EMMA WHITTINGTON

Centre for Biological Diversity
University of St Andrews

email: ew254@st-andrews.ac.uk
website: emmawhittington.wordpress.com

EDUCATION

2013–2019 PhD, Syracuse University, NY, USA
Adviser: Steve Dorus
Committee Members: Scott Pitnick, Janice Friedman, John Belote, and Yasir Ahmed
Title: Sperm Proteome Variation Between Species and Within the Female Reproductive Tract

2011–2012 MRes in Evolutionary Biology, University of Bath, UK
Adviser: Steve Dorus
Title: Dynamic Changes in the Sperm Proteome during Maturation in the Mouse Epididymis and Technique for Sperm Collection and Dissection in *Manduca sexta*: The Potential Use of Sperm Proteomics.
Adviser: Tamás Székely
Title: Heritability of Morphological, Life History and Behavioural Traits in the Snowy Plover *Charadrius nivosa*

2007–2011 BSc in Behavioural Biology, University of St Andrews, UK

PROFESSIONAL APPOINTMENTS

2024 – Present Leverhulme Early Career Research Fellow, Centre for Biological Diversity, University of St Andrews, UK.
Funded project: "Population Divergence in Reproductive -Omics and Emerging Reproductive Isolation"

2019 – 2023 Postdoctoral Researcher, Natural History Museum University Oslo (NHMO), Norway
75% research, 25% teaching and service
Group leader: Arild Johnsen
Research topic: Comparative 'Omics of Sperm and Egg Membrane Evolution in Passerine Birds

FUNDING

2024 Leverhulme Early Career Fellowship. £18,000
Project: Population Divergence in Reproductive -Omics and Emerging Reproductive Isolation
Role: Sole applicant

2021 P E Lindahls Stipendiefond, Kungliga Vetenskapsakademien (The Swedish Royal Academy of Sciences) £11,730
Project: The molecular basis of female sperm choice in an avian model of speciation
Role: Named collaborator/proteomics expert
Award in SEK: 150,000

2021	The Swedish Royal Academy of Sciences Biosciences grant Project: The molecular basis of female sperm choice in an avian model of speciation Role: Named collaborator/proteomics expert Award in SEK: 100,000	£7,820
2020-22	Jubelfeststipendium, Faculty of Science and Technology, Uppsala University Project: The molecular basis of female sperm choice in an avian model of speciation Role: Named collaborator/proteomics expert Award in SEK: 120,000	£9,384
2020	Sederholms Nordiska Stipendium Project: The molecular basis of female sperm choice in an avian model of speciation Role: Named collaborator/proteomics expert Award in SEK: 15,000	£1,173
2020	Selma Andersons Stipendium, Uppsala University Project: The molecular basis of female sperm choice in an avian model of speciation Role: Named collaborator/proteomics expert Award in SEK: 70,000	£5,476
2020	NHM Oslo Qualifying Grant for Female Researchers Project: Molecular underpinnings of conspecific sperm precedence in a passerine model of speciation Role: Main applicant Award in NOK: 10,000	£815

FELLOWSHIPS, HONORS AND AWARDS

2019	Alexander Gourevitch Memorial Award for Graduate Thesis – 200 USD
2019	Syracuse University Summer Dissertation Fellowship
2018	Outstanding Reviewer Status, Journal of Proteomics
2016–2017	Marilyn Kerr Scholarship
2015	SU Biology Department Fellowship
2014-2016	Women in Science and Engineering Future Professionals Program – 200 USD

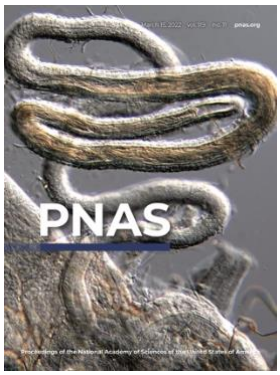
PUBLICATIONS

Citations = 176, H index = 7
* Denotes equally contributed to the work
Manuscripts in preparation available upon request

11. Garlovsky, M.*, **Whittington, E**.*, Albrecht, T., Castillo, D., Castro, H.A., Keias, G., Larson, E., Moyle, L., Plakke, M., Reifova, R., Snook, R., Ålund, M. and Weber, A.* (2023). Synthesis and scope of the role of postmating prezygotic isolation in speciation. **Cold Spring Harbor Perspectives in Biology**

10. **Whittington, E.** and Ålund, M. (2023). Sperm, eggs, pollen, and gelato, oh my! ***Molecular Reproduction and Development***, 1–5.

