Anton Lavrinienko, PhD — Curriculum Vitae

Dep. of Biological and Environmental Science,
Wildlife Genomics group
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Google Scholar Profile: (h-index: 10)
ORCID: orcid.org/0000-0002-9524-8054
Languages: English, Russian, Ukrainian

Research Interests

Host-associated microbiomes | Microbial ecology | Evolutionary biology | Invasion biology & Symbiosis

Education

2020 **PhD** in Health and Biosciences (Genetics & Physiology) *with Honors*
University of Oulu, Ecology and Genetics research unit, Oulu, Finland
Dissertation: The effects of exposure to radionuclide contamination on microbiota of wild mammals
Advisors: Prof. Phillip Charles Watts

2019 **University pedagogy** (2017-2019, 15 ETCS credit points), University of Oulu

2016 **MSc** in Genetics *with Honors*
Taras Shevchenko National University of Kyiv, Institute of Biology and Medicine, Kyiv, Ukraine
Thesis: Spontaneous mutation rate in natural populations of *Drosophila melanogaster* from Ukraine
Advisor: Dr. Iryna Kozeretska

2014 **BSc** in Biology
Taras Shevchenko National University of Kyiv, Institute of Biology and Medicine, Kyiv, Ukraine

Research and Academic appointments

2020-present **Postdoctoral Researcher**, WILD HEALTH project (funded by BiodivERsA)
Department of Biological and Environmental Science, University of Jyväskylä
Collaborative Project (Consortium research team from Finland, Sweden, and USA):
WILD HEALTH - How does environmental biodiversity affect wildlife health?

Peer-reviewed publications

2021

23. Brila, I., **Lavrinienko, A.,** Tukalenko, E., Ecke, F., Rodushkin, I., Kallio, E. R., … Watts, P. C. (2021). Low-level environmental metal pollution is associated with altered gut microbiota of a wild rodent, the bank vole (Myodes glareolus). *Science of the Total Environment*. doi:10.1016/j.scitotenv.2021.148224
22. Jernfors, T., Danforth, J., Kesäniemi, J., **Lavrinienko, A.**, Tukalenko, E., Fajkus, J., … Watts, P. C. (2021). Expansion of rDNA and pericentromere satellite repeats in the genomes of bank voles Myodes glareolus exposed to environmental radionuclides. *Ecology and Evolution*. doi:10.1002/ece3.7684

21. **Lavrinienko, A.**, Hämäläinen, A., Hindström, R., Tukalenko, E., Boratyński, Z., Kivisaari, K., … Mappes, T. (2021). Comparable response of wild rodent gut microbiome to anthropogenic habitat contamination. *Molecular Ecology*. doi:10.1111/mec.15945
20. Mella, M. A., **Lavrinienko, A.**, Akhi, R., Hindström, R., Nissinen, A. E., Wang, C., … Hörkkö, S. (2021). Compensatory IgM to the Rescue: Patients with Selective IgA Deficiency Have Increased Natural IgM Antibodies to MAA–LDL and No Changes in Oral Microbiota. *ImmunoHorizons*. doi:10.4049/immunohorizons.2100014
19. **Lavrinienko, A.**, Jernfors, T., Koskimäki, J. J., Pirttilä, A. M., & Watts, P. C. (2021). Does Intraspecific Variation in rDNA Copy Number Affect Analysis of Microbial Communities? *Trends in Microbiology*, 29(1), 19–27. doi:10.1016/j.tim.2020.05.019

2020

18. **Lavrinienko, A.**, Tukalenko, E., Kesäniemi, J., Kivisaari, K., Masiuk, S., Boratyński, Z., … Watts, P. C. (2020). Applying the Anna Karenina principle for wild animal gut microbiota: Temporal stability of the bank vole gut microbiota in a disturbed environment. *Journal of Animal Ecology*, 89(11), 2617–2630. doi:10.1111/1365-2656.13342
17. Kivisaari, K., Boratyński, Z., **Lavrinienko, A.**, Kesäniemi, J., Lehmann, P., & Mappes, T. (2020). The effect of chronic low-dose environmental radiation on organ mass of bank voles in the Chernobyl exclusion zone. *International Journal of Radiation Biology*. doi:10.1080/09553002.2020.1793016
16. **Lavrinienko, A.**, Tukalenko, E., Mousseau, T. A., Thompson, L. R., Knight, R., Mappes, T., & Watts, P. C. (2020). Two hundred and fifty-four metagenome-assembled bacterial genomes from the bank vole gut microbiota. *Scientific Data*. doi:10.1038/s41597-020-00656-2
15. Kesäniemi, Jenni, **Lavrinienko, A.**, Tukalenko, E., Moutinho, A. F., Mappes, T., Møller, A. P., … Watts, P. C. (2020). Exposure to environmental radionuclides alters mitochondrial DNA maintenance in a wild rodent. *Evolutionary Ecology*, 1–12. doi:10.1007/s10682-019-10028-x
14. Honkanen, J., Vuorela, A., Muthas, D., Orivuori, L., Luopajärvi, K., Tejesvi, M. V. G., **Lavrinienko, A.**, … Vaarala, O. (2020). Fungal Dysbiosis and Intestinal Inflammation in Children With Beta-Cell Autoimmunity. *Frontiers in Immunology*. doi:10.3389/fimmu.2020.00468

