

Dana L. Miller

curriculum vitae

1. Personal data

Born: Garden City, Kansas, USA
Birthdate: 11 May 1976

2. Education

BS University of Denver (1998), *summa cum laude*
PhD The Johns Hopkins University (2003)

3. Postgraduate training

2003-2010 Postdoctoral Research Fellow, Fred Hutchinson Cancer Research Center.
Division of Basic Sciences. Seattle, WA.

4. Faculty positions held

2010- Assistant Professor, University of Washington School of Medicine.
Department of Biochemistry. Seattle, WA.
2010- UW Molecular and Cellular Biology graduate program
2010- UW Neurobiology graduate program
2010- UW/FHCRC Cancer Consortium
2014- UW Center for Ecogenetic and Environmental Health

5. Hospital positions held

None

6. Honors

2015 NIH ONES (Outstanding New Environmental Scientist) Award
2011 Ellison Medical Foundation New Scholar in Aging
2010 Nathan Shock Center Junior Faculty Award
2009 NIH K99/R00 Pathway to Independence Award
2005 NIH NRSA Fellowship
2005 NIH Loan Repayment Program Award
1997 Phi Beta Kappa, Gamma Chapter of Colorado
1997 Golden Key National Honor Society Scholarship Winner
1994 National Merit Scholarship Finalist

7. Board certifications

None

8. Current licenses to practice

None

9. Professional organizations

Society for Toxicology
Society for Neuroscience
Genetics Society of America
Society for Developmental Biology
Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)
American Aging Association
American Society for Cell Biology

10. Teaching responsibilities

UNDERGRADUATE AND GRADUATE COURSES AT UW:

BIOC441 (2014-2015): Upper division undergraduate lecture course for Biochemistry majors. I gave 13 lectures, lead weekly office hour, helped write all three exams, and co-lead AA section. Co-taught with Drs. Alex Merz and Suzanne Hoppins. 249 students.

BIOC 533 (autumn quarter, 2014-present): required course for first-year graduate students in Biochemistry and BPSD (Biological Physics, Structure, and Design). I gave several lectures, then coordinated peer-review of grant draft and final mock study section of final applications. All eligible students submit application for NSF GRFP application. 5-25 students each quarter.

Students awarded GRFP Honorable Mention: Christina Faller (2015), Brianna King (2015), Robert Langan (2015).

BIOC441 (2013-2014): Upper division undergraduate lecture course for Biochemistry majors. I gave 13 lectures, co-taught with Dr. Alex Merz. 236 students.

BIOC 542 (2013): Required literature review and seminar series for first-year Biochemistry graduate students. Co-taught with Drs. Larry Loeb, Ted Young, Richard Palmiter, and Michael Ailion. 4 students.

BIOC 441 (2012-2013): Upper division, undergraduate lecture course for Biochemistry majors. I gave 8 lectures, co-taught with Drs. Bill Parson and Alex Merz. 258 students.

BIOC/BMSD 540 (2010, 2011, 2012, 2013): Initiated course component to have first-year graduate students from Biochemistry and Biomolecular Structure and Design (BMSD) programs complete and submit NSF GRFP applications. 4-15 students each quarter.

Students awarded GRFP: Jason Klima (2014), Brian Koepnick (2014), Michelle Giamarco (2013).

Students awarded GRFP Honorable Mention: Brian Koepnick (2013), Joseph Horsman (2012), Katja Dove (2012), Cassie Bryan (2012).

BIOC 541 (2011, 2012, 2013): Literature review for first-year Biochemistry graduate students. 4-12 students each quarter.

MCB Literature Review (2011, 2012): Hosted discussion of scientific literature by first-year graduate students in the Molecular and Cellular Biology Program. 15-25 students each quarter.

GRADUATE STUDENT TRAINEES:

Katherine Manbeck, UW Neurobiology. 2013-2015 (expected MS defense summer 2015).

Accepted into UW Clinical Psychology PhD program.

Best graduate student talk runner up – 2015 Society for Developmental Biology Northwest Regional Meeting

Cellular and Molecular Biology training grant awardee

Nicole Iranon, UW Molecular and Cellular Biology. 2012-

NSF Graduate Research Fellowship Program (GRFP) award recipient

Joseph Horsman, UW Biochemistry. 2011-

Best talk – 2014 C. elegans Aging, Stress, Metabolism, Pathogenesis, and Small RNAs meeting

Genetic Approaches to Aging training grant

HHMI/UW Molecular Medicine Scholar award

Cellular and Molecular Biology training grant

NSF GRFP Honorable mention

Emily Fawcett, UW Molecular and Cellular Biology. 2011-2015 (PhD defense date scheduled Aug 2015).

