ALEKSANDR PAKHOMOV **CURRICULUM VITAE**

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SUMMARY AND SCIENTIFIC INTERESTS

Experimental biologist specialising in animal behaviour, orientation and navigation, with expertise in magnetoreception, celestial compass mechanisms, and multisensory integration. Extensive experience in designing and conducting laboratory and field experiments, developing custom scientific instrumentation, and applying quantitative methods to behavioural research. Skilled in experimental automation, scientific programming, sensor integration, and the development of affordable, open-source research technologies. Experienced in leading externally funded research projects, managing international collaborations, supervising students, and communicating scientific findings. Principal Investigator on multiple funded projects and leader of the MagBBB (Magnetoreception in Birds, Bats and Butterflies) research group, with a strong publication record in international peer-reviewed journals.

Key Skills and Expertise

- **Experimental Biology:** Animal behaviour, sensory ecology, orientation and navigation, behavioural assay design, laboratory and field experimentation.
- **Scientific Instrumentation:** Design, prototyping, construction, testing, and optimisation of custom experimental systems and low-cost research equipment (my experimental setups: https://magbbb.com/openscience/smartlab/).
- **Electronics and Automation:** Raspberry Pi, Arduino, sensors, camera systems, automated behavioural monitoring, experimental control and data acquisition.
- **Programming and Data Analysis:** Python, R, behavioural data processing, circular statistics, statistical modelling, simulation, data visualisation and reproducible analysis.
- **Field Research:** Planning and conducting international fieldwork, animal capture and handling, experimental logistics and equipment deployment.
- **Research Leadership:** Project design and management, grant applications, research budgeting, procurement and coordination of international collaborations.
- **Open Science:** Development of open-source scientific software and hardware, reproducible experimental methods, and sharing of research data and protocols.
- **Communication and Supervision:** Scientific publications, conference presentations, peer review, student mentoring, teaching and public engagement.

CURRENT AND PREVIOUS POSITIONS

07/2026 – 06/2027	**Visiting Researcher** School of Life Sciences, Keele University, UK
07/2024 – 06/2026	**MCSA Postdoctoral Fellow** (UKRI Guarantee Scheme, 100%) School of Life Sciences, Keele University, UK
05/2022 – 06/2024	**Senior Researcher** (100%) Biological Station Rybachy, Zoological Institute of Russian Academy of Sciences, Russia
03/2017 – 05/2022	**Researcher** (100%) Biological Station Rybachy, Zoological Institute of Russian Academy of Sciences, Russia
05/2016 – 12/2020	**Researcher** (50%) Laboratory for Evolution of Sensory Organs, Sechenov Institute of Evolutionary Physiology & Biochemistry of Russian Academy of Sciences, Saint-Petersburg, Russia
05/2015 – 03/2017	**Junior Researcher** (100%) Biological Station Rybachy, Zoological Institute of Russian Academy of Sciences, Russia

EDUCATION

09/2012-11/2016	***PhD in Zoology (Life Sciences)*** Department of Vertebrate Zoology Faculty of Biology, Lomonosov Moscow State University (Moscow, Russia) Supervisor: Dr Sergey Ogurtsov, PhD *PhD thesis*: Role of the magnetic compass and a magnetic map in the choice of migratory direction by songbird migrants (thesis defense: 11/2016)
09/2007 – 06/2012	***Specialist's Degree in Vertebrate Zoology*** Department of Vertebrate Zoology Faculty of Biology, Lomonosov Moscow State University (Moscow, Russia) Supervisor: Dr Irina Marova, PhD *Diploma thesis*: Orientation of nocturnal migratory birds at sunset and the beginning of night.

RESEARCH FUNDING

2024-2026	**Marie Skłodowska-Curie Actions Postdoctoral Fellowship (UKRI Guarantee Scheme)** Project: Magnetoreception in migratory insects: the magnetic compass and the magnetic map in European migratory Lepidoptera (EP/Y036239/1) Amount: £200,500
2021 – 2023	**Research Grant for Young Investigators, Russian Science Foundation (PI)** Project: Magnetoreception in mammals: the magnetic compass of migratory bats and its position in a hierarchy of compass systems. Amount: €48,000
2020 – 2022	**Research Grant, Russian Foundation for Basic Research (PI)** Project: Light-dependent magnetoreception in songbird migrants: true or false? Amount: €48,000
2018 – 2020	**Research Grant, Russian Foundation for Basic Research (Co-Lead)** Project: Calibration of compass systems in migratory birds. Amount: **€**30,000
2019 – 2020	**Publication Grant, Russian Foundation for Basic Research (PI)** Project: A hierarchy of compass systems in migratory birds. Amount: €4,800
2015	**Short-term Doctoral Research Grant, Russian Foundation for Basic Research** Project: Magnetic declination as a part of a navigational map in migratory birds. Amount: €5,000
2014	**Short-term Doctoral Research Grant, Russian Foundation for Basic Research** Project: Stellar compass in migratory birds. Amount: €5,000

