

Paul Czechowski, Ph.D.

Biology · Statistics · Code · Robotics

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Education

PhD Molecular Ecology, Dean's Commendation for Thesis Excellence *Adelaide University* — Adelaide — Jan 2012 – Dec 2015

- Thesis: *Antarctic biodiversity surveys using high throughput sequencing: understanding landscape and communities of the Prince Charles Mountains.*
- Mentors: Dr. Mark Stevens, Dr. Laurence Clarke, Prof. Dr. Alan Cooper

MSc Biology *University of Leipzig, British Antarctic Survey* — Leipzig, Cambridge — Jun 2005 – Dec 2010

- Thesis: *Origins of Antarctic Tardigrades.*
- Mentors: Dr. Chester Sands, Dr. Mark Stevens, Prof. Dr. Peter Convey
- Majors: Zoology, Genetics, Botany, Plant Physiology

Research and Industry Experience

Automation Engineer *AZENTA Life Sciences* — Leipzig, Saxony, Germany — Dec 2024 – present

- Program and debug Hamilton Venus methods
- Develop C# user interfaces for laboratory staff
- Control and deploy automation code
- Automate protocols for economic high-throughput use

Senior Bioinformatics Core Scientist *Helmholtz Institute for Metabolic, Obesity, and Vascular Research — Clinical Obesity* — Leipzig, Saxony, Germany — Nov 2022 – Oct 2024

- Neural network analysis of multi-omics and clinical data
- Statistical analyses development (R: multivariate statistics, linear mixed effect modelling, general additive modelling, differential protein and gene expression analyses, functional protein and gene analyses)
- Multi-Omics data processing (Proteomics, RNAseq, Microarrays, WGS data processed with R, Bash, and Python)
- Multi-Omics pipeline development (SLURM, Nextflow, Snakemake)

Postdoctoral Research Associate *Otago University — Department of Anatomy* — Dunedin, Otago, New Zealand — Jun 2019 – Dec 2021

- Analysis of environmental DNA from marine conservation areas
- Genome reconstruction of extinct giant eagle *Harpagornis moorei*
- Eukaryotic environmental DNA analysis of Antarctic soils (Prince Charles Mountains)
- Colorimetric LAMP assays of *Undaria pinnatifida*

Postdoctoral Research Associate *Cornell University — Ecology and Evolutionary Biology* — Ithaca, New York, USA — Jun 2017 – Jun 2019

- Analysis of environmental DNA from global shipping ports. NSF grant 1427157
- Prokaryotic environmental DNA analysis of Antarctic soils (Vestfold Hills)
- Colorimetric LAMP assays of *Hydrilla verticillata*

Research Assistant *Max Planck Institute for Evolutionary Anthropology — Molecular Ecology* — Leipzig, Saxony, Germany — Jan 2007 – Oct 2009

- Extraction, sequencing, and analysis of various ancient DNA samples
- Sanger, 454, Illumina sequencing
- Molecular cloning

Professional Experience

Year	Position	Institution
2022	Data Analyst	The Economist Intelligence Unit, Leipzig, Saxony, Germany
2016–2017	Bioinformatics Consultant	Antarctic Biological Research Initiative, Adelaide, South Australia, Australia
2016	Staff Scientist	University of Adelaide, Adelaide, South Australia, Australia
2011–2012	Antarctic Expeditioner	Australian Antarctic Division, Kingston, Tasmania, Australia
2009	Research Assistant	Alfred-Wegener-Institute for Polar and Marine Research, Bremerhaven, Bremen, Germany
2005–2007	Zoo Pilot	Leipzig Zoo, Leipzig, Saxony, Germany

Publications

Selected Articles in Preparation

- Czechowski P, Kardailsky O, Grant H, Knapp M. **A draft genome of the extinct giant eagle *Harpagornis moorei***. In preparation for *Nature Communications*.

