



## Erik C. Andersen

**Assistant Professor**  
**Northwestern University**  
Department of Molecular Biosciences

2205 Tech Drive  
Evanston, IL 60208-3500  
Office: 847-467-4382  
Lab: 847-467-4264  
Fax: 847-491-4461  
erik.andersen@northwestern.edu  
[www.andersenlab.org](http://www.andersenlab.org)

**Research Interest:** Understanding the genetic basis of complex traits using high-throughput phenotyping, molecular genetics, and computational tools

### Education:

- 2008 - 2013 Post-doctoral fellow  
Princeton University, Princeton, NJ  
Advisor: Dr. Leonid Kruglyak
- 2000 - 2008 Ph.D. in Biology  
Massachusetts Institute of Technology (MIT), Cambridge, MA  
Advisor: Dr. H. Robert Horvitz  
Dissertation: The synthetic Multivulva genes and their suppressors regulate opposing cell fates through chromatin remodeling
- 1996 - 2000 B.S. in Biological Sciences with departmental honors  
Stanford University, Stanford, CA  
Advisor: Dr. Matthew P. Scott  
Dissertation: *in vivo* analysis of *Drosophila* heart-tube formation

### Academic Appointments:

- 2013 - Assistant Professor of Molecular Biosciences, Northwestern University  
Full Member of the Robert H. Lurie Comprehensive Cancer Center  
Member of the Chemistry of Life Processes Institute  
Preceptor for the Interdisciplinary Biological Sciences Graduate Program  
Preceptor for the Northwestern Univ. Interdepartmental Neuroscience Grad. Program

### Honors and Awards:

- 2015 - 2017 March of Dimes Basil O'Connor Research Scholar  
2014 - 2018 Pew Scholar in the Biomedical Sciences  
2012 - 2013 Howard Hughes Medical Institute Post-doctoral Fellow  
2011 - 2012 National Cancer Institute Post-doctoral Fellow  
2009 - 2011 Ruth L. Kirschstein National Research Service Award Recipient  
2005 - 2006 Anna Fuller Cancer Research Fellowship  
2000 Firestone Medal for Excellence in Undergraduate Research  
1999, 1998 Howard Hughes Medical Institute Summer Research Fellowship  
1998 Stanford University Undergraduate research small grant recipient

---

**Publications** *undergraduate co-authors in italics*, corresponding authors underlined

1. Balla K, **Andersen EC**, Kruglyak L, Troemel E. (2015)  
A wild *C. elegans* strain has enhanced epithelial immunity to a natural microsporidian parasite.  
*PLoS Pathogens*. (in press)
2. Etienne V\*, **Andersen EC\***, Ponciano JM, Blanton D, Cadavid A, Joyner-Matos J, Matsuba C, Tabman B, Baer CE. (2014)  
The Red Death Meets the Abdominal Bristle: Polygenic Mutation for Susceptibility to a Bacterial Pathogen in *Caenorhabditis elegans*. *Evolution* Dec 12. doi: 10.1111/evo.12585  
\*equal contribution
3. Shimko TC, **Andersen EC**. (2014)  
*COPASutils*: an R package for reading, processing, and visualizing data from COPAS large-particle flow cytometers. *PLoS One* Oct 20;9(10):e111090
4. **Andersen EC**, Bloom JS, Gerke JP, Kruglyak L. (2014)  
The neuropeptide receptor *npr-1* is a major determinant of *Caenorhabditis elegans* growth and physiology. *PLoS Genetics* 10(2):e1004156
5. Felix MA, Jovelín R, Ferrari C, Han S, Cho YR, **Andersen EC**, Cutter AD, Braendle C. (2013)  
Species richness, distribution and genetic diversity of *Caenorhabditis* nematodes in a remote tropical rainforest. *BMC Evolutionary Biology* 13(10):
6. Ghosh R, **Andersen EC**, Shapiro JA, Gerke JP, Kruglyak L. (2012)  
Natural variation in a chloride channel subunit confers avermectin resistance in *C. elegans*. *Science* 335(6068): 574-578.
7. **Andersen EC\***, Gerke JP\*, Shapiro JA\*, Crissman JR, Ghosh R, Bloom JS, Felix MA, Kruglyak L. (2012) Chromosome-scale selective sweeps shape *Caenorhabditis elegans* genomic diversity  
*Nature Genetics* 44(3): 285-290. \*equal contribution
8. **Andersen EC**. (2011) PCR-directed *in vivo* plasmid construction using homologous recombination in baker's yeast. *Molecular Methods for Evolutionary Genetics*, 772; 409-421.  
\*Invited book chapter
9. Raj A, Rifkin SA, **Andersen EC**, van Oudenaarden A. (2010)  
Variability in gene expression underlies incomplete penetrance. *Nature* 463(7283): 913-918.
10. Bessler JB, **Andersen EC**, Villeneuve AB. (2010)  
Differential localization and independent acquisition of the H3K9me2 and H3K9me3 chromatin modifications in the *Caenorhabditis elegans* adult germ line. *PLoS Genetics* 6(1): e1000830.
11. Reddy KC\*, **Andersen EC\***, Kruglyak L, and Kim DH. (2009)  
A polymorphism in *npr-1* is a behavioral determinant of pathogen susceptibility in *C. elegans*. *Science* 323(5912): 382-384. \*equal contribution
12. **Andersen EC**, Saffer AM, and Horvitz HR. (2008)  
Multiple levels of redundant processes inhibit *Caenorhabditis elegans* vulval cell fates. *Genetics* 179(4): 2001-2012.

