CURRICULUM VITAE, 9th January, 2023

NAME Tapio Oskari Mappes

PERSONAL
Date of birth: 21 April 1965
Place of birth: Berlin, Germany
Nationality: Finnish

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EDUCATION AND TRAINING

- Master of Science (magna cumlaude approbatur), 20 June 1991, University of Jyväskylä
- Licenciate of Philosophy (magna cumlaude approbatur), 9 June 1993, University of Jyväskylä
- Doctor of Philosophy (eximia cumlaude approbatur), 15 March 1995, University of Jyväskylä
- Docent of Ecology and Environmental Management, 20 November 1996, University of Jyväskylä

PRESENT POSITION

2020-22 Professor of Animal Ecology, Univ of Jyväskylä, Dept of Biological and Env. Science, 1.10.2020-

FELLOWSHIPS

1993-94 Department of Zoology, Stockholm University, 1.9.1993-30.4.1994 hosted by Prof. Jan Ekman

2000-03 Dept of Ecology & Evolutionary Biology, Univ of California, Santa Cruz, 1.9.2000-30.4.2001, 1.-30.4.2003 hosted by Prof Barry Sinervo

2019-20 Wissenschaftskolleg zu Berlin, Germany, 2 months

PREVIOUS PROFESSIONAL APPOINTMENTS

- **Research and teaching posts**

1985 Research assistant, The Finnish Forest Research Ins., The Research Station Parkano, 1.6.-15.9.1985

1991 Researcher, Univ of Jyväskylä, Dept of Biology, 17.6.-16.12.1991

1992-93 Researcher, The Finnish Game and Fisher Research Institute, 1.2.1992 - 3.3.1993

1993-95 Researcher, Univ of Jyväskylä, Dept of Biology, 15.3.1993-30.9.1994, 1.2.-31.5.1995

1995 Researcher of the Emil Aaltonen Foundation, 1.6.-31.7.1995

1995-2000 Junior Fellow of the Academy of Finland, 1.8.1995-31.7.2000

2002-2008 Academy Research Fellow, 1.8.2002-31.7.2008

2008-2010 Adjunct Professor, Univ of Jyväskylä, Dept of Biological and Env. Science, 1.8.2008-31.7.2010

2010-2013 Professor, Univ of Jyväskylä, Dept of Biological and Environmental Science, 1.8.2010-31.12.2013

2014-2020 Lecturer, Univ of Jyväskylä, Dept of Biological and Env. Science, 1.1.2014-30.9.2020

- **Administrative posts**

2000-02 Research Manager in the Center of Excellence in Evolutionary Ecology Research (Academy of Finland), 1.8.2000-31.7.2002

2006-11 Member of Leader Team in the Centre of Excellence in Evolutionary Research appointed by the Academy of Finland (2006-11)
2010-2013 Professor, Univ of Jyväskylä, Dept of Biological and Environmental Science, 1.8.2010-31.12.2013

OTHER RESEARCH POSTS EARNED BY THE PROJECTS LED BY ME

1. Minna Koivula Post-doctoral Researcher of the Academy of Finland, 2000-2002
2. Esa Koskela Post-doctoral Researcher of the Academy of Finland, 2001-2003
3. Esa Koskela Post-doctoral Researcher of the Academy of Finland, 2003-2005
4. Suzanne Mills Post-doctoral Researcher of the Academy of Finland, 2003-2005
5. Suzanne Mills Post-doctoral Researcher of the Academy of Finland, 2005-2006
6. Tuula Oksanen Post-doctoral Researcher of the Academy of Finland, 2003-2005
7. Unnamed for the project Post-doctoral Researcher of the Academy of Finland, 2006-2008
8. Mikael Mökkönen Post-doctoral Researcher of the Academy of Finland, 2012-2015
9. Mikael Mökkönen Post-doctoral Post, Finnish Cultural Foundation, 2012
10. Tuula A. Oksanen Post-graduate post in the Evol. Ecol. Graduate School of the AF, 1999-02
11. Tanja Poikonen Post-graduate post in the Evol. Ecol. Graduate School of the AF, 2005
12. Tanja Poikonen Post-graduate post in the Univ of Jyväskylä, 2009
13. Anna-Kaisa Rikalainen 3 Post-graduate posts, Finnish Cultural Foundation, 2009-12
14. Kati Kivisaari 2 Post-graduate posts, Emil Aaltonen Foundation, 2015-17
15. Petra Lantova Post-graduate grant, CIMO, Centre for International Mobility, 2010
16. Anna Dubiec Marie Curie Training Site by the European Commission, 2002
17. Joanna Rutkowska Marie Curie Training Site by the European Commission, 2003
18. Zbigniew Boratyñski Marie Curie Training Site by the European Commission, 2004
19. Anni Hämäläinen Post-doctoral post, National Science Centre, NCN, Poland, 2019-21
20. Anton Lavrinienko Post-doctoral Researcher of the Academy of Finland, 2022-2025