Best poster – 2014 Society for Developmental Biology NW Regional meeting.
Honorable mention, best talk award – 2014 C. elegans Aging, Stress, Metabolism, Pathogenesis, and Small RNAs meeting
DeLill Nasser Award for Professional Development in Genetics – Genetics Society of America.
Amgen Scholars Alumni Travel Award
Best graduate student talk, 2013 Society for Developmental Biology NW Regional meeting
Developmental Biology training grant
NSF GRFP Honorable mention

POSTDOCTORAL FELLOWS:

Stacy Alvares, PhD. 2013-
Hannah Chapin, PhD. 2013-2015.
April Reedy, PhD. 2012-2013
Kate Stoll, PhD. 2011.

UNDERGRADUATE RESEARCH TRAINEES:

Megan Okada. 2012-2015.
Angel Burford 2014-
David Camacho 2014-
Christie Yeh, UW Biochemistry 2014-
Soroosh Noorbakhsh, UW Neurobiology 2014
Darren Lee Pouv, UW Biochemistry 2014
Jenna Johnson, Amgen Scholar from Luther College 2014
Jennifer Chou, UW Biochemistry 2013-2014
Andjela Nemcevic, UW Molecular, Cellular, and Developmental Biology 2013-2014
Brian Nguyen, UW Biochemistry 2013-2014
Ryan Tam, UW Biochemistry 2013-2014
Courtnee Clough, UW Molecular Cellular, and Developmental Biology 2013-2014
Brandy Olin, UW Molecular Cellular, and Developmental Biology 2013-2014
Megan Mayer, UW Biochemistry 2013
Tara Chandran, UW Biology 2011-2012
Jill Groulik, UW Biochemistry 2010-2012

HIGH SCHOOL INTERNS

Prachi Keni, Lakeside High School.
Adrian Rodriguez, Lakeside High School. Entered Ph.D. program at Yale.

GRADUATE ROTATION STUDENTS

Abigail Keller, Molecular and Cellular Biology, Fall 2014
Rachel Hutto, Biochemistry, Fall 2014
Brandon Frenz, Biochemistry, Fall 2013
Katherine Manbeck, Neurobiology and Behavior, Spring 2013
Sarah Pickett, Neurobiology and Behavior, Winter 2013
Rob Lawrence, Molecular and Cellular Biology, Spring 2012
Cassie Brian, Biochemistry, Winter 2012
Nicole Iranon, Molecular and Cellular Biology, Fall 2011
Henry Olson, Biochemistry, Fall 2011
Joseph Horsman, Biochemistry, Winter 2011
Emily Fawcett, Molecular and Cellular Biology, Winter 2011

Katja Dove, Biochemistry, Fall 2010

GRADUATE STUDENT THESIS COMMITTEES:

Katherine Gumps, Molecular and Cellular Biology (Bai Lab).
Chelsey Spragg, Molecular and Cellular Biology (Emerman Lab).
Scott Delbecq, Biomolecular Structure and Design (Klevit Lab).
Zoi Villasana, Molecular and Cellular Biology (Lagunoff Lab).
Katja Dove, Biochemistry (Klevit Lab).
Kate Bayliss, Molecular and Cellular Biology (Loeb Lab).
Kim Fong, Biochemistry (Davis Lab).
Vinny Vittel, Biochemistry (Klevit Lab) – reading committee – defended 13 Mar 2015.
Ben Reed, Pharmacology (Gardner Lab) – reading committee – defended 25 Feb 2015.
Ken Lindsay, Biochemistry (Hurley Lab) – reading committee – defended 21 Nov 2014.
Matt Iadanza, Biochemistry (Gonen Lab) – defended 11 April 2014.
Michelle Oeser, Molecular and Cellular Biology (Gardner Lab) – GSR and reading committee – defended 29 May 2014.
George Sutphin, Molecular and Cellular Biology (Kaeberlein Lab) – GSR – defended 25 May 2012.
Joel Rosenbaum, Pharmacology (Gardner Lab) – GSR – defended 27 July 2011.
Allison Brooks, Molecular and Cellular Biology (van Gilst Lab) – reading committee – defended 12 Dec 2011.

