### Daniel E. Cook

2850 N. Sheridan Rd. Apt 409 Chicago, IL. 60657 

### Education

**Northwestern University** 

Ph.D. Graduate Student – Interdisciplinary Program in Biological Sciences (IBiS)

Evanston, IL 2013-present

University of Iowa

B.S. Biology with Honors

Iowa City, IA May 2010

### **Experience**

### Andersen Lab, Northwestern University

Evanston, IL 2014-Present

Graduate Student

o Identified the gene and variant underlying natural variation in telomere length across the C. elegans species.

- o Assembled, organized, and processed the largest collection of C. elegans wild isolate sequence data in existence.
- o Developed several bioinformatic pipelines for processing whole-genome sequence data.
- o Created a genome-wide association portal using cloud-based services for the C. elegans community (elegansvariation.org).
- o Developed R and Python packages processing genetic data.
- Creation and maintenance of laboratory website (andersenlab.org).

### Ober Lab, University of Chicago

Chicago, IL

Research Assistant

Research Assistant

2012-2013

- Assisted with development of databases for phenotypic and genotypic data.
- o Helped disclose carrier status to individuals.

### Murray Lab, University of Iowa

Iowa City, IL

2009-2012

- o Leveraged supercomputing resources to explore maternal-fetal gene-gene interactions.
- o Conducted geographic analysis of Iowa newborn screen data.
- o Collected human placental tissue for genetic, epigenetic, and expression studies.

#### **Honors and Awards**

- o **2015** IBiS Travel Award (\$975)
- o 2015 Northwestern TGS Conference Travel Grant (\$600)
- o 2014 NSF-GRFP: National Science Foundation Graduate Research Fellowship
- o 2006 University of Iowa National Scholars Award

### **Teaching**

- o Fall 2016 Biol. Sci. 390 Advanced Molecular Biology
- o Spring 2015 Biol. Sci. 393 Genetic Analysis
- o Summer 2014-2016 IBiS Computational Biology Bootcamp

### **Computational Skills**

Projects: GitHub.com/danielecook

**Development**: R, Python, Travis-Cl

**Programming**: Python, R, Bash, Stata, git

Database: SQL, BigQuery, Google Datastore

Django, Flask, jQuery, Jekyll, HTML, Genetic Analysis: Many command-line tools (bwa, Web:

Javascript, CSS

samtools, bcftools, gatk, etc.), galaxy

Cloud: AWS, Google Cloud Platform

Other: LATEX, Slurm, Grid Engine, Nextflow, Sketch

### **Publications**

# 2016 The genome-wide abundance and distribution of transposons across the *Caenorhab-ditis elegans* species [Pending]

Laricchia, Kristen M, Stefan Zdraljevic, **Daniel E Cook**, and Erik C Andersen **Dec. 2016**.

# Conserved Natural Genetic Variation in Topoisomerase II Affects Response to a Class of Chemotherapeutics [Pending]

Zdraljevic, Stefan, **Daniel E Cook**, Samuel K Rosenburg, Hannah S Seidel, and Erik C Andersen **Dec. 2016**.

# Natural variation in *Caenorhabditis* reveals role for heritable small RNAs in nematode benzimidazole resistance [Pending]

Zamanian, Mostafa, **Daniel E Cook**, Daehan Lee, Samuel K Rosenburg, Junho Lee, and Erik C Andersen **Dec. 2016**.

### VCF-kit: Assorted utilities for analyzing genetic variation [Accepted]

Cook, Daniel E and Erik C Andersen

Oct. 2016 Bioinformatics.

#### CeNDR, the Caenorhabditis elegans natural diversity resource

Cook, Daniel E, Stefan Zdraljevic, Joshua P Roberts, and Erik C Andersen

Oct. 2016 Nucleic Acids Research. PMID: 27701074 DOI: 10.1093/nar/gkw893.

### The Genetic Basis of Natural Variation in Caenorhabditis elegans Telomere Length

Cook, Daniel E, Stefan Zdraljevic, Robyn E Tanny, Beomseok Seo, David D Riccardi, Luke M Noble, Matthew V Rockman, Mark J Alkema, Christian Braendle, Jan E Kammenga, John Wang, Leonid Kruglyak, Marie-Anne Félix, Junho Lee, and Erik C Andersen

Sept. 2016 Genetics (204(1):371-83). PMID: 27449056 DOI: 10.1534/genetics.116.191148.

# 2015 DYRK1A controls the transition from proliferation to quiescence during lymphoid development by destabilizing Cyclin D3

Thompson, Benjamin J, Rahul Bhansali, Lauren Diebold, **Daniel E Cook**, Lindsay Stolzenburg, Anne-Sophie Casagrande, Thierry Besson, Bertrand Leblond, Laurent Désiré, Sébastien Malinge, and John D Crispino **2015** *Journal of Experimental Medicine* 212.6. DOI: 10.1084/jem.20150002.