PRESENT FIELDS OF RESEARCH

Evolutionary ecology

Negative frequency–dependent selection on life-history strategies
Sexually antagonistic genes
Fitness effects of gut and lung microbiota in wild animals
Neurogenetics
Epigenetics
Island selection, genetic drift and microevolution
Genetic basis of life-history trade-offs
Sex allocation
Sperm characters and sperm competition
Energetic costs of reproduction

Population ecology

Genetic polymorphism and population fluctuations
Physiological condition and population cysles in small mammals

Behavioural ecology

Evolution of cooperation in humans
Infanticide
Reproductive synchrony
Territoriality
Hoarding behaviour

Applied ecology

Ecological and evolutionary effects of ionizing radiation
Adaptations to climate change
Urban evolution

Forestry effects on gut microbiome diversity
Host-pathogen dynamics of zoonotic diseases (rodent and tick-borne pathogens, e.g.hanta virus and borrelia)
Effect of heavy metal (e.g. copper and cadmium) on reproduction and survival in small mammals
Effects of population size and isolation on genetic heterozygosity and extinctions

MAIN COLLABORATION

International collaboration (name, institute, aim of study)

- Prof **Paulo Celio Alves**, University of Porto, Portugal, *Hybridization effects on metabolic and life-history traits in Myodes species*
- Dr **Zbigniev Boratynski**, CIBIO, Portugal, *Physiological mechanisms (e.g. metabolic rate) of radiation effect*
- Prof. **Frauke Ecke**, Umea Univ. Sweden, *Wildlife health*
- Dr **Alexandro Grapputo**, Univ of Padova, Italy, *Genetic structure of small mammals in isolated populations. To develop new primers for microsatellite loci*
- Prof. **Mikael Begon**, Univ. of Liverpool, UK, *Maternal antibodies and pathogen (e.g Hanta- and Ljungan virus) dynamics in rodent populations*
- Prof. **Rob Knight** and Dr. **Luke R. Thompson** (University of California San Diego) *Gut microbiome changes as adaptations to ionizing radiation*
- Prof **Norman Kleiman**, Columbia University, New York City, USA, *The most vulnerable physiological pathways for ionizing radiation*
- Prof **Hanna Kokko** and MSc **Jussi Lehtonen**, Australian National University, Canberra, *Theoretical analyses of cyclic dynamics of sexually antagonistic genes*
- Dr **Pawel Koteja**, Jagiellonian Univ, Poland. *Energetics of reproductive effort tactics, genetic variation in basal metabolic rate, metabolic tactics as adaptations to ionizing radiation*
- Dr **Suzanne Mills**, Univ of Perpignan, France, *Male tactics and sexually antagonistic genes*
- Prof **Anders Møller**, Univ of South Paris, France and Prof. **Timothy Mousseau**, Univ of South Carolina, USA, *Genetic and phenotypic effects of long-term radiation in wild mammalian populations*
- Dr **Mikael Mokkonen**, Simon Fraser Univ Canada, *Genetic and physiological mechanisms of sexually antagonistic selection*
- Prof. **Katja Nowick**, Freie University, Berlin, Germany, *Neurogenetic effects of radiation*
- Prof **Barry Sinervo**, Univ of California, Santa Cruz, USA, *Frequency and density-dependent selection on alternative life-history strategies*
- Prof **John R. Speakman**, Univ of Aberdeen, Scotland. *Daily energy expenditure in the field measured in by the doubly-labelled water technique*
- Prof **Noriko Takamura** and Dr **Manabu Onuma** (NIES, Japan**), Kei Ueda** (Rikkyo University) and Prof. **Hiroshi Higuchi** (University of Tokyo). *Genetic and phenotypic effects of long-term radiation in wild mammas in Fukushima*
- Dr **Barbara Tschirren**, University of Exeter UK, *Selection and genetics of Diabetes type 1 in wild rodent populations, TLR polymorphism in European bank vole populations*
- Dr **Eugene Tukalenko**, Institute for Nuclear Research, National Academy of Science of Ukraine, Prof **Gennadi Milinevsky**, Taras Shevchenko National University of Kiev, Ukraine), Prof **Serhii Kireev**, Chernobyl Research and Development Institute, *Genetic and phenotypic effects of long-term radiation in wild mammas in Chernobyl*