11. Editorial Responsibilities

Editorial Board, Journal of Gerontology Series A: Biological Sciences.
Ad Hoc Reviewer: *Antioxidants and Redox Signalling, Aging Cell, Developmental Biology, Nature Communications, PLoS Genetics, PLoS ONE, Development, British Journal of Pharmacology, Nucleic Acids Research*

12. Special National Responsibilities

2015 Ad-hoc member NIH ONES Review study section.
2015 Ad-hoc member NIH Cellular Mechanisms of Aging and Disease (CMAD) study section.
2014 Scientific organizer, with Dr. Sean Curran, USC. Aging, Stress, Metabolism, Pathogenesis, and Small RNAs topic meeting in Madison, WI
2012 Organizing committee for Aging, Stress, Metabolism, Pathogenesis, and Small RNAs topic meeting
2012 Early career reviewer, NIH Cellular Mechanisms of Aging and Disease (CMAD) study section
2011- National Scientific Advisory Council for the American Federation of Aging Research (AFAR)

13. Special Local Responsibilities

Department of Biochemistry Junior Faculty Search Committee, 2014 and 2011
Developmental Biology Training Grant Selection Committee, 2013
Molecular and Cellular Biology Graduate Program Admissions Committee, 2013
Department of Biochemistry Graduate Program Admissions Committee, 2012, 2013, and 2014
Neurath Lecture Selection Committee: 2011-2012, 2012-2013, 2013-2014, and 2014-2015
Cellular and Molecular Biology Training Grant Selection Committee, 2011
Department of Biochemistry Seminar Committee: 2010-2011, 2011-2012, 2012-2013, 2013-2014, and 2014-2015.

Organizer for Seattle Area *C. elegans* Meeting, a monthly research conference with 11 area lab groups (<http://depts.washington.edu/gasgenes/projects/seattle-worm-meeting/>)
Grant reviewer, Murdoch Foundation
Grant reviewer, UW Nathan Shock Center for Excellence in the Biology of Aging
Grant reviewer, UW Royalty Research Fund
Grant reviewer, UW / FHCRC Cancer Consortium
Convener, UW Gerosciences Peer Mentoring Group

14. Research funding

Active

2015-2020
R01 ES024958 (PI)
NIH/NIEHS ONES (Outstanding New Environmental Scientist) Award.
Mechanisms of hydrogen-sulfide effects on the epigenetic landscape.
\$428,813 direct costs for Year 1 budget

2015-2020
R01 AG044378 (PI)
NIH/NIA
"Mechanisms integrating hypoxia response with proteostasis"
\$205,000 direct costs for Year 1 budget

Completed

2014-2015
Royalty Research Fund (PI)
"Revealing Rheb-1's role in nutrient sensing and aging"
\$40,000 total direct costs

2011-2015
Ellison Medical Foundation New Scholars in Aging (PI)
"Understanding the Effects of Hydrogen Sulfide on Protein Homeostasis and Aging"
\$400,000 total direct costs

NIGMS R01GM088055 (Klevit, PI)
Collaborative structure / function investigation of novel ubiquitin enzymes using *C. elegans*.
Role: collaborator

2011-2012
P30 CA015704 (Pilot Award, Cancer Center Support Grant)
Mechanisms of TOR kinase role in cellular adaptations to hypoxia
\$10,000 total direct costs

2010-2013
NIA R00 AG033050 (independent phase)
"Mechanism of the response to hydrogen sulfide"
\$747,000 total costs

2010-2012
Nathan Shock Center Junior Faculty Award
Mechanisms of environmental influence on protein homeostasis
\$68,000 total direct costs

2009-2010
NIA K99 AG033050 (mentored phase)

Mechanism of the Response to Hydrogen Sulfide
\$180,000 total direct costs

2005-2007
NIGMS F32 GM073369
Cellular Mechanisms for Quiescence in *C. elegans*
\$92,772 total direct costs

Other submissions not funded

NIEHS R01 ES023797 (PI) – submitted June 2013.

Mechanisms of epigenetic responses to hydrogen sulfide
A0 submission, impact score 29 (16%). This application was withdrawn upon funding of R01 ES024958.

NIEHS R01 ES023171 (PI) – submitted Nov 2012.

Mechanisms that underlie the epigenetic memory of hydrogen sulfide.
Response to RFA TARGET I: Chromatin Structure, Genomics, and Transcriptional Responses to the Environment. Impact score 35 (funding line 32).