AWARDS, TRAVEL GRANTS AND STIPENDS

2022	**Travel Grant: International Ornithological Congress (Durban, South Africa)** Sponsor: Leventis Conservation Foundation and Oppenheimer Generations Foundation
2018	**Travel Grant: International Congress of Neuroethology (Brisbane, Australia)** Sponsor: International Society for Neuroethology
2013	**Government stipend for academic/educational excellence/performance (PhD students)** Sponsor: Ministry of High Education and Science of Russian Federation

COLLABORATIONS

- **Dmitry Kishkinev**, Keele University, UK: Orientation and navigation in migratory Lepidoptera
- **Nikita Chernetsov**, **Gleb Utvenko**, ZIN RAS, RU: Orientation and navigation in migratory songbirds
- **Bojarinova Julia, Kavokin Kirill**, ZIN RAS, RU: Mechanisms of magnetic orientation in songbird migrants
- **Nazar Shapoval**, ZIN RAS, RU: Orientation mechanisms in migratory butterflies
- **Oliver Lindecke**, NaviSense Cluster of Excellence (Oldenburg University), DE: Orientation mechanisms in migratory butterflies

MENTORING AND TEACHING

Supervision and co-supervision of Bachelor's and Master's students

- **Maria Ershova** (Lomonosov Moscow State University)
  2018 – 2019: Effects of radio-frequency magnetic fields on migratory orientation in garden warblers, **Bachelor's thesis (2019).**
- **Fedor Cellarius** (Lomonosov Moscow State University)
  2018 – 2020: Magnetic declination in avian navigational maps, **Bachelor's thesis (2020).**
  2020 – 2022: Orientation and navigation in migratory bats, **Master's thesis (2022).**
- **Alexandra Fedorisheva** (Lomonosov Moscow State University)
  2021 – 2022: Disruption of migratory behaviour by oscillating magnetic fields**, Bachelor's thesis (2022).**
  2022 – 2024: Disruption of migratory behaviour by oscillating magnetic fields, **Master's thesis (2024).**
- **Anisia Prokshina** (Herzen State Pedagogical University, Lomonosov Moscow State University)
  2020 – 2021: Hierarchy of compass systems in migratory songbirds, **Bachelor's thesis (2021).**
  2022 – 2023: Effects of monochromatic light on magnetic orientation in birds, **Master's thesis (2023).**
- **Anastasia Grebenkova** (Lomonosov Moscow State University)
  2022-2024: Magnetic orientation after simulated geomagnetic equator crossing, **Bachelor's thesis (2024).**
- **Gleb Utvenko** (Moscow State Pedagogical University, Saint-Petersburg State University)
  2019 – 2021: Ontogeny of the stellar compass in songbird migrants, **Bachelor's thesis (2021).**
  2022 – 2023: Orientation of migratory bats in circular release experiments, **Master's thesis (2023).**
- **Nadezhda Romanova** (Moscow State Pedagogical University**)**
  2021 – 2022: Light-dependent magnetoreception in migratory songbirds (replication study), **Bachelor's thesis (2022).**

Teaching

- **Practical teaching** in Vertebrate Zoology, Lomonosov Moscow State University, Moscow, Russia (2012–2013)
- **Invited lectures** on bird orientation and navigation, Immanuel Kant Baltic Federal University, Kaliningrad, Russia (2015)

ACADEMIC AND NON-ACADEMIC ACTIVITIES

- **Administrative leadership and management**

- **Acting Director**, Biological Station Rybachy (2017–2024, 1–2 months annually)
- **Head of Laboratory Department,** Biological Station Rybachy (2020–2024)

- **Organisation of conferences and panel sessions**

- **Co-organiser** (registration forms, scientific programme, website creation and maintenance), 1st and 2nd Autumn Schools for students and early-career researchers "Animal Navigation and Orientation", October 2014 and 2019, Zvenigorod Biological Station, Russia
- **Symposium Organiser** (with Kirill Kavokin), "The Mechanisms of Orientation and Navigation in Migratory Birds", February 2023, 2nd All-Russian Ornithological Congress, St. Petersburg, Russia

- **Web design and administration**

- Website of the Department of Vertebrate Zoology, Faculty of Biology, Lomonosov Moscow State University, 2011 – 2012.
- Website of the 1st and 2nd Autumn Schools for students and early career researchers "Animal navigation and orientation" (Zvenigorod biological station, MSU, Russia), 2014 and 2019.
- Website of the MagBBB Group (2023 – present).