National collaboration (name, institute, aim of study)

- Prof **Jouni Aspi**, Univ of Oulu, *Microarrays and QTL analyses in small mammals*
- Dr **Jukka Forsman**, Univ. of Oulu, *Forestry effects on gut and fur microbiome diversity*

- Dr **Otso Huitu** and Prof **Heikki Henttonen**, Finnish Forest Research Institute, Helsinki, *Physiological condition and population cycles in small mammals*
- Dr **Minna Koivula**, MTT Biotechnology and Food Research, Jokioinen, *Quatitative genetics in life-history traits*
- Prof **Erkki Korpimäki**, Univ of Turku, *Breeding success of individuals and population cyclicity*
- Prof **Johanna Mappes**, Univ of Helsinki, *The effect of genotype and genotype * environmental interaction on the sexually selective traits, of males*
- Prof **Juha Tuomi**, Univ of Oulu, *Theoretical study of the evolutionary stability of different infanticidial tactics in female mammals*
- Prof **Olli Vapalahti** and Prof **Antti Vaheri**, Faculty of Veterinary Medicine, Univ of Helsinki, *Co-evolution of hanta-virus and its host*

Within University of Jyväskylä (name, institute, *aim of study*)

- Dr **Sara Calhim**, *Tardigrades as a model group to study adaptations to ionizing radiation in nature*
- Dr **Mikko Kiljunen**, *Stable isotope analyses*
- Dr **Eva Kallio** and Dr **Yingying Wang**, *Socio-economic and climate change effects on the risk of zoonotic diseases*
- Dr **Esa Koskela**, *Experimental evolutionary ecology in bank voles*
- Prof **Heikki Penttilä** and Prof. **Rauno Julin** (Dept. of Physics*) Analyses of radionuclide accumulation in different organs*
- Dr **Mikael Puurtinen**, *The role of intergroup competition and sanctions in human cooperation*
- Dr **Suvi Ruuskanen**, *Radiation effects on birds*
- Prof **Phill Watts**, *Neurogenetics of life-history strategies, gut microbiome and radiation, whole genome of Myodes glareolus*

TEACHING EXPERIENCE

Supervised post-docs (11) (name, current position

- Zbigniew Boratynski, CIBIO Portugal
- Anna Dubiec, Polish Academy of Science
- Anni Hämäläinen, National Science Center, NCN, Poland
- Eva Kallio, Univ Jyväskylä, Finland
- Minna Koivula, LUKE Finland
- Esa Koskela, Univ Jyvaskylä Finland
- Anton Lavrinienko, ETH Zurich, Schwitzerland
- Suzanne C. Mills, CRIOBE France
- Mikael Mokkonen, Simon Fraser University, Canada
- Tuula Oksanen, University of Jyväskylä, Finland)
- Joanna Rutkowska, Jagiellonian Univ Poland

Supervised PhD theses (15)

1. Esa Koskela (University of Jyväskylä, 1998) (**with honours**)
2. Pernilla Jonsson (University of Gothenburg, 1999)
3. Tuula A. Oksanen (University of Jyväskylä, 2002) (**with honours**)
4. Eva R. Kallio (Finnish Forest Research Institute, Helsinki, 2006)
5. Tanja Poikonen (University of Jyväskylä, 2010) (**with honours**)
6. Petra Lantova (University of South Bohemia, Czech Republic, 2011)
7. Mikael Mokkonen (University of Jyväskylä, 2011) (**with honours**)
8. Anna-Kaisa Rikalainen (University of Jyväskylä, 2013)
9. Kristian Forbes (LUKE, 2014) (**with honours**)

10. Claire Cayol (University of Jyväskylä, 2017)
11. Eija Lönn (University of Jyväskylä, 2017)
12. Eero Schroderus (University of Jyväskylä, 2017)
13. Joannes van Cann (University of Jyväskylä, 2019)
14. Kati Kivisaari (University of Jyväskylä, 2019)
15. Anton Lavrinienko (University of Oulu, 2020) (**with honours**)