Published

- Röhrborn K, Hoffmann A, Lorenz A, Kovacs P, Hagemann T, Czechowski P, Sehm M, Schamarek I, Horstmann A, Stumvoll M, Blüher M, Rohde-Zimmermann K. **Salivary extracellular vesicle-derived microRNAs are related to variances in parameters of obesity, taste and eating behaviour**. *Molecular Metabolism* 2025 Oct. doi.org/10.1016/j.molmet.2025.102265
- Czechowski P, Hoffmann A, Dommel S, Blüher M, Klötting N. **Gene expression in normal-weight mice offspring from parents on Western Diet suggests altered risk for obesity and metabolic disease**. *Obesity Science and Practice* 2025 Feb. doi.org/10.1002/osp4.70058
- Czechowski P, Hagemann T, Ghosh A, Sun W, Dong H, Noé F, Wolfrum C, Hoffmann A, Blüher M. **RNA sequencing reveals a relationship of omentin-1 expression with clinical phenotypes related to overweight, obesity, insulin resistance, and bariatric surgery**. *Scientific Reports* 14, 22286, 2024. doi.org/10.1038/s41598-024-72720-5
- Zhang E, Wong SY, Czechowski P, Terauds A et al. **Effects of increasing soil moisture on Antarctic desert microbial ecosystems**. *Conservation Biology* 2024: e14268. doi.org/10.1111/cobi.14268
- Czechowski P, de Lange M, Heldsinger M, Rayment W, Hepburn C, Ladds M, Knapp M. **Comparison of traditional and molecular surveys of fish biodiversity in southern Te Wāhipounamu / Fiordland (Aotearoa / New Zealand)**. *Environmental DNA* 2024, 6(1): e514. doi.org/10.1002/edn3.514
- Hoffmann A, Meir AY, Hagemann T, Czechowski P, Müller L, Engelmann B, Haange SB, Rolle-Kampczyk U, Tsaban G, Zelicha H, Rinott E, Kaplan A, Shelef I, Stumvoll M, Blüher M, Liang L, Ceglarek U, Isermann B, von Bergen M, Kovacs P, Keller M, Shai I. **A polyphenol-rich green Mediterranean diet enhances epigenetic regulatory potential: the DIRECT PLUS randomized controlled trial**. *Metabolism* 2023 May 24;145:155594. doi:10.1016/j.metabol.2023.155594
- Varliero G, Lebre P, Stevens M, Czechowski P, Makhallanyane T, Cowan D. **The use of different 16S rRNA gene variable regions in biogeographical studies**. *Environmental Microbiology Reports* 2023 Feb;Online:1758-2229.13145. doi.org/10.1111/1758-2229.13145
- Andres JA, Czechowski P, Grey E, Saebi M, Andres K, Brown C, et al. **Environment and ship-ping drive eDNA beta-diversity among commercial ports**. *Molecular Ecology* 2023 Feb;Online. doi.org/10.1111/mec.16888

- Czechowski P, de Lange M, Knapp M, Terauds A, Stevens M. **Antarctic biodiversity predictions through substrate qualities and environmental DNA.** *Frontiers in Ecology and The Environment* 2022 Dec;20(10):550-557. doi.org/10.1002/fee.2560
- Czechowski P, Stevens MI, Madden C, Weinstein P. **Steps towards a more efficient use of chironomids as bioindicators for freshwater bioassessment: Exploiting eDNA and other genetic tools.** *Ecological Indicators* 2020 Mar;110:105868. doi.org/10.1016/j.ecolind.2019.105868
- Chang D, Knapp M, Enk J, Lippold S, Kircher M, Lister A, Czechowski P, et al. **The evolutionary and phylogeographic history of woolly mammoths: A comprehensive mitogenomic analysis.** *Scientific Reports* 2017 Mar;7:44585. doi.org/10.1038/srep44585
- Czechowski P, Clarke L, Cooper A, Stevens M. **Ground-truthing Phylotype Assignments for Antarctic Invertebrates.** *DNA Barcodes* 2017 Jan;5(1):1–13. [dx.doi.org/10.1515/dna-2017-0001](https://doi.org/10.1515/dna-2017-0001)
- Czechowski P, White D, Clarke L, McKay A, Cooper A, Stevens MI. **Age-related environmental gradients influence invertebrate distribution in the Prince Charles Mountains, East Antarctica.** *Royal Society Open Science* 2016 Dec;3(12):160296. doi.org/10.1098/rsos.160296
- Czechowski P, Clarke LJ, Cooper A, Stevens MI. **A primer to metabarcoding surveys of Antarctic terrestrial biodiversity.** *Antarctic Science* 2016 Sep;29(01):3–15. doi.org/10.1017/S0954102016000389
- Czechowski P, Clarke LJ, Breen J, Cooper A, Stevens MI. **Antarctic eukaryotic soil diversity of the Prince Charles Mountains revealed by high-throughput sequencing.** *Soil Biology and Biochemistry* 2016 Apr;95:112–21. doi.org/10.1016/j.soilbio.2015.12.013
- Alter SE, Meyer M, Post K, Czechowski P, Gravlund P, Gaines C, et al. **Climate impacts on transoceanic dispersal and habitat in gray whales from the Pleistocene to 2100.** *Molecular Ecology* 2015 Mar;24(7):1510–22. doi.org/10.1111/mec.13121
- Clarke LJ, Czechowski P, Soubrier J, Stevens MI, Cooper A. **Modular tagging of amplicons using a single PCR for high-throughput sequencing.** *Molecular Ecology Resources* 2013 Sep;14(1):117–21. doi.org/10.1111/1755-0998.12162
- Czechowski P, Sands CJ, Adams BJ, D’Haese CA, Gibson JAE, McInnes SJ, et al. **Antarctic Tardigrada: a first step in understanding molecular operational taxonomic units (MOTUs) and biogeography of cryptic meiofauna.** *Invertebrate Systematics* 2012;26(6):526. doi.org/10.1071/is12034
- Asher RJ, Maree S, Bronner G, Bennett NC, Bloomer P, Czechowski P, et al. **A phylogenetic estimate for golden moles (Mammalia, Afrotheria, Chrysochloridae).** *BMC Evol Biol* 2010;10(1):69. doi.org/10.1186/1471-2148-10-69

