4. Winner of the competition for the best young gerontologist by the Gerontology Society of the Russian Academy of Sciences, 2003
5. Timoffeev-Ressovsky Young Scientist Award from the Ural Division of RAS, 2004
6. Medal "For Achievements in Radiation Genetics" in memory of Vladimir A. Shevchenko, 2007
7. Winner of the V.V. Frolkis Prize of the Society of Gerontologists and Geriatrists of Ukraine for young scientists, 2009
8. Gold Medal of the Russian Academy of Science for young scientists, 2010
9. Medal from the International Association of Academies of Science of the former Soviet Union, 2010
10. Timoffeev-Ressovsky Biology Award from the Ural Division of RAS, 2011
11. Award of the Government of the Republic of Komi, 2013
12. VM Klechkovskii Medal, 2015

C. Selected Peer-reviewed Publications (35 out of 90 articles)

1. **Moskalev A** (2007) Radiation-induced life span alteration of Drosophila lines with genotype differences. *Biogerontology* 8, 499–504.
2. **Moskalev AA** (2008) Aging and Genes (St. Petersburg. Nauka) pp 358.
3. **Moskalev A**, Shaposhnikov M, Turysheva E. (2009) Life span alteration after irradiation in Drosophila melanogaster strains with mutations of Hsf and Hsps. *Biogerontology* 10, 3-11.
4. **Moskalev** AA, Shaposhnikov MV (2010) Pharmacological inhibition of phosphoinositide 3- and TOR-kinase improves survival of Drosophila melanogaster. *Rejuvenation Res*. 13, 246-247.
5. Plyusnina EN, Shaposhnikov MV, **Moskalev AA** (2011) Increase of Drosophila melanogaster lifespan due to D-GADD45 overexpression in the nervous system. *Biogerontology* 12, 211-226.
6. **Moskalev AA**, Plyusnina EN, Shaposhnikov MV (2011) Radiation hormesis and radioadaptive response in Drosophila melanogaster flies with different genetic backgrounds: the role of cellular stress-resistance mechanisms. *Biogerontology* 12, 253-263.
7. **Moskalev A**, Shaposhnikov M (2011) Pharmacological inhibition of NF-κB prolongs lifespan of Drosophila melanogaster. *Aging* 3, 391-394.
8. **Moskalev AA**, Smit-McBride Z, Shaposhnikov MV, Plyusnina EN, Zhavoronkov A, Budovsky A, Tacutu R, Fraifeld VE (2012) Gadd45 proteins: Relevance to aging, longevity and age-related pathologies. *Ageing Res Rev* 11, 51-66.
9. Anisimov VN, Bartke A, Barzilai N, Batin MA, Blagosklonny MV, Brown-Borg H, Budovskaya Y, Campisi J, Friguet B, Fraifeld V, Franceschi C, Gems D, Gladyshev V, Gorbunova V, Gudkov AV, Kennedy B, Konovalenko M, Kraemer B, **Moskalev A**, Petropoulos I, Pasyukova E, Rattan S, Rogina B, Seluanov A, Shaposhnikov M, Shmookler Reis R, Tavernarakis N, Vijg J, Yashin A, Zimniak P. (2012) The Second International Conference "Genetics of Aging and Longevity". *Aging* 4, 305-317.
10. **Moskalev A**, Plyusnina E, Shaposhnikov M, Shilova L, Kazachenok A, Zhavoronkov A. (2012) The role of D-GADD45 in oxidative, thermal and genotoxic stress resistance. *Cell Cycle* 11, 4222 - 4241.
11. Zhavoronkov A, Smit-McBride Z, Guinan KJ, Litovchenko M, **Moskalev A**. (2012) Potential therapeutic approaches for modulating expression and accumulation of defective lamin A in laminopathies and age-related diseases. *J Mol Med (Berl)* 90 1361-1389.
12. Shostal O.A., **Moskalev AA** (2012) The genetic mechanisms of the influence of the light regime on the lifespan of *Drosophila melanogaster. Front Genet* 3 325