- **Reviewer for scientific journals and funding agencies**

- Regular peer reviewer for: Journal of Comparative Physiology A, BioEssays, Biological Bulletin, BMS Zoology, Biology Open, Scientific Reports, Behavioural Ecology and Sociobiology, Current Biology, Journal of Experimental Biology, Proceedings of the Royal Society B, eLife, Journal of Avian Biology, Journal of Zoology, Journal of Royal Society Interface, iScience

PUBLICATIONS

(*) – as a main/correspondence author

Preprints and manuscripts in preparation/under review

1. (*) Pakhomov A et al. The Role of Magnetic and Celestial Cues in Orientation and Navigation of Red Underwing (*Catocala nupta*), a European Migratory Moth // preprint/**under review** doi: 10.64898/2026.03.04.709557.

2. (*) Pakhomov A et al. Not All Butterflies Are Monarchs: Compass Systems in the Red Admiral (*Vanessa atalanta*), a European Diurnal Migrant // preprint/**published**. doi: 10.1101/2025.05.01.651646

3. (*) Pakhomov A et al. Orientation tests and long-term movement phenology establish the red admiral Vanessa atalanta as an applicable model for navigation research in migratory butterflies // preprint/**under review.** doi: 10.1101/2023.09.09.554419

4. (*) Cellarius et al. Birds are easier to trick: an effect of magnetic field manipulation on migratory orientation of Nathusius' pipistrelle in the circular release box // **preprint.** doi: 10.1101/2023.02.20.529207

Peer-reviewed publications (19)

Journal of the Royal Society Interface (WOS Q1)	(*) Pakhomov et al.,**2026**. Not all butterflies are monarchs: orientation using daytime celestial cues but not magnetic cues in European migratory red admirals (*Vanessa atalanta*) // doi: https://doi.org/10.1098/rsif.2026.0537
Current Biology (WOS Q1)	Utvenko et al., **2026.** Navigation map has to be learned by migration-naïve Eurasian reed warblers// doi: https://doi.org/10.1016/j.cub.2026.08.027
Behavioral Ecology and Sociobiology (WOS Q1)	Utvenko et al., **2026.** Magnetic cues and refuelling in thrush nightingales (*Luscinia luscinia*): a 25-year-old hypothesis revisited // doi: https://doi.org/10.1007/s00265-026-03792-8
Journal of the Royal Society Interface (WOS Q1)	Kavokin et al., **2026**. Disruption of magnetic orientation in migratory songbirds by radiofrequency magnetic fields is mediated by a specialized sensory system // doi: https://doi.org/10.1098/rsif.2026.0129
eLife (SCImago Q1)	(*) Pakhomov, Kishkinev, **2026**. Insect Migration: A sense of direction // doi: https://doi.org/10.7554/eLife.110796
Journal of Experimental	Utvenko et al., **2025**. Magnetic orientation of marsh warblers (*Acrocephalus palustris*) and spotted flycatchers (*Muscicapa striata*) after simulated crossing of the magnetic equator // doi: https://doi.org/10.1242/jeb.248169