Awards, Fellowships, & Grants

Award	Awarding Organization	Amount	Year
Support for the SCAR Biology Symposium	Scientific Committee for Antarctic Research	\$667	2017
Student Travel Grant	Australian Government’s National Taxonomy Research Grant Program	\$1,650	2014
Natural History Grants Scheme	Sir Mark Mitchell Research Foundation	\$4,900	2013
International Post-Graduate Research Scholarship	The University of Adelaide	\$25,849 p.a.	2012

Presentations

Selected Conference Presentations

- Röhrborn K, Hoffmann A, Lorenz A, Kovacs P, Hagemann T, Stumvoll M, Czechowski P, Blüher M, Schamarek I, Rohde-Zimmermann K. **MicroRNAs extrazellulär Vesikel des Speichels assoziieren mit metabolischen Parametern, Geschmackswahrnehmung und Essverhalten bei Adipositas.** In: *Adipositas – Ursachen, Folgeerkrankungen, Therapie* 2025;19(03):190-191.

- Czechowski P, Iakovenko N, Zawierucha K, Stevens M. **Unearthed from old soils: New records of Antarctic tardigrades, nematodes, and rotifers in the Prince-Charles Mountains.** In: 2nd Australian and New Zealand Environmental DNA conference 2025.
- Czechowski P, Hoffmann A, Dommel S, Jais A, Blüher M, Klötting N. **Normal-weight offspring of parents with obesity fed with Western diets display altered gene expression.** In: 3rd International Symposium CRC 1052, 2024.
- Czechowski P. **MEDISCO - synthetic obesity transcriptome data for fast-paced analysis development.** In: Middleearth Meeting 2024.
- Czechowski P. **MEDISCO - synthetic obesity transcriptome data for fast-paced analysis development.** In: 17th Leipzig Research Festival for Life Sciences 2024.
- Czechowski P, Knapp M. **Environmental DNA needs reference data for taxonomy-based conservation policy – A case study from Fiordland, New Zealand.** In: 1st Australian and New Zealand Environmental DNA conference 2023.
- Czechowski P, Knapp M. **An estimate of the species-level fish biodiversity of Te Wāhipounamu / Aotearoa with notes on the shortcomings of local environmental DNA reference data.** In: New Zealand Ecological Society 2022 Conference.
- Czechowski P, de Lange M, Knapp M, Terauds A, Stevens M. **Antarctic biodiversity predictions through substrate qualities and environmental DNA.** In: Xth SCAR Open Science Conference 2022.
- Czechowski P, Grey-Avis E, Lodge DM. **Advancing global monitoring of ship borne invasive species through streamlined metabarcoding.** In: 10th International Conference on Marine Bioinvasions (ICMB-X) 2019.
- Czechowski P, Grey-Avis E, Lodge DM. **Advancing global monitoring of ship borne invasive species through streamlined metabarcoding.** In: 4th World Conference on Marine Biodiversity (WCMB) 2018.
- Czechowski P, Stevens M. **Environmental constraints to terrestrial eukaryote distribution in the Prince Charles Mountains (East Antarctica): exploring high throughput sequencing derived biodiversity capability.** In: XIIth SCAR Biology Symposium 2017.
- Stevens M, Czechowski P. **Environmental limits to terrestrial invertebrate distribution in the Prince Charles Mountains (East Antarctica): Exploring high throughput sequencing derived biodiversity capability.** In: XXXIV SCAR Open Science Conference 2016.
- Czechowski P, White D, Clarke L, Cooper A, Stevens M. **Insights into the soil biodiversity of the Southern Prince Charles Mountains in the context of the abiotic environment.** In: SCAR Open Science Conference and COMNAP Symposium 2014.