2019

13. Kesäniemi, J., **Lavrinienko, A.**, Tukalenko, E., Mappes, T., Watts, P. C., & Jurvansuu, J. (2019). Infection load and prevalence of novel viruses identified from the bank vole do not associate with exposure to environmental radioactivity. *Viruses*, 12(1). doi:10.3390/v12010044
12. J. Kesäniemi, T. Jernfors, **A. Lavrinienko**, K. Kivisaari, M. Kiljunen, T. Mappes, PC. Watts. (2019). Exposure to environmental radionuclides is associated with altered metabolic and immunity pathways in a wild rodent. *Molecular Ecology*. doi:10.1111/mec.15241
11. T. Mappes, Z. Boratyński, K. Kivisaari, **A. Lavrinienko**, G. Milinevsky, TA. Mousseau, AP. Møller, E. Tukalenko, PC. Watts. (2019). Ecological mechanisms can modify radiation effects in a key forest mammal of Chernobyl. *Ecosphere*. 10:4. doi:10.1002/ecs2.2667
10. Kesäniemi, J., **Lavrinienko, A**., Tukalenko, E., Boratyński, Z., Kivisaari, K., Mappes, T., . . . Watts, P. (2019). Exposure to environmental radionuclides associates with tissue-specific impacts on telomerase expression and telomere length. *Scientific Reports*. 9:850. doi:10.1038/s41598-018-37164-8

9. Serga SV, Kovalenko PA, Gora NV, **Lavrinienko AV**, Demidov SV, Mestres F, Pascual M, Kozeretska IA. (2019). Low prevalence of *Wolbachia* infection in Ukrainian populations of *Drosophila*. *Mikrobiol Z*. 81(2):84-89. doi:10.15407/microbiolj81.02.084

2018

8. **Lavrinienko A**, Tukalenko E, Mappes T, Watts PC. (2018). Skin and gut microbiomes of a wild mammal respond to different environmental cues. *Microbiome*. 6. doi:10.1186/s40168-018-0595-0
7. **A Lavrinienko**, T Mappes, E Tukalenko, TA. Mousseau, AP. Møller, R Knight, JT. Morton, LR. Thompson, PC. Watts. (2018). Environmental radiation alters the gut microbiome of the bank vole *Myodes glareolus*. *The ISME J*. doi:10.1038/s41396-018-0214-x
6. Mustonen, J. Kesäniemi, **A. Lavrinienko**, E. Tukalenko, T. Mappes, P.C. Watts, J. Jurvansuu (2018) Fibroblasts from bank voles inhabiting Chernobyl have increased resistance against oxidative and DNA stresses. *BMC Cell Biology*. 19, 17. doi:10.1186/s12860-018-0169-9

2017

5. Kesäniemi J, Boratynski Z, Danforth J, Itam P, Jernfors T, **Lavrinienko A**. et al. (2017). Analysis of heteroplasmy in bank voles inhabiting the Chernobyl exclusion zone: A commentary on Baker et al. (2017) "Elevated mitochondrial genome variation after 50 generations of radiation exposure in a wild rodent." *Evol Appl*. 00:1–7. doi:10.1111/eva.12578
4. Jernfors T, Kesäniemi J, **Lavrinienko A**, Mappes T, Milinevsky G, Møller AP, Mousseau TA, Tukalenko E and Watts PC. (2017). Transcriptional Upregulation of DNA Damage Response Genes in Bank Voles (*Myodes glareolus*) Inhabiting the Chernobyl Exclusion Zone. *Front. Environ. Sci*. 5:95. doi:10.3389/fenvs.2017.00095
3. Kleiman, N. J.; **Lavrinienko, A.**; Kivisaari, K.; Boratynski, Z.; Dauer, L.; Mappes, T.; Mousseau, T. (2017). Radiation Cataract in Chernobyl Voles. *Investigative Ophthalmology & Visual Science*, 58 (8), 2037-2037.

2016 and earlier

2. **Lavrinienko**, **A.**, Kesäniemi, J., Watts, P.C. et al. (2016). First record of the invasive pest *Drosophila suzukii* in Ukraine indicates multiple sources of invasion. *J Pest Sci*. doi:10.1007/s10340-016-0810-3
1. **Lavrinienko, A.**, Gorodetska, E., Kriachok, L., Kozeretska, I. (2014). Rates of spontaneous mutation processes in natural population of *Drosophila melanogaster* from Ukraine. *Visnyk of the Lviv University*. 66. 100.