Current PhD students (7)

Päivi Berg (Dept Psychology, University of Jyväskyä)
Ilze Brila (University of Oulu)
Heikki Helle (University of Jyväskylä)
Nosheen Kiran (University of Jyväskylä)
Sameli Piirto (University of Jyväskylä)
Tiffany Scholier (University of Jyväskylä)
Andrii Vasylenko (University of Jyväskylä)

Supervised MSc theses (28)

Other teaching experience

- Responsible Professor in evolutionary biology, leading for the development of evolutionary teaching at the Univ. of Jyvaskylä 1.8.2010-31.12.2013, 1.10.2020-
- Developed and taught over ten different courses in evolutionary biology and ecology in basic, Bachelor and Master levels at the Univ. of Jyväskylä from 1997
- Supervising in the Bachelor and Master Seminariums at Univ. of Jyväskylä 1995-2022
- "Philosophy and Ethics in Biology" at the Univ. Jyväskylä 2005-2009
- "Identication of Finnish vertebrates" at the Univ. of Jyväskylä 2007-2022
- "Urban Ecology" at the Univ. of Jyväskylä 2007
- Teaching in Summer Courses in Ecology at Univ. of Jyväskylä, 1997-1998
- Developing the course "Philosophy of Knowledge in Biological Sciences" at the Open Univ. of Jyväskylä

GRANTS to the research projects led by me

Recent ten years (2011-2022), Total: **2 205 633 €**

2022-24 Academy of Finland, Mobility invitation from Ukraine to Finland, **102 557 €**
2019-23 Academy of Finland, 300 000 + Univ Jyväskylä 128 574, **428 574 €**
2019-21 Biodiversa (EU) + Academy of Finland, Consortium, **36 704€**
2013-17 Academy of Finland, 592 475 + Univ Jyvaskyla 291 816, **884 291 €**
2010-13 Academy of Finland 270 070 + Univ Jyväskylä 67 437, **337 507 €**
2009-11 Centre of Excellence of the Academy of Finland, **417 000 €**

Earlier (1990-2010), Total: **1 554 017 €**

2010 CIMO fellowship grant, **10 800€**
2009 Univ. of Jyväskylä, Two travel grants to strength international collaboration, **6000 €**
2006-08 Centre of Excellence of the Academy of Finland, **380 000 €**
2006-08 Academy of Finland, **128 810 €**
2005-08 Academy of Finland, **156 090 €**
2003-06 Academy of Finland, **197 880 €**
2002-03 Academy of Finland, **23 900 €**
2000-05 Centre of Excellence of the Academy of Finland, **300 000 €**
1999-2001 Academy of Finland, **1 115 500 FIM** (187 479 €)
1997-2000 Academy of Finland, **298 000 FIM** (50 084 €)
1997-98 Academy of Finland, **290 000 FIM** (48 739 €) (about 25% of the large grant,

1 172 000 FIM, applied together with Dr Hannu Ylönen)
1997 University of Jyväskylä, **90 000 FIM** (15 126 €)
1996-97 Academy of Finland, **90 600 FIM** (15 227 €)
1995-96 Academy of Finland, **80 600 FIM** (13 546 €)
1995 Emil Aaltonen Foundation, **12 000 FIM** (2 017 €)
1994 Nordisk Forskerutdanningsakademi, the travelling grant **67 400 NOK** (55 000 FIM, 9 243 €)
1993 Alfred Kordelin Foundation, **14 000 FIM** (2 353 €)
1991 Jenny and Antti Wihuri Foundation, **30 000 FIM** (5 042 €)
1990 Alfred Kordelin Foundation, **10 000 FIM** (1 681 €)

GRANTS to the members of my research projects

Recent ten years (2011-2022), Total: **2 449 014€**

2022-25 Anton Lavrinienko, Academy Res Fellow, 280 906 + Univ Jyvaskyla 120 338, **401 294 €**
2020-21 Heikki Penttilä, National Defence Support Foundation, **23 000 €**
2019-21 Katja Nowick, Research grant, German Research Foundation, **411 673 €**
2019-21 Anni Hämäläinen, post-doctoral grant National Science Center, NCN, Poland, 2 000 000 PLN, **463 790 €**
2015-18 Kati Kivisaari, Doctoral grants, Emil Aaltonen Foundation, , **98 100 €**
2015-16 Claire Cayol, Doctoral grants, Kone Foundation, **56 640 €**
2012-16 Esa Koskela, Academy of Finland 675 232 + Univ. Jyvaskyla 289 385, **964 617 €**
2011 Mikael Mokkonen, Post-Doctoral grant, Ehnrooth Foundation, **9 000 €**
2011 Mikael Mokkonen, Post-Doctoral grant, Emil Aaltonen Foundation, **9 900 €**
2011 Mikael Mokkonen Post-Doctoral grant, Finnish Cultural Foundation, **11 000 €**