13. **Andersen EC** and Horvitz HR. (2007)  
Two *C. elegans* histone methyltransferases repress *lin-3* EGF transcription to inhibit vulval development. *Development* 134(16): 2991-2999.
14. Reddien PW, **Andersen EC**, *Huang M*, and Horvitz HR. (2007)  
DPL-1 DP, LIN-35 Rb, and EFL-1 E2F act with the MCD-1 Zinc-finger protein to promote programmed cell death in *C. elegans*. *Genetics* 175(4): 1719-1733.
15. **Andersen EC**, Lu X, and Horvitz HR. (2006)  
*C. elegans* ISWI and NURF301 antagonize an Rb-like pathway in the determination of multiple cell fates. *Development* 133(14): 2695-2704.
16. Furlong EE, **Andersen EC**, Null B, White KP, and Scott MP. (2001)  
Patterns of gene expression during *Drosophila* mesoderm development. *Science* 293(5535): 1629-1633.

#### ***In preparation:***

1. **Andersen EC**, *Shimko TC*, Crissman JR, Ghosh R, Gerke JP, Seidel HS, Kruglyak L. (2015)  
A powerful new quantitative genetics platform using *C. elegans* high-throughput fitness assays combined with a large collection of recombinant strains.
2. Sterken MG, Snoek LB, Kammenga JE, **Andersen EC**. (2015)  
The laboratory domestication of *C. elegans*.

---

## **Presentations**

### **Invited departmental seminars and conference presentations:**

- 2014 Northwestern Institute on Complex systems, Northwestern University, Evanston, IL  
Fondation de Treilles: Revisiting the roles of phenotypic plasticity in evolution, Provence, France  
Biology Department, Marquette University, Milwaukee, WI  
Pharmacogenomics group, University of Chicago, Chicago, IL
- 2013 Quantitative genetics workshop, 19th International *C. elegans* meeting, UCLA, Los Angeles, CA
- 2012 Molecular Bioscience Department, Northwestern University, Evanston, IL  
Program in Systems Biology, University of Massachusetts Medical School, Worcester, MA  
Biology Department, Dartmouth University, Hanover, NH  
Human Genetics Department and Life Sciences Institute, University of Michigan, Ann Arbor, MI  
Genetics Department, University of Georgia, Athens, GA  
Biology Department, Case Western Reserve University, Cleveland, OH  
Biology Department and BioDesign Institute, Arizona State University, Phoenix, AZ  
Center for Computational and Integrated Biology, Rutgers University, Camden, NJ  
Biology Department, University of Florida, Gainesville, FL
- 2011 Evolution workshop, 18th International *C. elegans* meeting, UCLA, Los Angeles, CA  
Laboratory of Toxicology, NIEHS, Research Triangle Park, NC
- 2010 Institute for Evolutionary Biology Department, University of Edinburgh, Edinburgh, UK
- 2008 Featured talk at *C. elegans* Aging, Stress, and Pathogenesis meeting, Madison, WI
- 2000 Undergraduate research symposium, Stanford University, Stanford, CA