13. **Moskalev AA**, Shaposhnikov MV, Plyusnina EN, Zhavoronkov A, Budovsky A, Yanai H, Fraifeld VE (2013) The role of DNA damage and repair in aging through the prism of Koch-like criteria. *Ageing Res Rev* 12 661–684.
14. Seim I., Fang X., Xiong Z., Lobanov A.V., Huang Z., Ma S., Feng Y., Turanov A.A., Zhu Y., Lenz T.L., Gerashchenko M.V., Fan D., Yim S.H., Yao X., Jordan D., Xiong Y., Ma Y., Lyapunov A.N., Chen G., Kulakova O.I., Sun Y., Lee S.G., Bronson R.T., **Moskalev A.A.**, Sunyaev S.R., Zhang G., Krogh A., Wang J., Gladyshev V.N. (2013) Genome analysis reveals insights into physiology and longevity of the Brandt's bat Myotis brandtii *Nat comm* 4 DOI:10.1038/ncomms3212
15. Danilov A., Shaposhnikov M., Plyusnina E., Kogan V., Fedichev P., **Moskalev A** (2013) Selective anticancer agents suppress aging in Drosophila *Oncotarget* 4 1527-1546.
16. Shaposhnikov M., Latkin D., Plyusnina E., Shilova L., Danilov A., Popov S., Zhavoronkov A., Ovodov Y., **Moskalev A.** (2014) The effects of pectins on life span and stress resistance in *Drosophila melanogaster Biogerontology DOI: 10.1007/s10522-013-9484-x*
17. **Moskalev A**, Shaposhnikov M, Snezhkina A, Kogan V, Plyusnina E, Peregudova D, Melnikova N, Uroshlev L, Mylnikov S, Dmitriev A, Plusnin S, Fedichev P, Kudryavtseva A. (2014) Mining gene expression data for pollutants (dioxin, toluene, formaldehyde) and low dose of gamma-irradiation *PLoS One* 9 e86051. *DOI: 10.1371/journal.pone.0086051*
18. Zhavoronkov A., Buzdin A.A., Garazha A.V., Borisov N.M., **Moskalev A.A.** Signaling pathway cloud regulation for in silico screening and ranking of the potential geroprotective drugs // Front. Genet., 2014. - Vol. 5, P. 1-6. - doi: 10.3389/fgene.2014.00049.
19. **Moskalev A.A.**, Aliper A.M., Smit-McBride Z., Buzdin A., Zhavoronkov A. Genetics and epigenetics of aging and longevity // Cell Cycle, 2014. Vol. 13, N7. P. 1063 - 1077.
20. **Moskalev AA**, Pasyukova EG. From theories of aging to anti-aging interventions // Front Genet. 2014 Aug 14;5:276. doi: 10.3389/fgene.2014.00276
21. Bgatova N, Dubatolova T, Omelyanchuk L, Plyusnina E, Shaposhnikov M, **Moskalev A**. Gadd45 expression correlates with age dependent neurodegeneration in Drosophila melanogaster // Biogerontology. 2014
    Craig T, Smelick C, Tacutu R, Wuttke D, Wood SH, Stanley H, Janssens G, Savitskaya E, **Moskalev A**, Arking R, de Magalhaes JP. The Digital Ageing Atlas: integrating the diversity of age-related changes into a unified resource // Nucleic Acids Res. 2015. V. 43, N D1, Pp. D873-D878.
22. He C, Tsuchiyama SK, Nguyen QT, Plyusnina EN, Terrill SR, Sahibzada S, Patel B, Faulkner AR, Shaposhnikov MV, Tian R, Tsuchiya M, Kaeberlein M, **Moskalev AA**, Kennedy BK, Polymenis M. Enhanced Longevity by Ibuprofen, Conserved in Multiple Species, Occurs in Yeast through Inhibition of Tryptophan Import. PLoS Genet. 2014 Dec 18;10(12):e1004860. doi: 10.1371/journal.pgen.1004860.
23. **Moskalev A**, Shaposhnikov M, Plyusnina E, Plyusnin S, Shostal O, Aliper A, Zhavoronkov A. Exhaustive data mining comparison of the effects of low doses of ionizing radiation, formaldehyde and dioxins. BMC Genomics. 2014 Dec 19;15 Suppl 12:S5. doi: 10.1186/1471-2164-15-S12-S5.
24. Bgatova N, Dubatolova T, Omelyanchuk L, Plyusnina E, Shaposhnikov M, **Moskalev A**. Gadd45 expression correlates with age dependent neurodegeneration in Drosophila melanogaster. Biogerontology. 2014
25. Aliper AM, Csoka AB, Buzdin A, Jetka T, Roumiantsev S, **Moskalev A**, Zhavoronkov A. Signaling pathway activation drift during aging: Hutchinson-Gilford Progeria Syndrome fibroblasts are comparable to normal middle-age and old-age cells. Aging (Albany NY). 2015 Jan;7(1):26-37.
26. **Moskalev A**, Zhikrivetskaya S, Krasnov G, Shaposhnikov M, Proshkina E, Borisoglebsky D, Danilov A, Peregudova D, Sharapova I, Dobrovolskaya E, Solovev I, Zemskaya N, Shilova L, Snezhkina A, Kudryavtseva A. A comparison of the transcriptome of Drosophila melanogaster in response to entomopathogenic fungus, ionizing radiation, starvation and cold shock. BMC Genomics. 2015 Dec 16;16 Suppl 13:S8.
27. Tarrade S, Bhardwaj T, Flegal M, Bertrand L, Velegzhaninov I, **Moskalev A**, Klokov D. Histone H2AX Is Involved in FoxO3a-Mediated Transcriptional Responses to Ionizing Radiation to Maintain Genome Stability. Int J Mol Sci. 2015 Dec 16;16(12):29996-30014.
28. **Moskalev A**, Zhikrivetskaya S, Shaposhnikov M, Dobrovolskaya E, Gurinovich R, Kuryan O, Pashuk A, Jellen LC, Aliper A, Peregudov A, Zhavoronkov A. Aging Chart: a community resource for rapid exploratory pathway analysis of age-related processes. Nucleic Acids Res. 2016 Jan 4;44(D1):D894-9.
29. Shaposhnikov M, Proshkina E, Shilova L, Zhavoronkov A, **Moskalev A**. Lifespan and Stress Resistance in Drosophila with Overexpressed DNA Repair Genes. Sci Rep. 2015 Oct 19;5:15299.

