

## **JAY MELLIES**

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### **EDUCATION**

Ph.D., Microbiology, University of California, Davis, 1994.  
Bachelor of Science, University of California, Davis, 1986.  
Major: Biochemistry; Minor: Music

### **ACADEMIC POSITIONS/EMPLOYMENT**

Professor, Reed College	4/11-present
Associate Professor, Reed College	9/03-4/11
Visiting Faculty, Portland State University, Oregon	Summer '10
Assistant Professor, Reed College	9/99-8/03
Postdoctoral Fellow, University of Maryland School of Medicine, Baltimore, Maryland	3/97-7/99
Volunteer Faculty, University of Maryland School of Dentistry, Baltimore, Maryland	3/97-7/99
Adjunct Faculty, Anne Arundel Community College, Arnold, Maryland.	5/97-7/99
Postdoctoral Fellow, Max-Planck-Institut für Biologie, Tübingen, Germany	10/94-2/97
Research Assistant, Section of Microbiology, University of California, Davis	12/90-9/94
Research Assistant, Department of Veterinary Microbiology, University of California, Davis	4/90-11/90
Research Chemist, Microgenics Corp., Concord, California	9/86-9/89

### **TEACHING**

Immunology (BIO 463) Reed College	9/14-present
Microbiology Lecture and Laboratory (BIO 358) Reed College	99-present
The Human Genome (BIO 431) , Senior Seminar Course, Reed College	Fall 2016
Bacterial Pathogenesis (BIO 431), Senior Seminar Course, Reed College	99-present
Introductory Biology and Laboratory (BIO 101/102) Reed College, 12 lectures/yr	99-present
Bacterial Genetics, University of Maryland School of Dentistry, 2 to 3 lectures/yr	97-98
Introductory Microbiology Course/Laboratory, Anne Arundel Community College	5/97-7/99

### **Reed senior theses mentored**

Lily Ben-Avi ('16)  
Leah Cepko ('16)  
Hans Leier ('16)  
Amy Platenkamp ('16)  
Eren Veziroglu ('16)  
Maggie Cheney ('15)  
Jonathan Gerhart ('15)  
Jennilyn Nelson ('15)  
Jossef Osborn ('15)  
President's Winter Fellowship to visit the South African Tuberculosis Vaccine Initiative, 2014-2015  
Jules Weinstein ('15)  
Karen Dewey ('14)  
Jennifer Farrell ('14)  
Gus Kilgore ('14)  
Abe Leis ('14)  
Nima Subramanian ('14)  
Yuan Xue (Soso) ('14)  
Anand Panchal ('13)

Rachel Strominger ('13)  
 Shaurav Regmi ('13)  
 Gabe Butterfield ('12)  
     Davis Projects for Peace Award, 2012  
 Sarah Wesley ('12)  
 Mischka Moechtar ('12)  
 Meg Moeller ('12)  
 Neil Evans ('12)  
 Rosie Lawrence-Pine ('11)  
     ASM Undergraduate Research Fellowship, 2010-2011  
 Katherine Thomas ('11)  
 Charlie Morse ('11)  
 Orissa Agnihotri ('11)  
 Peter Cawley ('10)  
 Gabe Holt ('10)  
 Emily Lorenzen ('10)  
 Saate Shakil ('10)  
 Dan Glaser ('09)  
 David Mavor ('09)  
 Patricia Snarski ('09)  
 Jeannette Tenthorey ('09)  
     NSF Graduate Fellowship ('12)  
 Emily Warschefsky ('09)  
 Christine Beckel ('08)  
 Garon Coriz ('08)  
 Laura Mulshine ('08)  
 Will McNitt ('08)  
 Melissa Zarr ('08)  
 Rebecca Kreston ('07)  
 Trevor Young ('07)  
 Anna Carmona ('06)  
     Best Undergraduate Research Poster Presentation at the Northwest Branch Meeting of the ASM,  
     Seattle, Washington, March 10-12, 2006.  
 Dot Coffey ('06)  
 Alex Barron ('05)  
     Student Travel Award- ASM General Meeting, Atlanta, Georgia, June 2005  
 Anna Brown ('05)  
 Elijah Itah ('05)  
 Derek Galligan ('05)  
     ASM Undergraduate Research Fellowship, 2004-2005  
 Leslie Cooperman ('05)  
 Alex Beebe ('04)  
 Marisa Hemungkorn ('04)  
 Katy Horback ('04)  
 Andrew Korson ('04)  
 Jonathan Fowlkes ('03)  
 Rebecca Bart ('03)  
 Alhaji Ceesay ('03)  
 Evan Hayashi ('02)  
 Kristin Harper ('02)  
     Student Travel Award- ASM General Meeting, Salt Lake City, Utah, May 2002  
     NSF Graduate Fellowship ('03) and Howard Hughes Medical Institute Pre-Doctoral Fellowship ('03)  
 Christopher Robinson ('02)  
 Darrow DeLuca ('02)  
 Leslie Hoover ('01)  
     NIH Post-Baccalaureate Research Fellowship, Bethesda, Maryland, 2001-2003  
 Kristie Miller ('01)  
 Colin Daniel ('00)

