Daniel B. Munro

Computational biologist at UC San Diego
dmunro@health.ucsd.edu https://danmun.ro

EDUCATION

2019 **Ph.D.** Quantitative and Computational Biology, Princeton University
Thesis: Revealing disease-relevant alteration patterns through data aggregation. Advisor: Mona Singh

2013 **B.S.** Biology, University of North Texas

RESEARCH EXPERIENCE

05/2023–Present **Bioinformatics Programmer**, UC San Diego
Continuing postdoctoral research with Abraham Palmer (UC San Diego) and Pejman Mohammadi (Seattle Children's Research Institute and University of Washington) • Quantitative genetics and regulatory genomics • Integrating genetic variation, multi-modal transcriptomics, and complex traits

03/2020–04/2023 **Postdoctoral Fellow**, Scripps Research and
Postdoctoral Scholar, UC San Diego
Advisors: Pejman Mohammadi & Abraham Palmer • Quantitative genetics and regulatory genomics • Integrating genetic variation, multi-modal transcriptomics, and complex traits

03/2019–10/2019 **Postdoctoral Associate**, New York University
Advisor: Christine Vogel • Computational research in proteomics and cancer genomics

01/2014–12/2018 **Graduate Research Assistant**, Princeton University
Advisor: Mona Singh • Computational research in cancer genomics, protein variant impact, and histological image analysis

01/2011–05/2013 **Undergraduate Research Assistant**, University of North Texas
Advisor: Qunfeng Dong • Computational microbiome research and genomics software development

PEER-REVIEWED PUBLICATIONS

JL Zhou, G de Guglielmo, AJ Ho, M Kallupi, N Pokhrel, H-R Li, AS Chitre, **D Munro**, et al. (2023). Single-nucleus genomics in outbred rats with divergent cocaine addiction-like behaviors reveals changes in amygdala GABAergic inhibition. Accepted at *Nature Neuroscience* 2023-09-06. Preprint: https://www.biorxiv.org/content/10.1101/2022.09.08.506493v2

AS Chitre, O Polesskaya, **D Munro**, R Cheng, P Mohammadi, K Holl, J Gao, et al. (2023). Exponential increase in QTL detection with increased sample size. *GENETICS*. iyad054.

S Fowler, T Wang, **D Munro**, A Kumar, AS Chitre, TJ Hollingsworth, A Garcia Martinez, et al. (2023). Genome-wide association study finds multiple loci associated with intraocular pressure in HS rats. *Frontiers in Genetics*. 13: 1029058.

D Munro, T Wang, AS Chitre, O Polesskaya, N Ehsan, J Gao, A Gusev, LC Solberg Woods, LM Saba, H Chen, AA Palmer, P Mohammadi (2022). The regulatory landscape of multiple brain regions in outbred heterogeneous stock rats. *Nucleic Acids Research*. 50 (19): 10882-10895.

JT Ash*, G Darnell*, **D Munro***, BE Engelhardt (2021). Joint analysis of gene expression levels and histological images identifies genes associated with tissue morphology. *Nature Communications.* 12 (1), 1–12.
* These authors contributed equally

D Munro, M Singh (2020). DeMaSk: A deep mutational scanning substitution matrix and its use for variant impact prediction. *Bioinformatics*. 36 (22–23): 5322–5329.

GXL Li, **D Munro**, D Fermin, C Vogel, H Choi (2020). A protein-centric approach for exome variant aggregation enables sensitive association analysis with clinical outcomes. *Human Mutation*. 41 (5): 934–945.

D Munro, D Ghersi, M Singh (2018). Two critical positions in zinc finger domains are heavily mutated in three human cancer types. *PLoS Comput Biol*. 14 (6): e1006290.

C Cohen, E Toh, **D Munro**, Q Dong, H Hawlena (2015). Similarities and seasonal variations in bacterial communities from the blood of rodents and from their flea vectors. *The ISME Journal*. 2015-01-09.

