

ALEX NADINE POPINGA

Computational biologist

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PUBLICATIONS

Journal Articles

- Jr., C. W. Carter et al. (2022). "Multidimensional phylogenetic metrics identify Class I aminoacyl-tRNA synthetase evolutionary mosaicism and inter-modular coupling". In: *International Journal of Molecular Sciences* 23 (1520). URL: <https://doi.org/10.3390/ijms23031520>.
- Drummond, A. J. and A. Poppinga (2021). "Bayesian inference of the climbing grade scale". In: *arXiv*. URL: <https://doi.org/10.48550/arXiv.2111.08140>.
- Bouckaert, R. et al. (2019). "BEAST 2.5: An Advanced Software Platform for Bayesian Evolutionary Analysis". In: *PLoS Computational Biology* 15 (4). URL: <https://www.doi.org/10.1371/journal.pcbi.1006650>.
- Poppinga, A., J. W. Demastes, et al. (2019). "Host-parasite associations of the *Cratogeomys fumosus* species group and their chewing lice, *Geomydoecus*". In: *Therya* 10 (2). URL: <https://www.doi.org/10.12933/therya-19-739> 20ISSN%202007-3364.
- Wasef, S. et al. (2019). "Mitogenomic diversity in sacred ibis mummies sheds light on early Egyptian practices". In: *PLoS One* 14 (11). URL: <https://www.doi.org/10.1371/journal.pone.0223964>.
- Poppinga, A., T. Vaughan, T. Stadler, et al. (2015). "Inferring epidemiological dynamics with Bayesian coalescent inference: The merits of deterministic and stochastic models". In: *Genetics* 199 (2), pp. 595-607. URL: <https://www.doi.org/10.1534/genetics.114.172791>.
- Vaughan, T. et al. (2014). "Efficient Bayesian phylogenetic inference under the structured coalescent". In: *Bioinformatics* 30 (16), pp. 2272-2279. URL: <https://www.doi.org/10.1093/bioinformatics/btu201>.

Conference Proceedings

- Poppinga, A., Ant Poole, et al. (2019). "Resolving protein families using structural phylogenetics". In: *AMMA Molecular Modelling Conference*. Bintan, Indonesia.
- Poppinga, A., R. Bouckaert, and P. Wills (2018a). "A new model of amino acid substitution using iteratively added exchangeability rates to improve phylogenetic inference of aminoacyl-tRNA synthetases". In: *Te Ao Marama (Centre for Fundamental Inquiry) Meeting*. The Royal New Zealand Yacht Squadron, Auckland.
- (2018b). "Aminoacyl-tRNA synthetases: Protein structures and the dawn of the genetic code". In: *Quantitative and Computational Chemistry Student Conference*. Kioloa, Australia.
- Poppinga, A. and P. Wills (2016). "The search for simple systems: Minimal genetic information and autocatalytic sets". In: *New Zealand Astrobiology Workshop*. Kaikoura, New Zealand.
- Poppinga, A., C. W. Carter Jr., et al. (2015). "Complex phylogeny of aminoacyl-tRNA synthetases". In: *European Society for Evolutionary Biology Congress*. Lausanne, Switzerland.
- Poppinga, A., T. Vaughan, D. Welch, et al. (2015). "Stochastic population dynamics in Bayesian epidemic parameter inference with the coalescent Susceptible-Infected-Removed (SIR) model". In: *Annual Meeting of the Society for Molecular Biology and Evolution*. Vienna, Austria.

"All models are wrong, but some are useful." -George E. P. Box

VOLUNTEERING



SPCA Canine Volunteer

Socialisation and basic training

EDUCATION

Ph.D. in Computer Science

University of Auckland,
New Zealand

09 December 2019

Thesis title: *From the Origins of Life to Epidemics: Bayesian Inference, Stochastic Simulation, and Dynamics of Bioinformatic Systems*

B.Sc. in Honors Research in Biology, B.Sc. in Bioinformatics, Minor in Chemistry

University of Northern Iowa,
United States of America

05 May 2013

Thesis title: *Cophylogeny of Geomydoecus Chewing Lice and Cratogeomys Pocket Gophers of the Trans-Mexican Volcanic Belt*

AWARDS

- Doctoral scholarship, Department of Physics, University of Auckland
- Royal Society of New Zealand Marsden Fund (as PhD student), *A unified framework for phylodynamic inference of infectious diseases*
- Doctoral scholarships, Allan Wilson Centre for Molecular Ecology and Evolution (AWC)
- Summer internship scholarship, AWC
- Intercollegiate Academic Funds Research Award, University of Northern Iowa (UNI)
- College of Natural Sciences Undergraduate Research Award, UNI
- Floyd Scholarship for Undergraduate Research, UNI
- Floyd Flute Scholarship, UNI

WORK & INTERNSHIPS

Research fellow

School of Biological Sciences, University of Auckland

📅 April 2019 – August 2021

📍 Auckland, New Zealand

- Postdoctoral research in evolutionary relationships between proteins using conformations from molecular dynamics simulations

Instructor, workshop for the Institute of Environmental Science and Research (ESR) and the Ministry for Primary Industries (MPI)

Animal Health Laboratory, Wallaceville

📅 March 2019

📍 Wellington, New Zealand

- Instruction on the use and development of the software packages

Part-time data analyst

Bioinformatics Institute, University of Auckland

📅 June 2017 – July 2018

📍 Auckland, New Zealand

- Assisted in statistical analyses involving biological data as requested by Scion and the Ministry of Primary Industries (MPI)

Origins of life internship

Department of Statistics, University of Oxford

📅 May 2015 – July 2015

📍 Oxford, England

- Stochastic simulation of reaction-diffusion processes in autocatalytic molecular systems

NASA Student Airborne Research Program internship

NASA Airborne Science Program, Dryden Aircraft Operations Facility and the University of California - Irvine

📅 June 2012 – August 2012

📍 California, United States of America

- Investigation into the impact of the hydrocarbon composition of liquefied petroleum gas on the air quality in the Los Angeles Basin

Lab manager

Coevolution Laboratory, University of Northern Iowa

📅 August 2011 – December 2011

📍 Iowa, United States of America

- Analysis of mitochondrial cytochrome oxidase I (COI) genes
- Trained younger undergraduate students in techniques such as DNA extraction, purification, amplification, sequencing, and analysis

Internship in neurodegeneration

National Chengchi University

📅 July 2011 – August 2011

📍 Taipei, Taiwan

- Research on longevity in *Drosophila*: Effects of calorie restriction on metabolic pathways of the Indy gene

Internship in glycochemistry

L'École Nationale Supérieure de Chimie de Rennes (ENSCR)

📅 June 2012 – August 2012

📍 Bretagne, France

- Investigation into biosynthetic pathways to per-O-acetyl furanoses

REFEREES

Prof. Jane Allison, Postdoctoral supervisor

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@ University of Auckland, NZ

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Dr. David Saunders, Head of the Department of Biology

@ University of Northern Iowa, U. S. A.

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Dr. Emily Schaller, NASA Student Airborne Research Program Director

@ National Suborbital Education and Research Center, U. S. A.

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Dr. Theresa Spradling, Undergraduate honors research supervisor

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