Michael Bomier ('00)  
Rebecca Green ('00)

## AWARDS

National Institutes of Health, Exploratory/Developmental Research Grant 1R21AI115193-01, \$362,803  
2015-2017  
MJ Murdock Charitable Trust, College Research Program for Life Sciences Award, \$50,000, 2013-2015  
National Institutes of Health, collaboration on R01 Award with John Crane, MD, Ph.D., State University  
of New York at Buffalo, sub-contract \$202,206, 2010-2013  
National Science Foundation, Visiting Faculty, Portland State University, ROA Supplement to investigate  
protein-DNA complexes associated with DNA damage repair with Justin Courcelle, Ph.D., \$12,000,  
Summer 2010  
National Institutes of Health, Academic Research Enhancement Award, 2R15AI47802-03, \$235,363  
2008-2011  
Mellon Foundation Faculty Research Award, Reed College, \$35,000, 2007-2008  
Michael E. Levine Faculty Research Award, Reed College, \$5,000, 2005-2006  
National Institutes of Health, Academic Research Enhancement Award, 2R15AI47802-02, \$227,500,  
2004-2007  
Defense Advanced Research Projects Agency (DARPA) Award, \$230,323, 2003-2005  
National Institutes of Health, Academic Research Enhancement Award, 1R15AI47802-01, \$143,667,  
2001-2004  
Oregon Medical Research Foundation Seed Grant, \$25,000, 2000-2001  
Howard Hughes Faculty Development Award, Reed College, \$29,446, 1999-2000  
Alexander von Humboldt Postdoctoral Research Fellowship, Germany, 1995-1997  
Jastro-Shields Scholarship for Graduate Research, U.C. Davis, 1992-1993

## REED GOVERNANCE

Chair, Biology Department	6/14-present
Chair, Committee on Academic Planning and Policy	9/08-5/10
Chair, Paid Leave Award Committee	9/08
Chair, Radiation Safety Committee	9/08-5/13

## SERVICE TO THE REED COMMUNITY

Pre-Med Advisor	9/02-present
Coordinator, Biology Department Seminar Program	9/01-9/10
Paid Leave Award Committee	06-08
Administration Committee	9/01-5/05

## SERVICE OUTSIDE THE REED COMMUNITY

*Ad hoc review*

*Molecular Microbiology, Proceedings of the National Academy of Sciences USA, PLoS Pathogens, Cellular Microbiology, Journal of Bacteriology, Infection and Immunity, Applied and Environmental Microbiology, Journal of Microbiology & Biology Education, Journal of Clinical Microbiology, Zoonoses and Public Health, FEMS Microbiology Letters, BMC Microbiology*

Member, NIH Study Section, R15 AREA Applications: Infectious Disease and Microbiology	2015
Section Editor, <i>Journal of Microbiology &amp; Biology Education</i>	9/09-present
Reed Speakers Bureau	03-present
<i>E. coli</i> disease associated with fresh produce, evolution of <i>E. coli</i> pathotypes.	
Talks given at Lincoln, Beaverton, Marshall, Madison and Riverdale High Schools in Portland	

An initiative aimed at advancing science literacy of adults, a partnership between OMSI and the Multnomah County Library

## OTHER GOVERNANCE

Member, Foundation Board, Cleveland High School, Portland 9/08-6/14  
Participant in fundraising activities to ensure adequate FTEs for reasonable class sizes and quality programs; President, 2012-2014

Foundation Board, Educational Recreational Adventures, Portland 9/08-9/10  
A non-profit organization that fosters human development through science and environmental education, outdoor skills instruction, outdoor adventures and opportunities for environmental restoration

