

**BIOGRAPHICAL SKETCH**

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NAME: **Dana L. Miller, PhD**

eRA COMMONS USER NAME (credential, e.g., agency login): **Orcid ID: [orcid.org/0000-0003-3983-0493](http://orcid.org/0000-0003-3983-0493)**

POSITION TITLE: **Assistant Professor, University of Washington School of Medicine.  
Department of Biochemistry.**

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Minnesota, Minneapolis	B.S.	1998	
The Johns Hopkins University (2003)	Ph.D .	2003	
Fred Hutchinson Cancer Research Center. Division of Basic Sciences. Seattle, WA.	Postdoctoral	2003-2010	

**A. Personal Statement****B. Positions**

- 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

**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

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## C. Contribution to Science (Publications)

### a) Manuscripts in refereed journals

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* (7): 419-434 PMID: 26142908, PMCID: PMC4505168.
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, PMCID: PMC4326909.
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, PMCID: PMC3570071.
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 Tral 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, PMCID: PMC3516179.
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*.
12. *Leiser, S. F., Miller, H., Rossner, R., Fletcher, M., Leonard, M., Primitivo, N., Ramos, F., Miller, D. L., and Kaeberlein, M.\** 2015 "Cell non-autonomous activation of flavin-containing monooxygenase promotes longevity and healthspan". *In press at Science*.

### 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*.
13. Manbeck, K., and **Miller, D. L.\*** "Cholinergic signaling is required for the response to hydrogen sulfide in *C. elegans*." In review at *Genetics*

**f) Manuscripts in preparation (current drafts available upon request)**

14. Kemp, H., Dove, K., Camacho, D., Milborn, L., Klevit, R. E. \*, and **Miller, D. L.\*** "E2 ubiquitin conjugating enzymes UBC-18 and UBC-3 cooperate in development of the *C. elegans* pharynx." Planned submission November 2015.
15. Fawcett, E. M., Johnson, J. K., Knopp, S., and **Miller, D. L.\*** "Epigenetic bookmarking of exposure to hydrogen sulfide in *C. elegans*." Planned submission Dec 2015.

**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 H<sub>2</sub>S".
20. 2012: San Francisco, CA. Annual meeting of the American Society for Cell Biology (invited talk). H<sub>2</sub>S 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. 40<sup>th</sup> 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. 38<sup>th</sup> 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*".

### **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*"
- 29.

## **D. Research Support (Grants/fellowships)**

### **Research funding**

#### Active

2015-2016

Glenn Award for Research in Biological Mechanisms of Aging

Glenn Foundation for Medical Research

\$60,000 total direct costs

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