Earlier (1998-2010), Total: **114 815 €**

2010 Mikael Mokkonen, Doctoral grant, Ehnrooth Foundation, **8 000 €**
2009-11 Kaisa Rikalainen Doctoral grants, Finnish Cultural Foundation, **63 000 €**
2009 Tanja Poikonen, Doctoral grant, Univ. of Jyväskyla, **21 000 €**
2001 Tuula Oksanen, Doctoral grant, Ehnrooth Foundation, **5 000 €**
2000 Esa Koskela Post-doctoral grant, Emil Aaltonen, **50 000 FIM** (8 403 €)
1999 Tuula Oksanen travel grant, Nordisk Forskerutdanningsakademi, **40 000 NOK** (32 000 FIM, 5 378 €)
1998 Pernilla Jonsson, travel grant, Nordisk Forskerutdanningsakademi, **30 000 NOK** (24 000 FIM, 4 034 €)

OTHER ACADEMIC AND PROFESSIONAL MERITS AND ACTIVITIES

- Member of **Finnish Academy of Science and Letters**
- Member of Leader Team in the **Centre of Excellence in Evolutionary Research** appointed by the Academy of Finland (2006-11)
- Member of Leader Team in the **Centre of Excellence in Evolutionary Ecology** appointed by the Academy of Finland (2000-05)

- Application referee for
  The National Science Foundation (NSF) of USA, January 2008
  The Israel Science Foundation (ISF), April 2008
  The Swiss National Science Foundation (SNF), May 2009
  The Swiss National Science Foundation (SNF), December 2010
  National Science Centre, Poland, POLONEZ/HORIZON 2020, March 2016

National Science Centre, Poland, March 2020

- invited expert (in experimental evolutionary ecology) in three meetings in radioecology, **STAR (Strategy for ALLIED Radioecology**) Rovaniemi 2014, **IUR (International Union of Radioecology)** Miami 2015, **COMET (Coordination and implementation of a pan-European instrument for radioecology)** Ukraine 2016

- Member of the national **JUFO (Publication Forum) panel** (evaluate and rank the quality of scientific journals for Finnish Universities)

- Member of **the Election Panel of the University of Jyväskylä**

- Member of **the Committee of Ethics in Science** at the University of Jyväskylä 1.1.2011-31.12.2012

- The Award for **the Notable Publication Productivity** in Ecology and Evolutionary Biology 2007, Univ of Jyväskylä

- The Award for **the Notable Publication of 2011 in the University of Jyväskylä**

- Supervised **the Best PhD Thesis of 2011 in the University of Jyväskylä**

- **Adjunct Professor referee for**
  Samuli Helle (University of Turku, 2008)
  Mirkka Lahdenperä (University of Turku, 2020)
  Maarit Pahkala (University of Oulu, 2003)
  Suvi Ruuskanen (University of Turku, 2015)
  Vesa Selonen (University of Turku, 2010)

- **PhD thesis referee for**
  Suvi Hämäläinen (University of Turku, 2019)
  Minna Koivula (University of Turku, 1998)
  Vesa Koivunen (University of Turku, 1997)

- **Recent and the most important invited scientific talks**
  NIES Japan
  University of Lausanne Switzerland
  University California Santa Cruz
  University of Gothenburg Sweden
  Finnish Academy of Science and Letters
  University of Oulu
  University of Turku
  University of Jyväskylä Physics department
  University of Jyväskylä Psychology department

- **Recent public talks, interviews and citations**:
  Radio and TV: YLE 1, YLE (local), Animal Planet, Japanese TV
  News papers: Spiegel, Helsingin sanomat, Suomen Kuvalehti, Tiede, Tiede Luonto
  Organizations: Finnish Association for Nature Conservation, Finnish Green party, Village Committee in Fukushima