30. **Moskalev A**, Chernyagina E, de Magalhães JP, Barardo D, Thoppil H, Shaposhnikov M, Budovsky A, Fraifeld VE, Garazha A, Tsvetkov V, Bronovitsky E, Bogomolov V, Scerbacov A, Kuryan O, Gurinovich R, Jellen LC, Kennedy B, Mamoshina P, Dobrovolskaya E, Aliper A, Kaminsky D, Zhavoronkov A. Geroprotectors.org: a new, structured and curated database of current therapeutic interventions in aging and age-related disease. Aging (Albany NY). 2015 Sep;7(9):616-28.
31. Proshkina EN, Shaposhnikov MV, Sadritdinova AF, Kudryavtseva AV, **Moskalev AA**. Basic mechanisms of longevity: A case study of Drosophila pro-longevity genes. Ageing Res Rev. 2015 Nov;24(Pt B):218-31.
32. Danilov A, Shaposhnikov M, Shevchenko O, Zemskaya N, Zhavoronkov A, Moskalev A. Influence of non-steroidal anti-inflammatory drugs on Drosophila melanogaster longevity. Oncotarget. 2015 Aug 14;6(23):19428-44.
33. Lashmanova E, Proshkina E, Zhikrivetskaya S, Shevchenko O, Marusich E, Leonov S, Melerzanov A, Zhavoronkov A, **Moskalev A**. Fucoxanthin increases lifespan of Drosophila melanogaster and Caenorhabditis elegans. Pharmacol Res. 2015 Oct;100:228-41.
34. Zhikrevetskaya S, Peregudova D, Danilov A, Plyusnina E, Krasnov G, Dmitriev A, Kudryavtseva A, Shaposhnikov M, **Moskalev A**. Effect of Low Doses (5-40 cGy) of Gamma-irradiation on Lifespan and Stress-related Genes Expression Profile in Drosophila melanogaster. PLoS One. 2015 Aug 6;10(8):e0133840.
35. Velegzhaninov I, Mezenceva V, Shostal O, Baranova A, **Moskalev A**. Age dynamics of DNA damage and CpG methylation in the peripheral blood leukocytes of mice. Mutat Res. 2015 May;775:38-42.
36. Proshkina E, Lashmanova E, Dobrovolskaya E, Kudryavtseva A, Shaposhnikov M and **Moskalev A**. Geroprotective and radioprotective activity of quercetin, (-)-epicatechin, and ibuprofen in Drosophila melanogaster. Front. Pharmacol. 2016. 7:505. doi: 10.3389/fphar.2016.00505
37. **Moskalev A.**, Shaposhnikov M., Proshkina E., Belyi A., Fedintsev A., Zhikrivetskaya S., Guvatova Z., Sadritdinova A., Snezhkina A., Krasnov G., Kudryavtseva A. The influence of pro-longevity gene Gclc overexpression on the age-dependent changes in Drosophila transcriptome and biological functions // BMC Genomics. 2016, - Vol. 17, Suppl 14. P. 273-289. doi: 10.1186/s12864-016-3356-0