Seminars

- Nov 2023. *On obesogenic diet exposure of parents and sex-specific programming of overweight in mouse offspring.* Departmental Seminar, Helmholtz Institute for Metabolic, Obesity and Vascular Research, Leipzig, Germany.
- Mar 2022. *The holy grail of environmental DNA biodiversity surveys - species level identifications.* Departmental Seminar, Genetics, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany.
- Nov 2021. *Dr. Czechowski or: How I learned to stop worrying and love the environmental DNA.* Departmental Seminar, Anatomy, University of Otago, Dunedin, New Zealand.

Teaching

- **Software Carpentry: Shell, Git, Programming in R.** Helmholtz Information and Data Science Academy, online, 12–13 Feb 2024
- **Software Carpentry: Shell, Git, Programming in R.** Helmholtz Information and Data Science Academy, online, 11–12 Mar 2024

Mentoring

- **Anya Kardailsky** — Summer Student, Otago University, 2021
- **Amanda Wong** — Summer Student, Cornell University, 2019
- **Eden Zhang** — Graduate Student, University of New South Wales, 2018–2019

Service & Professional Development

Service and Outreach

- SCAR ABP, EGABI, and Ant-ICON SCAR Workshop on Essential Biodiversity Variables for Terrestrial Antarctic and Sub-Antarctic Ecosystems — Advisor, Cambridge, UK, 2024
- 2nd Australian and New Zealand Environmental DNA Conference — Reviewer, online, 2024
- 1st Australian and New Zealand Environmental DNA Conference — Organizer, online, 2023
- XXIV SCAR Open Science Conference — Reviewer, online, 2016

Professional Development

- Multivariate Statistics 1 – Principal Component Analysis and Clustering algorithms, 16-17 & 23-24 & 29-30 Nov 2023, Helmholtz Munich, Online
- Generalised Additive Models in R: A data-driven approach to estimating regression models, 20-24 Nov 2023, Physalia Courses, Online
- Mixed Models – Analysing data with repeated measures or clusters, 25-26 Apr & 02-05 May 2023, Helmholtz Munich, Online
- Exploring the Relationship Between Two Eukaryotic Genomes Using the Comparative Genome Viewer, 18 May 2023, NIH National Library of Medicine, Online
- The Carpentries Instructor Training, 20-23 Mar 2023, The Carpentries, Online
- Species Distribution Modelling Using R, 18-21 Jan 2021, Transmitting Science, Online
- Fundamentals of Population Genetics Using R, 30 Nov-11 Dec 2020, PR Statistics, Online
- Comparative Genomics, 21-25 Dec 2020, Physalia Courses, Online
- Introduction to MIG welding, 11 Aug-10 Sep 2020, Otago Polytechnic, Dunedin, Otago
- Python Machine Learning in Biology, 20-24 Jul 2020, Transmitting Science, Online
- Software Carpentry, Python and Git, 26-27 Nov 2015, University of Adelaide, South Australia
- Advanced Bioinformatics Workshop, 10-14 Nov 2014, University of Adelaide, South Australia
- Advanced Bioinformatics Workshop, 11-15 Nov 2013, University of Adelaide, South Australia
- National Bioinformatics Workshop, 5-9 Nov 2012, University of Adelaide, South Australia
- Summer School on Genome Evolution, 5-11 Sep 2010, LMU Munich, Bavaria

Peer Review

Antarctic Science (2), Conservation Genetics Resources (1), Diversity (2), Ecological Entomology (1), Ecology and Evolution (1), Freshwater Biology (1), Marine and Freshwater Research (1), Methods in Ecology and Evolution (1), Microbial Genomics (1), Molecular Ecology (1), Obesity Facts (1), Polar Biology (6), Scientific Reports (1)

Professional Memberships

Association of Polar Early Career Scientists (2015 - current) · European Society for Evolutionary Biology (2022 - current)