Biology (WOS Q1)	
Behavioral Ecology and Sociobiology (WOS Q1)	Bojarinova et al**., 2023.** Sensitivity threshold of avian magnetic compass to oscillating magnetic field is species-specific // 77, 6. doi: https://doi.org/10.1007/s00265-022-03282-7
Journal of Ornithology (WOS Q1)	Bojarinova et al., **2024**. Oscillating magnetic field does not disrupt orientation in the presence of stellar cues in an avian migrant // doi: https://doi.org/10.1007/s10336-023-02129-w
Proceedings of the Royal Society B (WOS Q1)	(*) Romanova et al., **2023**. Migratory birds are able to choose the appropriate migratory direction under dim yellow narrowband light // doi: https://doi.org/10.1098/rspb.2023.2499.
Journal of Experimental Biology (WOS Q1)	(*) Pakhomov et al., **2022.** Access to the sky near the horizon and stars does not play a crucial role in compass calibration of European songbird migrants // doi: https://doi.org/10.1242/jeb.243631
Journal of Experimental Biology (WOS Q1)	Zolotareva et al., **2021**. Ontogeny of the star compass in birds: pied flycatchers (*Ficedula hypoleuca*) can establish the star compass in spring // doi: https://doi.org/10.1242/jeb.237875
Biological Communications (SCImago Q3)	(*) Pakhomov**,** Chernetsov, **2020**. A hierarchy of compass systems in migratory birds // doi: https://doi.org/10.21638/spbu03.2020.306
PLOS ONE (WOS Q2)	Chernetsov et al., **2020**. No evidence for the use of magnetic declination for migratory navigation in two songbird species // doi: https://doi.org/10.1371/journal.pone.023213
Scientific Reports (WOS Q1)	Bojarinova et al., **2020**. Magnetic compass of garden warblers is not affected by oscillating magnetic fields applied to their eyes // doi: https://doi.org/10.1038/s41598-020-60383-x
Scientific Reports (WOS Q1)	**(*)** Pakhomov et al., **2018**. Magnetic map navigation requires input from the trigeminal nerve in a migratory songbird // doi: https://doi.org/10.1038/s41598-018-30477-8
Current Biology (WOS Q1)	Chernetsov et al., **2017**. Migratory Eurasian reed warblers can use magnetic declination to solve the longitude problem // doi: https://doi.org/10.1016/j.cub.2017.07.024
Journal of the Royal Society Interface (WOS Q1)	(*) Pakhomov et al., **2017**. Very weak oscillating magnetic field disrupts the magnetic compass of songbird migrants // doi: https://doi.org/10.1098/rsif.2017.0364

Behavioral Ecology and Sociobiology (WOS Q1)	(*) Pakhomov et al., **2017**. Further evidence of a time-independent stellar compass in a night-migrating songbird // doi: https://doi.org/10.1007/s00265-017-2279-3
Current Biology (WOS Q1)	Kishkinev et al., **2015**. Eurasian reed warblers compensate for virtual magnetic displacement // doi: https://doi.org/10.1016/j.cub.2015.08.01
Journal of Ornithology (WOS Q1)	(*) Pakhomov., Chernetsov, **2014**. Early evening activity of migratory Garden Warbler *Sylvia borin*: compass calibration activity? // doi: https://doi.org/10.1007/s10336-014-1044-x
Journal of the Royal Society Interface (WOS Q1)	Kavokin et al., **2014**. Magnetic orientation of garden warblers (*Sylvia borin*) under 1.4 MHz radiofrequency magnetic field // doi: https://doi.org/10.1098/rsif.2014.0451

SELECTED INTERNATIONAL CONFERENCES

- 12th International Animal Navigation Conference «Orientation & Navigation Birds, Humans & Other Animals» (RIN26), 15-17 April 2026, Egham, UK**. Oral talk:** Not All Butterflies are Monarchs: Orientation Using Daytime Celestial Cues but Not Magnetic Cues in European Migratory Red Admirals (*Vanessa atalanta*)

- ASAB Spring 2026 Conference, Bristol, UK, 23-25 March 2026. **Poster:** The Role of Magnetic and Celestial Cues in Orientation Behaviour of European Migratory Lepidoptera.

- Biologists@100 Conference (100 year of the Company of Biologists), Liverpool, UK, 24-27 March 2025. **Poster:** Not all butterflies are monarchs: Compass systems in European migratory butterflies

- 22nd International Ornithological Congress, Durban, South Africa, 15-19 August 2022. **Oral talk:** Two sensitivity peaks of the avian magnetic compass to monochromatic light: true or false?

- 12th Conference of the European Ornithologists' Union (EOU 2019), Cluj Napoca, Romania, 26-30 August 2019. **Oral talk:** No evidence for compass calibration in European songbird migrants during both migratory seasons.

- 10th International Animal Navigation Conference «Orientation & Navigation Birds, Humans & Other Animals» (RIN19), 10-12 April 2019, Egham, UK**. Poster:** Do songbird migrants use the magnetic field during the non-migratory season?

- International Congress of Neuroethology, Brisbane, Australia, 15-20 July 2018. **Oral talk:** Magnetic map navigation requires input from the trigeminal nerve in a migratory songbird.

- 11th Conference of the European Ornithologists' Union, Turku, Finland, 18-23 August 2017. **Oral talk**: The ophthalmic branch of the trigeminal nerve provides magnetic map information in a migratory songbird.

- 9th International Animal Navigation Conference «Orientation & Navigation Birds, Humans & Other Animals» (RIN16), 13-15 April 2016, Egham, UK**. Poster**: The magnetic compass of long-distance songbird migrant, garden warbler *Sylvia borin*, is not calibrated by celestial cues**.**

- 10th Conference of the European Ornithologists' Union, Spain, Badajoz, 24-28 August 2015. **Oral talk**: Magnetic declination provides east–west navigational map information in a migratory songbird.