NIA R01 AG044378 (A0) – submitted June 2012.

Molecular genetic mechanisms to coordinate context-dependent responses to environmental conditions.
A0 submission, impact score 29 (23%).

NIGMS R01 GM103992 – submitted Feb 2012.

Mechanisms for integrating hydrogen sulfide and the response to hypoxia in animals.
Not discussed

NSF CAREER – submitted 2011.

Mechanisms of suspended animation in *C. elegans* hypoxia-induced diapause
Scored medium priority

Internal submissions not chosen for full application: Pew (2010), Packard (2011), Mallinckrodt (2012, 2013), and Searle (2010).

15. Bibliography

A. Manuscripts in refereed journals

* indicates corresponding author

1. Chapin, H. C.* , Okada, M. , Merz, A. J., and **Miller, D. L.*** 2015. "Tissue-specific autophagy responses to aging and stress in *C. elegans*." *Aging* Epub ahead of print. PMID: 26142908.
2. Fawcett, E. M., Hoyt, J. M., Johnson, J. K., and **Miller, D. L.*** 2015. "Hypoxia disrupts proteostasis in *Caenorhabditis elegans*." *Aging Cell* (14): 92-101 PMID: 25510338.
3. Fawcett, E. M., Horsman, J. W., and **Miller, D. L.*** 2012. "Creating defined gaseous environments to study the effects of hypoxia on *C. elegans*." *JoVE* (65) e4088 PMID: 22850348.
4. **Miller, D. L.***, Budde, M. W. and Roth, M. B.* 2011 "HIF-1 and SKN-1 Coordinate the Transcriptional Response to Hydrogen Sulfide in *C. elegans*." *PLoS ONE* 6(9): e25476. PMID: 21980473, PMCID: PMC3183046.
5. **Miller, D. L.** and Roth, M. B.* 2009. "*C. elegans* are Protected from Lethal Hypoxia by an Embryonic Diapause." *Curr Biol.* 19: 1233. PMID 19576771.
6. **Miller, D. L.** and Roth, M. B.* 2007. "Hydrogen Sulfide Increases Thermotolerance and Lifespan in *Caenorhabditis elegans*." *PNAS.* 104: 20618. PMID 18077331.

7. **Miller, D. L.** and Schildbach, J. F.* 2003. "Evidence for a Monomeric Intermediate in the Reversible Unfolding of F Factor TraM." *J Biol Chem.* 278: 10400. PMID 12529360
8. Street, L. M., Harley, M. J., Stern, J. C., Larkin, C., Williams, S. L., **Miller, D. L.**, Dohm, J. A., Rodgers, M. E., and Schildbach, J. F.* 2003. "Subdomain organization and catalytic residues of the F factor TraI relaxase domain." *Biochim Biophys Acta.* 1646: 86. PMID 12637015.
9. Cottingham, F. R., Gheber, L., **Miller D. L.**, and Hoyt, M. A.* 1999. "Novel Roles for *Saccharomyces cerevisiae* Mitotic Spindle Motors." *J Cell Bio.* 147:335. PMID 10525539.

B. Book chapters and review articles

10. Iranon, N. N., and **Miller, D. L.*** 2012 "Integrating oxygen homeostasis, nutritional status, and hydrogen sulfide signaling. *Frontiers in Genetics.* 3: 257. PMID: 23233860
11. Palubinsky, A. M., Lizama-Manibusan, B. N., **Miller, D. L.**, and McLaughlin, B.A. 2014. Genetic Models of Parkinson's Disease: Behavior, Signaling, and Pathological Features. In: Environmental Factors in Neurodevelopmental and Neurodegenerative Disorders. Aeschner, M. and Costa, L. (Eds.). Waltham, MA: Elsevier. *In press.*

C. Published books, videos, software, etc.

none

D. Other publications

none

E. Manuscripts in review

11. Leiser, S. F., Miller, H., Rossner, R., Fletcher, M., Leonard, M., Primitivo, N., Ramos, F., **Miller, D. L.**, and Kaeberlein, M. "Cell non-autonomous activation of flavin monooxygenase-2 mediates lifespan extension from HIF-1 and dietary restriction". Revised and resubmitted at *Science*.
12. Horsman, J. W., and **Miller, D. L.*** "Mitochondrial SQRD-1 is essential to maintain translation in hydrogen sulfide". In review at *Journal of Biological Chemistry*.