- **Organizing person in scientific meetings**

Member of Scientific Committee in 10th International Behavioural Ecology Congress, 10.-15.7.2004, Jyväskylä, Finland

Symposium secretary in International Symposium on "Predation risk and behavioural adaption of prey: ecological and evolutionary consequences", 25-29.11.1991, Konnevesi Res Stat, Finland

- **Editor** in PLoS ONE

- **Referee in journals (30)**
  Ecology Letters, American Naturalist, Proceedings of Royal Society (B), Evolution, Ecology, Trends in Ecology & Evolution, Journal of Animal Ecology, Journal of Experimental Biology, PLoS ONE, Biology Letters, Journal of Theoretical Biology, Evolutionary Ecology, Behavioural Ecology, Behavioural Ecology and Sociobiology, Animal Behaviour, Functional Ecology, Oecologia, Oikos, Hereditas, Ecography, Landscape and Urban Planning, Ethology, Canadian Journal of Zoology, Ecological Research, Behaviour, Ethology Ecology & Evolution, Acta Oecologica, Acta Zoologici Sinici, Ornis Fennica, Annales Zoologici Fennici

PUBLICATIONS

(Note: according to the policy of my research project, authors after the first author are generally listed in alphabetical order. To help the evaluation of my role in particular studies, my task as a principal investigator is marked by asterisk *)

***** The studies where I was principal investigator and I would be "last or multiple last author" in other name order systems

See citations e.g.: http://scholar.google.com/citations?user=1BHUYOkAAAAJ

ARTICLES IN TOP SCIENTIFIC JOURNALS:

***** 1. Mokkonen M, Kokko H, Koskela E, Lehtonen J, Mappes T, Martiskainen H & Mills SC 2011 Negative frequency-dependent selection of sexually antagonistic alleles in *Myodes glareolus*. **Science** 334:972-974 **pdf**

***** 2. Mappes T, Aspi J, Koskela E, Mills SC, Poikonen T & Tuomi J 2012 Advantage of rare infanticide strategies in an invasion experiment of behavioural polymorphism. **Nature Communications** 3:611 **pdf**

***** 3. Lonn E, Koskela E, Mappes T, Mokkonen M, Sims AM & Watts PC 2017 Balancing selection maintains polymorphisms at neurogenetic loci in field experiments. **Proceedings of the National Academy of Sciences of the USA** 114:3690-3695 **pdf**

***** 4. Lavrinienko A, Mappes T, Tukalenko E, Mousseau TA, Møller AP, Knight R, Morton JT, Thompson LR & Watts PC 2018 Environmental radiation alters the gut microbiome of the bank vole Myodes glareolus. **ISME Journal** 12:2801-2806 **pdf**

***** 5. Lavrinienko A, Tukalenko E, Mappes T & Watts PC 2018 Skin and gut microbiomes of a wild mammal respond to different environmental cues. **Microbiome** 6:209 **pdf**

6. Shaffer JP et al. 2022 Multi-omics profiling of Earth's biomes reveals that microbial and metabolite composition are shaped by the environment. **Nature Microbiology** **pdf**

ARTICLES IN HIGH RANKED SCIENTIFIC JOURNALS:

Recent (2016-2022) (journals in alphabetical order)

7. Forbes KM, Mappes T, Sironen T, Strandin T, Stuart P, Meri S, Vapalahti O, Henttonen H & Huitu O 2016 Food limitation constrains host immune responses to nematode infections. **Biology Letters** 12:20160471 **pdf**
8. Moutinho AF, Serén N, Paupério J, Silva TL, Martínez-Freiría F, Sotelo G, Faria R, Mappes T, Alves PC, Brito JC & Boratyński Z 2020 Evolutionary history of two cryptic species of northern African jerboas. **BMC Evolutionary Biology** 20:26 **pdf**
9. Lindstedt C, Schroderus E, Lindström L, Mappes T & Mappes J 2016 Evolutionary constraints of warning signals: a genetic trade-off between the efficacy of larval and adult warning coloration can maintain variation in signal expression. **Evolution** 70:2562-2572 **pdf**

***** 10. Kesäniemi J, Boratynski Z, Danforth J, Itam P, Jernfors T, Lavrinienko A, Mappes T, Møller AP, Mousseau TA, Watts PC 2018 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'. **Evolutionary Applications** 2018;11:820-826 **pdf**

***** 11. Boratynski Z, Koskela E, Mappes T, Mills S, Mokkonen M 2018 Maintenance costs of male dominance and sexually antagonistic selection in the wild. **Functional Ecology** 32:2678–2688 **pdf**