**Contributed presentations:** (\*selected for oral presentation)

- 2013 \*19th International *C. elegans* meeting, UCLA, Los Angeles, CA  
Society for Molecular Biology of Evolution, Chicago, IL
- 2012 \*Evolutionary biology of *Caenorhabditis* and other nematodes meeting, CSHL, NY
- 2011 \*18th International *C. elegans* meeting, UCLA, Los Angeles, CA  
18th International *C. elegans* meeting (poster), UCLA, Los Angeles, CA
- 2010 \*Evolutionary biology of *Caenorhabditis* and other nematodes meeting, Hinxton, UK  
Evolutionary biology of *Caenorhabditis* and other nematodes meeting (poster), Hinxton, UK  
Cold Spring Harbor Labs Automated Imaging and High-throughput Phenotyping, CSHL, NY
- 2009 \*17th International *C. elegans* meeting, UCLA, Los Angeles, CA  
Gordon Research Conference on Quantitative Genetics and Genomics, Galveston, TX
- 2007 Department of Biology Annual Retreat, MIT, \*\* poster prize winner
- 2006 *C. elegans* Evolution and Development meeting, Univ. of Wisconsin, Madison, WI
- 2005 \*15th International *C. elegans* meeting, UCLA, Los Angeles, CA  
Chromatin Structure and Function meeting, Nassau, Bahamas
- 2004 East Coast *C. elegans* meeting, Yale, New Haven, CT
- 2003 \*14th International *C. elegans* meeting, UCLA, Los Angeles, CA
- 2002 East Coast *C. elegans* meeting, University of New Hampshire, Durham, NH

---

**Grants and Fellowships****Awarded:**

- 2015 - 2017 March of Dimes Basil O'Connor Starter Research Grant  
*Identification of hookworm anthelmintic resistance genes to ameliorate maternal and infant anemia*  
PI (\$150,000)
- 2014 - 2018 National Institutes of Health [1 R01 GM107227]  
*Direct determination of the distribution of fitness effects of spontaneous mutations*  
consortium PI (\$360,000) with Dr. Charlie Baer (University of Florida)
- 2014 - 2018 Pew Charitable Trust, Scholars Program in the Biomedical Sciences  
*Elucidating the genetics of anthelmintic resistance in nematode-borne neglected tropical diseases*  
PI (\$240,000)
- 2014 - 2016 Chicago Biomedical Consortium, Catalyst Grant  
*Uncovering "missing heritability" in an experimentally tractable model organism*  
Co-PI (\$120,000) with Dr. Ilya Ruvinsky (University of Chicago)
- 2013 - 2014 American Cancer Society, Institutional Research Grant [93-037-18]  
*Elucidating the genetic causes of variation in chemotherapy-based toxicity*  
PI (\$30,000)
- 2013 - 2014 Chemistry of Life Processes, Chairman's Innovation Award  
*Using perturbations of heavy metal homeostasis to treat nematode-borne neglected tropical diseases*  
Co-PI (\$28,000) with Dr. Thomas O'Halloran (Northwestern)

**Pending:**

- 2015 National Institutes of Health Director's New Innovator Award
- 2015 American Cancer Society Research Scholar Grant

---

## Teaching

**Courses:**

- 2015 Genetic Analysis (Prog. in Biological Sciences 393-0, Spring, 25-30 students expected)
- 2014 *Guest Lecture:* Eukaryotic Molecular Biology (IBiS402, 16 students) - *Quantitative genetics*  
 Computational Biology Bootcamp (IBiS, 16 students) - *Command-line utilities and R*  
[www.GitHub.com/AndersenLab/IBiS-Bootcamp](http://www.GitHub.com/AndersenLab/IBiS-Bootcamp)  
*Guest Lecture:* IBiS BioEthics class (IBiS423, 41 students) - *Ethics of peer review*
- 2013 *Guest Lecture:* Eukaryotic Molecular Biology (IBiS402, 24 students) - *Quant. genetics*
- 

## Mentoring

**Post-doctoral:**

- Mostafa Zamanian (2014 - ), Ph.D. from Iowa State University, advisor Dr. Timothy Day  
*Funded by the Bill and Melinda Gates Foundation*
- Bryn Gaertner (2014), Ph.D. from University of Oregon, advisor Dr. Patrick Phillips

**Graduate:**

- Daniel Cook (2014 - ), Ph.D. student, Driskill Graduate Program  
*Funded by a National Science Foundation Pre-doctoral Fellowship*
- Stefan Zdravljic (2014 - ), Ph.D. student, Interdisciplinary Biological Sciences Program
- Lucie Bastin-Heline (2014), Master's exchange student, Ecole Normale Superior, Paris, France

**Additional graduate rotation students:**

- Ryan Abdella (Winter, 2015), IBiS
- Erin Baker (Fall, 2014), IBiS
- Alex Karge (Spring, 2014), IBiS
- Saiorse McSharry (Winter, 2014), IBiS
- Amy Nilles (Fall, 2013), IBiS
- Ian Wolff (Summer, 2013), IBiS