Y Gavish, H Kedem, I Messika, C Cohen, E Toh, **D Munro**, Q Dong, C Fuqua, K Clay, H Hawlena (2014). Association of host and microbial species diversity across spatial scales in desert rodent communities. *PLoS ONE*. 9: e109677.

JS Kuehn, PJ Gorden, **D Munro**, R Rong, Q Dong, PJ Plummer, C Wang, GJ Phillips (2013). Bacterial community profiling of milk samples as a means to understand culture-negative bovine clinical mastitis. *PLoS ONE*. 8: e61959.

M Zhou, R Rong, **D Munro**, C Zhu, X Gao, Q Zhang, Q Dong (2013). Investigation of the effect of type 2 diabetes mellitus on subgingival plaque microbiota by high-throughput 16S rDNA pyrosequencing. *PLoS ONE*. 8: e61516.

H Hawlena, E Rynkiewicz, E Toh, A Alfred, LA Durden, MW Hastriter, DE Nelson, R Rong, **D Munro**, Q Dong, C Fuqua, K Clay (2013). The arthropod, but not the vertebrate host or its environment, dictates bacterial community composition of fleas and ticks. *The ISME Journal*. 7: 221-223.

K Revanna, **D Munro**, A Gao, C Chiu, A Pathak, Q Dong (2012). A web-based multi-Genome Synteny Viewer for customized data. *BMC Bioinformatics*. 13: 190.

PREPRINTS

TV de Jong, Y Pan, P Rastas, **D Munro**, M Tutaj, H Akil, C Benner, et al. A revamped rat reference genome improves the discovery of genetic diversity in laboratory rats.
Preprint: https://www.biorxiv.org/content/10.1101/2023.04.13.536694v1

RE Clifford, **D Munro**, D Dochterman, P Devineni, S Pyarajan, F Telese, P Mohammadi, AA Palmer, RA Friedman. GWAS of chronic dizziness in the elderly identifies novel loci implicating MLLT10, BPTF, LINC01225, and ROS1.
Preprint: https://www.medrxiv.org/content/10.1101/2022.12.14.22283471v3

HONORS & AWARDS

2019 Runner-up, Symbiosis Competition at Imagine Science Film Festival, New York, NY, in collaboration with Jin Angdoo

2013 **National Science Foundation Graduate Research Fellowship**

2013 Phi Kappa Phi National Fellowship ($5000)

TEACHING EXPERIENCE

Spring 2016 Assistant in Instruction, “An Integrated, Quantitative Introduction to the Natural Sciences II”, Princeton University

Fall 2015 Assistant in Instruction, “An Integrated, Quantitative Introduction to the Natural Sciences I”, Princeton University

PRESENTATIONS

2022 “The regulatory landscape of multiple brain regions in outbred heterogeneous stock rats”, talk at the Complex Trait Consortium-Rat Genomics 2022 meeting, September 29, 2022

2021 “Identification of regulatory landscape in multiple brain regions of outbred heterogeneous stock rats”, talk at the Complex Trait Consortium-Rat Genomics 2021 meeting, September 1, 2021

2021, 2023 “Techniques for algorithmic graphics”, guest lecture for Honors Colloquium on Complex Systems, University of Nebraska Omaha, March 2, 2021 and March 28, 2023

2020 “Mapping eQTLs in five rat brain regions”, talk at the 6th Annual Retreat for P50 Center for GWAS in Outbred Rats, La Jolla, CA, November 2, 2020

PROFESSIONAL SERVICE & MEMBERSHIPS

Ad hoc reviewer: *Developmental Biology* (2019), *PLOS Computational Biology* (2020), *PLOS ONE* (2020), *BMC Bioinformatics* (2021), *Journal of Computational Biology* (2021), *Genome Biology* (2023), *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (2023)

American Society of Human Genetics (Since 2020)
International Society for Computational Biology (Since 2019)