# 2013 The influence of maternal disease on metabolites measured as part of newborn screening

Ryckman, Kelli K, Oleg A Shchelochkov, **Daniel E Cook**, Stanton L Berberich, Sara Copeland, John M Dagle, and Jeffrey C Murray

**Sept. 2013** The J. of Maternal-Fetal & Neonatal Medicine (26(14):1380-3). PMID: 23550828 DOI: 10.3109/14767058.2013.791267.

#### The heritability of metabolic profiles in newborn twins.

Alul, Farah Y, **Cook, Daniel E**, Oleg A Shchelochkov, Lauren G Fleener, Stanton L Berberich, Jeffrey C Murray, and Kelli K Ryckman

Mar. 2013 Heredity (110(3):253-8). PMID: 23149456 DOI: 10.1038/hdy.2012.75.

# Clinical and environmental influences on metabolic biomarkers collected for newborn screening

Ryckman, Kelli K, Stanton L Berberich, Oleg A Shchelochkov, **Daniel E Cook**, and Jeffrey C Murray **Jan. 2013** *Clinical Biochemistry* (46(1-2):133-8). PMID: 23010448 DOI: 10.1016/j.clinbiochem.2012.

### Generating Manhattan plots in Stata

Cook, Daniel E, Kelli R Ryckman, and Jeffrey C Murray 2013 Stata Journal (13(2):323-328).

### 2012 Replication of clinical associations with 17-hydroxyprogesterone in preterm newborns

Ryckman, Kelli K, **Daniel E Cook**, Stanton L Berberich, Oleg A Shchelochkov, Susan K Berends, Tamara Busch, John M Dagle, and Jeffrey C Murray

Jan. 2012 J. of Ped. Endo. and Met. (25(3-4):301-5). PMID: 22768660 DOI: 10.1515/jpem-2011-0456.

### **Presentations**

### 2016 The genetic basis of natural variation in *C. elegans* telomere length

Selected Talk - International Conference on Quantitative Genetics, Madison WI.

### The C. elegans natural diversity resource

Selected Talk – Midwest *C. elegans* meeting Van Andel Research Institute, Grand Rapids, MI.

# Variation in *pot-2* associated with differences in telomere length in *C. elegans* Talk – OncDevBio Departmental Seminar, Northwestern University.

# 2015 Genome-Wide and Species-Wide Variation in *C. elegans* Reveals Association of Telomere Length With Population Differences in *pot-2*

Selected Talk – International Worm Meeting 2015, UCLA.

#### **Examining Genomic Variation in** *C. elegans*

Talk – OncDevBio Departmental Seminar, Northwestern University.

### 2012 Mapping Newborn Screen Data: A Geographic Exploration

Poster - Pediatric Academic Societies Meeting, Boston, MA.

### **Professional Activities**

o 2015, 2016 - NSF Data Science Workshop @ University of Washington

### Software

My Github profile features additional projects I have been involved in as well: GitHub.com/danielecook

### Python Packages

- o VCF-kit Assorted utilities for analyzing genetic variation.
- o CeNDR Web-based portal written in Flask. Provides users interactive interface for browsing and ordering *C. elegans* strains, examining their genetic variation, and performing genome-wide association using cloud-based pipelines. (elegansvariation.org).

#### R Packages

- o rdatastore provides an R-based interface for Google Datastore.
- o memoise [contribution] developed functionality for caching function results (memoisation) using cloud-based environments such as Amazon S3.

### Stata Programs

- o manhattan Generation of Manhattan plots.
- o ccmatch Utility for case/control studies.

### Mentorship

**Joshua Roberts**, **2015-2016** - *Computer Science (CS) Undergraduate* - Helped further develop Python and web-application development skills. Joshua now works at Motivate International.

**Rohit Rastogi, 2016-present** - *CS Undergraduate* - Fostered development of programming skills in R and Python.

**Michael Jiang, 2016-present** - *CS Undergraduate* - Furthered knowledge of web development, programming, and understanding of SQL databases.

### **Volunteer Activities**

Americorps Boston, MA
Volunteer 2010-2011

- Worked for ten months on a team with 15 fellow volunteers at the Maurice J. Tobin K-8 school.
- o Tutored and mentored a 6<sup>th</sup>-grade classroom.
- Helped run an after-school program in partnership with community organizations.

**Table-To-Table (2007-2010)** - Salvaged food every week from grocery stores and distributors in central lowa for distribution at area food pantries.

**Appalachia Service Project** - Went on eight annual one-week trips during high-school and college to make homes safer, warmer, and drier for disadvantaged families in the Appalachian mountains of Kentucky and Tennessee

**Alpha Phi Omega** - Member, 3.5 years; Engaged in a large variety of volunteer work, including performing environmental cleanups and teaching first-aid.