Funding and Fellowships

2020 Scholarship Fund of the University of Oulu (5,000 €)
2018 UniOGS Travel Grant (1,175 €)
2018 The ISME Travel Award for young scientist to attend the ISME17 Symposium in Germany (800 €)
2017 Oskar Öflunds Foundation, personal research grant (5,000 €)
2016 Open-research Doctoral Fellowship, University of Oulu Graduate School (4-year salary, ca. 110,400 €)
2015 University of Jyväskylä, Finland; personal research grant (3,000 €)
2015 Victor Pinchuk Foundation 'Zavtra.UA', Ukraine; personal scholarship (1,200 €)
2014 University of Zielona Góra, Poland; award for the best research project
2014 Travel Grant, University of Barcelona, Spain; (300 €)

Conference Talks

2021 *Comparable response of wild rodent gut microbiome to anthropogenic habitat contamination*, Oikos Finland (Jyväskylä, Finland)

2019 *Applying the Anna Karenina principle to the bank vole gut microbiota in a disturbed environment*, ESEB (Turku, Finland)

2018 *Environmental radiation alters the gut microbiome of the bank vole Myodes glareolus*, ISME17 (Leipzig, Germany)

2017 *Impact of radionuclides upon the gut microbiome of the bank vole Myodes glareolus,* 21st Kaamos Symposium (Oulu, Finland)

2016 *Does inhabiting areas contaminated by human-caused ionizing radiation alter metagenomic microbial community?* 2ed Finnish Molecular Ecology Symposium (Lammi, Finland)

2014 *Estimation of the spontaneous mutation rate in loci cn in natural population of Drosophila melanogaster*, 9th International Conference of Young Naturalists (Zielona Góra, Poland)

Research Skills and Fieldwork Experience

Wet Lab: DNA/RNA extraction; gel electrophoresis; PCR/qPCR; Sanger sequencing; microbial culturing; stable isotope analysis; gamma spectrometry (radiation dosimetry); *Drosophilidae* species identification.

Dry Lab: analysis of marker-gene (16S, ITS, 18S) and shotgun metagenome datasets using QIIME2, various R packages, Anvi'o and other software for microbial 'omics; basic programming skills (R, UNIX/bash) and knowledge of documenting workflows using R Markdown and Jupyter Notebook; experience working with high-performance computing environments (*e.g*. CSC, https://www.csc.fi/); familiarity with sequence data repositories (*e.g*. EBI, SRA, MGnify, Qiita).

Animals in Research: expertise in ecology and physiology (field and lab work) of small mammals; carrying out procedures (handling and sampling) – using animals in research (license to work with rats and mice at present), Laboratory Animal Center (KEKS 2018), University of Oulu.

Research Expeditions and Fieldwork Experience: field work in challenging environments (Chernobyl Exclusions Zone, Ukraine 2014-2021; Fukushima restricted area, Japan in 2015; mining/smelter sites, Finland in 2018); capture-mark-release-recapture and reciprocal transplant experiments on small mammals (Urban bank voles, Central Finland in 2020; Chernobyl Exclusion Zone 2016 and 2021; Konnevesi research station in 2018); Biodiversity surveys for *Drosophila* species throughout Ukraine, in the framework of the European Drosophila Population Genomics Consortium (DrosEU), 2012-2016.

Teaching and Supervision

Summary: >80h of teaching; co-supervision of 1 PhD student, 1 MSc student and 4 BSc students

2021 Joined PhD thesis supervision, Andrii Vasylenko, University of Jyväskylä (JYU)

2021 BSc thesis co-supervision, Pekka Wahala, Lauri Kumpulainen, JYU

2020 BSc thesis co-supervision, Kim Kreuze and Mikko Hakanen, JYU

2019 Conservation of Biodiversity* (756347A code; total: 10h), University of Oulu (UO)

2019 Advanced course in bioinformatics (757619S code; total: 36h), UO
2018 MSc thesis co-supervision, John Danforth, UO
2018 Key Skills for Biologists: Science Communication (750654S code; total: 2h), UO
2018 Microbial ecology: Bioinformatics* (750654S code; total: 11h), UO
2017 Conservation of Biodiversity* (756347A code; total: 10h), UO
2017 Laboratory Practicals in Molecular Methods I (757311A code; total: 14h), UO
*also course developer

Other Key Scientific, Academic Merits and Science Communication

2021 Collaboration on a science communication project *Belonging to Nature: the Heart of Wellbeing* (microbial ecology and youthwork), in the frames of the Erasmus+ Strategic Partnerships for youth
2018 Organizing an official QIIME2 Workshop, University of Oulu, Ecology and Genetics (Oulu, Finland)
2018 Member of *The Bug Academy*, The European Researchers' Night science event in 2018, UO
2017 Organizing committee: the XXI Kaamos Symposium in 2017 (Oulu, Finland)
2017 Communicating science training, *Making Science Matter* (Ekenäs herrgård, Sweden)

Manuscript Reviewing: total of 5 reviews for *The ISME Journal, mSphere, Scientific Reports and PLoS ONE*

References

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Email: tapio.mappes@jyu.fi

Prof. Sohvi Hörkkö, MD, PhD, eMBA (Collaborator on the *NFBC1966 cohort saliva microbiome project*)
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Jarno Honkanen, PhD (Collaborator on the *gut mycobiome and type 1 diabetes project*)
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Faculty of Medicine, Translational Immunology
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