**Undergraduate:**

- Annika Zhang (2014 - , Class of 2018), Biological Sciences Major
- Tyler Shimko (summers 2012, 2013, 2014, University of Utah Class of 2015), Biology Major  
*Barry Goldwater Scholarship, Myriad Academic Scholarship,*  
*Thomas Verender Hanks Scholarship*
- Mazeed Aro-Lambo (2014 - , Class of 2017), Biological Sciences Major  
*2014 NU Bioscientist Summer Grant recipient*
- Stevie Hippleheuser (2014 - , Class of 2017), Biological Sciences Major  
*2014 Weinberg College Summer Grant recipient*
- Hillary Tsang (2013 - , Class of 2016), Biological Sciences Major  
*2014 Summer URG recipient, 2014 Academic URG recipient*
- Lautaro Clienti (2013 - , Class of 2017), Mechanical Engineering Major  
*2014 Academic URG recipient*
- Kreena Patel (2013 - , Class of 2015), Biological Sciences and Psychology Double Major  
*2014 Academic URG recipient*
- Zifan Xiang (2014 - , Class of 2016), Biomedical Engineering Major
- Stephen Chan (2013 - 2014, Class of 2014), Computer Science Major  
*2013 Summer URG recipient*

**K-12 lab experiences:**

Lauren Mann, Oak Park and River Forest High School (2014-2015 academic year)

Jacob Cruger, Latin School of Chicago (summers 2013, 2014)

Gina Liu, Illinois Math and Science Academy (2013-2014 academic year)

**Ph.D. Thesis committee memberships:**

Rose Njoroge (advisor, Sarki Abdulkadir – Driskill Graduate Prog., Feinberg School of Medicine), 2014 -

Keila Torre-Santiago (advisor, Sadie Wignall) 2014 -

Aaron Sue (advisor, Rick Morimoto), 2014 -

Kristen Larrichia (advisor, Nyree Zerega – Program in Plant Biology and Conservation), 2014 - 2015

Arianne Rodriguez (advisor, Yun Wang), 2014 (Transferred to DGP)

Ritika Giri (advisor, Richard Carthew), 2013 -

Lilien Voong (advisor, Alec Wang), 2013 -

---

**Service****Ongoing:**

2014 - Editorial Board Member for Trends in Genetics

2013 - IBiS Graduate Admissions committee

**Professional:**

2015 Organizing committee for the 19th annual International *C. elegans* meeting

2014 Panelist, NUIN Post-doc Association, *Interviews and Start-up packages*

Poster judge, Northwestern Undergraduate Research Symposium

Panelist, Pathways to the Professoriate, *How to prepare for a job interview?*

2013 Poster judge, Northwestern Undergraduate Research Symposium

Panelist, Bioscientist Freshman seminar; *How to find a research lab?*

Poster judge, 19th International *C. elegans* meeting - Evolution and Genomics section

**Departmental:**

2014 Departmental Review committee

Co-chair, IBiS Retreat organizing committee

Qualifying examination committee (Nick Timkovich, Amaral lab)

Qualifying examination committee (Aaron Sue, Morimoto lab)

Qualifying examination committee (Arianne Rodriguez, Wang lab)

Qualifying examination committee (Kristen Larrichia, Zerega lab)

2013 Qualifying examination committee (Lilien Voong, Wang lab)

Qualifying examination committee (Ritika Giri, Carthew lab)

**Reviewing activity: Academic Journals**

*Biological Journal of the Linnean Society, BMC Genetics, BMC Genomics, Cell, Development, EMBO, Genes and Development, Genetics, Genome Research, Heredity, Nature, Nature Scientific Reports, Nature Genetics, PLoS Genetics, PLoS ONE, PNAS, Science*

**Reviewing activity: Grants and fellowships**

2014 *Ad hoc* reviewer for Human Frontiers Science Program

2014 *Ad hoc* reviewer for National Science Foundation CREST Awards

**Membership in Professional Societies:**

Genetics Society of America, member

Society of Molecular Biology and Evolution, member

---

**Synergistic Activities and Outreach****K-12 Outreach**

2014            Mentored Lauren Mann from Oak Park and River Forest High School on iodine sensitivity

2014            Co-organized with Jacob Cruger nematode collections with the Punahou School, Hawaii

2009            Organized nematode collections with Vassalboro Community School, Maine