9. Grønstøl, G., Danielsen, Cramer, E., Johannessen, L.E., Johnsen, **Whittington, E**., and Lifjeld, J.T. (2022). Effects of fixatives and storage duration on avian sperm morphology. ***Journal of Ornithology***



8. McCullough, E.L.*, **Whittington, E.***., Singh, A*., Pitnick, S., Wolfner, M.F., and Dorus, S. (2022). The life history of *Drosophila* sperm involves molecular continuity between male and female reproductive tracts. ***Proceedings of the National Academy of Sciences.*** 119 (11) e2119899119

7. McDonough-Goldstein, C.E., **Whittington, E**., McCullough, E.L., Buel, S.M., Erdman, S.E., Pitnick, S. and Dorus, S. (2021). Pronounced postmating response in the *Drosophila* female reproductive tract fluid proteome. ***Molecular and Cellular Proteomics***. 20:100156

6. Rowe, M., **Whittington, E**., Borziak, K., Ravinet, M., Eroukhmanoff, F., Sætre, G-P., and Dorus, S. (2020). Molecular diversification of the seminal fluid proteome in a recently diverged passerine species pair. ***Molecular Biology and Evolution.*** 37:488-506

5. **Whittington, E**., Karr, T., Mongue, A.J., Dorus, S and Walters, J.R. (2019). Evolutionary Proteomics Reveals Distinct Patterns of Complexity and Divergence between Lepidopteran Sperm Morphs. ***Genome Biology and Evolution*****.** evz080

4. Ålund, M., **Whittington, E**., Backström, N., Borziak, K., Jones, W., McFarlane, E., Mugal, C.F., Wang, M., Wheatcroft, D., Xu, L., Ellegren, H., Immler, S., Dorus, S., and Qvarnström, A. (2017). Reproductive-omics of a wild avian speciation model unveils candidate genes for gamete interaction [PhD Thesis]. Uppsala University. Available from: http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-326809

3. **Whittington, E**., Forsythe, D., Karr, T., Walters, J., and Dorus, S. (2017). Contrasting Patterns of Evolutionary Constraint and Novelty Revealed by Comparative Sperm Proteomic Analysis in Lepidoptera. ***BMC Genomics***. 18:931.

2. McDonough, C.E., **Whittington, E**., Pitnick, S. and Dorus, S. (2015). Proteomics of Reproductive Systems: Towards a Molecular Understanding of Postmating, Prezygotic Reproductive Barriers. ***Journal of Proteomics***. 135:26-37.

1. **Whittington, E.***, Zhao, Q*., Borziak, K., Walters, J.R. and Dorus, S. (2015). Characterisation of the *Manduca sexta* Sperm Proteome: Genetic Novelty Underlying Sperm Composition in Lepidoptera. ***Insect Biochemistry and Molecular Biology***. 62: 183-193.

SEMINARS AND SCIENTIFIC PRESENTATIONS

2023	Biology of Spermatozoa (Nynäshamn, Sweden) – Poster presentation
2023	Invited seminar at Uppsala University (Uppsala, Sweden) – Oral presentation – "-Omics of Ejaculate-Female Interactions and Reproductive Isolation"
2023	Speciation Gordon Research Conference (Lucca, Italy) – Poster presentation
2022	European Society for Evolutionary Biology (Prague, Czech Republic) – Poster presentation
2021	ForBio Annual Meeting (Oslo, Norway) – Oral presentation – "Comparative Proteomics of the Perivitelline Layer – the site of avian sperm egg interaction"
2021	Sexual Selection Workshop (Göteborg, Sweden) – Oral presentation – "Comparative Proteomics of the Perivitelline Layer – the site of avian sperm egg interaction"
2020	Late Lunch Departmental Seminar, NHM Oslo – "A Molecular Evolutionary Approach to Sperm Heteromorphism"

2020	Invited Seminar at Netherlands Institute of Ecology (Wageningen, Netherlands) – Oral presentation – "A Molecular Evolutionary Approach to Sperm Heteromorphism"
2019	Biology of Spermatozoa (Nynäshamn, Sweden) – Oral presentation – "The Life History of Sperm in Drosophila melanogaster"
2018	Insect Reproductive Molecules (Groningen, Netherlands) – Oral presentation – "Postcopulatory Modification to the Sperm Proteome in Drosophila melanogaster"
2018	Annual Drosophila Research Conference (Philadelphia, PA) – Poster presentation
2017	Syracuse University Project Advance (New York, NY) – Oral presentation
2017	Ontario Ecology, Ethology and Evolution Colloquium (Kingston, Canada) – Oral presentation – "Molecular Approach to Sperm Evolution"
2017	Biology of Spermatozoa (Sheffield, UK) – Oral presentation (co-authored poster and oral presentation) – "A Molecular Evolutionary Approach to Sperm Heteromorphism"
2016	Ontario Ecology, Ethology and Evolution Colloquium (Toronto, Canada) – Oral presentation – "Sperm Heteromorphism: A molecular evolutionary approach"
2014	Regional Proteomics Symposium (Rochester, NY) – Poster presentation
2014	Insect Reproductive Molecules (Cornell, NY) – Poster presentation
2014	Evolution Conference (Raleigh, NC) – Poster presentation