D. Research Support

11-04-00956-а (Role: co-PI. PI: Shaposhnikov M), 2011-2013, Russian Basic Research Foundation, Effects of overexpression of stress resistance genes (*PARP-1, DmChk2, Hus1, SpnB, Brca2, Cyp4e2*) and inhibition of activity of aging-associated signaling, pathways enzymes (*NF-kappaB, p38 MAPK, SGK-1, PKA,* and *PKC*) on *Drosophila melanogaster* lifespan

11-04-12110-офи-м-2011 (Role: co-PI. PI: Ovodov Y), 2011-2013, Russian Basic Research Foundation, Lifespan extension with pectic polysaccharides.

09-П-4-1021 (Role: PI), 2009-2011, Presidium of the RAS, Ecological genetics of lifespan and aging in Drosophila melanogaster.

12-С-4-1007 (Role: PI), 2012-2014, Presidium of the RAS, Structure-functional organization of chromosomes in cell cycle.

12-С-4-1019 (Role: co-PI. PI: Shaposhnikov M), 2012-2014, Presidium of the RAS, Investigation of the roles of cell cycle, oncosupressors and epigenetic regulation in the mechanisms of aging and longevity in Drosophila melanogaster.

12-П-4-1005 (Role: PI), 2012-2014, Presidium of the RAS, Ecological genetics of the lifespan of model animals (*Drosophila melanogaster*, *Mus musculus*).

869 (Role: PI), 2012-2013, Federal Target Program "Scientific and scientific-pedagogical personnel of innovative Russia", Transgenic lines of *Drosophila melanogaster* based on the green fluorescent protein gene as biological sensors for mutagens (ionizing radiation, dioxins, formaldehyde).

198 (Role: co-PI. PI: Shaposhnikov M), 2012-2013, Federal Target Program "Scientific and scientific-pedagogical personnel of innovative Russia", Effect of inhibitors of signaling pathways, associated with aging (PI3K, TOR, NF-κB and COX) on maximum lifespan.

MD-1090.2014.4 (Role: PI), 2014-2015, President of Russian Federation, Comparison of mechanisms of response of *Drosophila melanogaster* to oxidative, heat, cold, and genotoxic stress using genome-wide analysis of the transcriptome.

14-04-01596-а (Role: PI), 2014-2016, Russian Basic Research Foundation, Comparison of *Drosophila melanogaster* transcriptomes in response to oxidative, thermal, cold, toxic and genotoxic stress.