* 12. van Cann J, Koskela E, Mappes T, Sims A & Watts PC 2019 Intergenerational fitness effects of the early life environment in a wild rodent. **Journal of Animal Ecology** 88:1355-1365 **pdf**

*****13. Lavrinienko A, Tukalenko E, Kesäniemi J, Kivisaari K, Masiuk S, Boratynski Z, Mousseau T, Milinevsky G, Mappes T & Watts PC 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** 89:2617–2630 **pdf**

14. Watts PC, Mappes T, Tukalenko E, Mousseau TA, Boratyński Z, Møller AP & Lavrinienko A 2022 Interpretation of gut microbiota data in the 'eye of the beholder': A commentary and re-evaluation of data from 'Impacts of radiation exposure on the bacterial and fungal microbiome of small mammals in the Chernobyl Exclusion Zone'. **Journal of Animal Ecology** 91:1535-1545 **pdf**

***** 15. van Cann J, Koskela E, Mappes T, Mikkonen A-M, Mokkonen M, Watts PC 2019 Early life of fathers affects offspring fitness in a wild rodent. **Journal of Evolutionary Biology** 32:1141–1151 **pdf**

* 16. Kesäniemi J, Jernfors T, Lavrinienko A, Kivisaari K, Kiljunen M, Mappes T, Watts PC 2019 Exposure to environmental radionuclides is associated with altered metabolic and immunity pathways in a wild rodent. **Molecular Ecology** 28:4620–4635 **pdf**

* 17. Lavrinienko A, Hämäläinen A, Hindström R, Tukalenko E, Boratyński Z, Kivisaari K, Mousseau TA, Watts PC, Mappes T 2021 Comparable response of wild rodent gut microbiome to anthropogenic habitat contamination. **Molecular Ecology** 30:3485-3499 **pdf**

* 18. Scholier T, Lavrinienko A, Brila I, Tukalenko E., Hindström R, Vasylenko A, Cayol C, Ecke F, Singh NJ, Forsman JT, Tolvanen A, Matala J, Huitu O, Kallio ER, Koskela E, Mappes T & Watts PC 2022 Urban forest soils harbour distinct and more diverse communities of bacteria and fungi compared to less disturbed forest soils. **Molecular Ecology** 32:504-517 **pdf**

19. Cayol C, Giermek A, Gomez-Chamorro A, Hytönen J, Kallio ER, Mappes T, Salo J, Voordouw MJ & Koskela E 2018 Borrelia afzelii alters reproductive success in a rodent host. **Proceedings of Royal Society, Biological Sciences** 285:20181056 **pdf**

* 20. Hämäläinen A, Kiljunen M, Koskela E, Koteja P, Mappes T, Rajala M, Tiainen K 2022 Artificial selection for predatory behaviour results in dietary niche differentiation in an omnivorous mammal. **Proceedings of Royal Society, Biological Sciences** 289: 20212510 **pdf**

***** 21. Watts PC, Kallio ER, Koskela E, Lonn E, Mappes T & Mokkonen M 2017 Stabilising selection on microsatellite allele length at arginine vasopressin 1a receptor and oxytocin receptor loci. **Proceedings of Royal Society, Biological Sciences** 284:20171896 **pdf**

*22. Brila I, Lavrinienko A, Tukalenko E, Ecke F, Rodushkin I, Kallio ER, Mappes T, Phillip C. Watts PC 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** 790:148224 **pdf**

*23. Lavrinienko A, Tukalenko E, Mousseau TA, Thompson L, Knight R, Mappes T, Watts PC 2020 Two hundred and fifty-four metagenome-assembled bacterial genomes from the bank vole gut microbiota. **Scientific Data** 7:312 **pdf**

24. Kesäniemi J, Lavrinienko A, Tukalenko E, Mappes T, Watts PC & Jurvansuu J 2020 Infection load and prevalence of novel viruses identified from the bank vole do not associate with exposure to environmental radioactivity. **Viruses** 12:44 **pdf**

(1995-2015) (journals in alphabetical order)

***** 25. Mills SC, Grapputo A, Jokinen I, Koskela E, Mappes T, Oksanen TA & Poikonen T 2009 Testosterone-mediated effects on fitness-related phenotypic traits and fitness. **American Naturalist** 173:475-487 **pdf**

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