F. Manuscripts in preparation (current drafts available upon request)

13. Manbeck, K., and **Miller, D. L.*** "Cholinergic signaling is required for the response to hydrogen sulfide in *C. elegans*."
14. Fawcett, E. M., Johnson, J. K., Knopp, S., and **Miller, D. L.*** "Epigenetic bookmarking of exposure to hydrogen sulfide in *C. elegans*."

G. Selected abstracts

16. 2015: Chicago, IL. Annual meeting of the Society for Neuroscience (selected talk). "Mechanisms of hypoxic protection by hydrogen sulfide" in Nanosymposium on Ischemia: Cellular Mechanisms.
17. 2014: Kobe, Japan. University of Washington and Kobe University International Joint Symposium (invited talk). "Hydrogen sulfide signaling from neurons to nucleus".
18. 2014: Washington, DC. Annual meeting of the Gerontological Society (invited talk). "Epigenetic memory of hydrogen sulfide declines with age in *C. elegans*."

19. 2014: Madison, WI. 2014 *C. elegans* topic meeting on Aging, Stress, Pathogenesis, and Small RNAs. NIA-sponsored talk (invited talk). "HIF-1 acts in neurons to coordinate the response to H₂S".
 20. 2012: San Francisco, CA. Annual meeting of the American Society for Cell Biology (invited talk). H₂S and fasting protect against hypoxia-induced disruption of proteostasis in *C. elegans*.
 21. 2012: San Diego, CA. Annual meeting of the Gerontological Society, Future Leaders/Future Directions in Aging Research session (invited talk). "Hypoxia responses influence proteostasis mechanisms".
 22. 2011: Big Sky, MT. Keystone Symposium on Metabolic Responses to Extreme Conditions (selected talk). "Hydrogen sulfide protects against hypoxia in *C. elegans*".
 23. 2011: Raleigh, NC. 40th Annual Meeting of the American Aging Association (invited talk). "Effects of hydrogen sulfide on protein homeostasis and aging".
 24. 2011: Vancouver, British Columbia, Canada. Northwest Regional Worm Meeting (invited Keynote seminar). "Making choices when the air gets thin".
 25. 2010: Cold Spring Harbor, NY. Molecular Genetics of Aging at Cold Spring Harbor Laboratory (selected talk) "Hydrogen sulfide protects against hypoxia-induced protein aggregation in *C. elegans*".
 26. 2010: Madison, WI. Aging, metabolism, stress, pathogenesis and small RNAs in *C. elegans* Topic Meeting (selected talk). "Hydrogen sulfide protects against hypoxia induced protein aggregation".
 27. 2010: Portland, OR. 38th Annual Meeting of the American Aging Society (selected talk). "Adaptation to hydrogen sulfide improves protein homeostasis in *C. elegans*".
 28. 2010: Keystone, CO. Keystone Symposia on Hypoxia: Molecular Mechanisms of Oxygen Sensing and Response Pathways (selected talk). "Hydrogen sulfide protects against hypoxia in *C. elegans*".
- 29. Other**
- Invited Lectures
- 2015: *scheduled Nov 5*. Murfreesboro, TN. Molecular Biosciences and Biology seminar series (invited talk).
- 2015: *scheduled Nov 13*. San Diego, CA. The Scripps Research Institute seminar series.
- 2015: *scheduled Nov. 19*. New Haven, CT. Cellular and Molecular Physiology seminar series (invited talk).
- 2015: Fort Worth, TX. Pharmacology and Neuroscience seminar series (invited talk).
- 2015: Raleigh, NC. Biochemistry seminar series (invited talk). "Specific hypoxic conditions disrupt protein quality control in *C. elegans*".
- 2013: Boston, MA. Harvard School of Public Health Department of Genetics and Complex Diseases seminar series (invited talk). "AMP-activated kinase regulates proteostasis in hypoxia".
- 2012: Vermillion, SD. Sanford School of Medicine Division of Basic Biomedical Sciences seminar series (invited talk). "Hypoxia-induced diapause in *C. elegans*".
- 2011: Jupiter, FL. Scripps Department of Metabolism and Aging Seminar Series. (invited talk) "Using worms to understand the beneficial effects of hydrogen sulfide."
- 2010: Seattle, WA. University of Washington Neurobiology and Behavior Seminar Series (invited talk). "Neuronal control of hypoxia-induced embryonic diapause in *C. elegans*".