TEACHING AND MENTORING

University of Oslo

2020-Present	BIOS2000	Animal Behaviour. Team-taught course. I cover three lectures and one practical exercise on nesting, parenting and territoriality, and mating strategies.	30 students
2020-2022	BIOS4240	Evolution and Systematics of Organismal Groups: The Animal Kingdom. Masters level. I ran a seminar discussing papers.	15 students

ForBio/BiGTREE – Research School in Biosystematics

2020-Present		Introduction to Bioinformatics. Co-organiser and instructor of an online course for graduate students and postdocs. From 2022, this is associated with the BiGTREE training network between Norway, Peru, and Colombia.	40 students

Syracuse University (Teaching Assistant)

2019	Bio326	Genetics	250 students
2018	Bio124	General Biology II – lab section	50 students
2018	Bio327	Cell Biology	250 students
2014-2017	Bio442	Bioinformatics for Life Scientists	15 students
2013-2015	Bio121	General Biology I – lab section	50 students

Syracuse University Undergraduate Honours Capstone Project Student Mentorship

2015-2017	Katherine Eng	"Male-biased retrogenes in *Drosophila melanogaster*: integration of novel genes into pathways governing sperm development"
2015-2017	Makayla Dearborn	"Characterization of Newly Created Mitochondrial Genes Affecting *Drosophila melanogaster* Sperm Phenotypes through Genetic Manipulation"
2015-2017	Zhaowei Jiang	"Retrogene Function in *Drosophila melanogaster* Spermatogenesis"

SERVICE AND OUTREACH

Service to Department, College, and University

2020-Present	Manage all aspects of the 'Tangled Banks' seminar series at the NHMO
2020-Present	Member of two PhD progress committees at NHMO
2022	Lead member of a postdoctoral hiring committee at NHM
2020-2022	Member of four postdoctoral and one PhD hiring committees at NHMO
2015	Internal examiner for University of Oslo master's defence committee
2015-2017	Graduate Careers Committee Member for the Syracuse University Biology Graduate Student Organisation

Service to Professional Societies and Communities

2022	Co-organiser European Society for Evolutionary Biology conference symposium, "Diversity and evolution in sperm, ova, and other primary reproductive traits"
2021	Beta testing/reviewer of ENSEMBL website interface
2021	Session chair in ForBio Annual Meeting
2015-2019	Contributor to PLOS Early Career Researcher Blog

Outreach

2020	Autumn Holiday at the Natural History Museum, Oslo (2020). Talk to the public on becoming a scientist.
2017-2018	Frontiers in Science. Led and modified a lab activity for high school students on Drosophila genetics and mutations.
2018	Syracuse University Project Advance (2018). Led and created lab activity for high school teachers as a part of a project developing genetics modules for high schools.

PROFESSIONAL DEVELOPMENT AND TRAINING

Courses

2023	Metabolomics Data Analysis Workshop, University of Glasgow Polyomics Core
2022	R/Bioconductor for Mass Spectrometry and Proteomics, Physalia
2022	Gene Set Enrichment in R, Physalia
2021	Ensembl Browser, GeneSpectrum
2020	Introduction to the Ensembl Genome Browser Series, Ensembl
2019	PEAKS proteomics software training, Rockville, USA
2016-2017	Bioinformatics courses at Computational Biology Service Unit, Cornell University - Linux for Biologists, Gene Function Annotation, Transcriptome Assembly, and Practical Linux Examples in Bioinformatics

Workshops

2023	Teaching Sexual Selection – online workshop, Stockholm University
2023	FAIR Data and FAIR Principles, University of Oslo Library
2022	Discovering biological information from MS-based proteomics, Ensembl
2022	Methods for exploring newly annotated species in Ensembl Rapid Release, Ensembl
2022	Open Access Publishing, University of Oslo Library
2022	Reproducible Research Workflows, University of Oslo Library
2022	Communicating your Science – a practical guide, University of Oslo Library
2020	Data Management Planning, University of Oslo Library

MANUSCRIPT REVIEWING

Ecology and Evolution ● *Insect Biochemistry and Molecular Biology* ● *BMC Biology* ● *BMC Genomics* ● *Nature Cell Discovery* ● *Heliyon* ● *Journal of Proteomics* ● *Frontiers in Ecology and Evolution* ● *Journal of the Lepidopterists' Society* ● *MDPI Biology* ● *Molecular and Cellular Proteomics* ● *Proceedings of the Royal Society B*