## INVITED SPEAKING ENGAGEMENTS

University of Virginia, School of Med., Infectious Diseases/Biodefense Seminar Series, January 12, 2016  
ASM NW Branch Meeting, University of Washington, Seattle, WA, Nov 20-21, 2015.  
OSU GSA Research Symposium, Linus Pauling Science Center, Oregon State University, April 4, 2015  
ASM NW Branch Meeting, University of Washington, Seattle, WA, Oct 17-18, 2014.  
ASM NW Branch Meeting, University of Washington, Seattle, WA, Nov 10, 2012.  
Division of Environmental & Biomolecular Systems, Oregon Health & Science University, May 27, 2011  
ASM NW Branch Meeting, Seattle Pacific University, Seattle, WA, Oct 16, 2010.  
Oregon Health & Science University, Department of Molecular Microbiology & Immunology, Portland, OR, September 28, 2009.  
University of Washington, Microbiology Department, Seattle, WA, October 7, 2008.  
Pomona College, Department of Biology, Claremont, CA, September 18, 2008.  
Oregon Museum of Science and Industry, Adult Learning Program, September 11, 2008.  
Portland State University, Department of Biology, Portland, OR, November 16, 2006.  
6th International Symposium on Shiga Toxin (Verocytotoxin) Producing *Escherichia coli* Infections, Melbourne, Australia, October 29 - November 2, 2006.  
OGI School of Science & Engineering, Portland, OR, October 7, 2005.  
University of Idaho, Moscow, Department of Microbiology, Molecular Biology and Biochemistry, April 17, 2005.  
DARPA Pathogen Countermeasures, Principal Investigator Meeting, Ft. Lauderdale, FL, March 9-11, 2005.  
Gordon Research Conference on Microbial Stress Response, Mt. Holyoke College, South Hadley, MA, July 11-16, 2004.

## SOCIETIES

American Society for Microbiology  
American Association for the Advancement of Science

## PUBLICATIONS

### Peer-reviewed

**Xue, Y, Osborn, J, Panchal, A,** and JL Mellies. 2015. The RpoE Stress Response Pathway Mediates Reduction of Enteropathogenic *Escherichia coli* virulence by Zinc. *Applied and Environmental Microbiology* **81**: 3766-3774.

- Winardhi, R, Gulvady, R, Mellies, JL, and Yan, Jie. 2014. Locus of Enterocyte Effacement-encoded Regulator (Ler) of Pathogenic *Escherichia coli* Competes Off Histone-like Nucleoid-structuring Protein (H-NS) through Noncooperative DNA Binding. *Journal of Biological Chemistry*. **289**: 13739-13750.
- Mellies JL, **Thomas K**, **Turvey M**, **Evans NR**, Crane J, Boedeker E, and Benison GC. 2012. Zinc-induced envelope stress diminishes type III secretion in enteropathogenic *Escherichia coli*. *BMC Microbiology*. Jun 24;**12** (1):123. [Epub ahead of print]
- Mellies, JL, Benison, **G**, **McNitt**, W, **Mavor**, **D**, Boniface, C, and Larabee, FL. 2011. Ler of Pathogenic *Escherichia coli* forms toroidal protein-DNA complexes. *Microbiology*. **157**: 1123-1133.
- Mellies, JL, Larabee, FL, **Zarr**, **MA**, **Horback**, **KL**, **Lorenzen**, **E** and **Mavor**, **D**. 2008. Ler interdomain linker is essential for anti-silencing activity in enteropathogenic *Escherichia coli*. *Microbiology*. **154**: 3624–3638.
- Mellies, JL, Haack, KR, and **DC Galligan**. 2007. SOS regulation of the type III secretion system of enteropathogenic *Escherichia coli*. *Journal of Bacteriology*. **189**: 2863-2872.
- Mellies, JL, **Barron**, **A**, Haack, KR, **Korson**, **AS**, and **D Oldridge**. 2006. The global regulator Ler is necessary for EPEC colonization of the *Caenorhabditis elegans*. *Infection and Immunity* **74**: 64-72.
- Haack KR, **CL Robinson**, **KJ Miller**, **JW Fowlkes** and JL Mellies. 2003. Interaction of Ler at the *LEE5* (*tir*) operon of Enteropathogenic *Escherichia coli*. *Infection and Immunity* **71**: 384-292.
- Mellies, JL, Navarro-Garcia, **F**, **Frederickson**, J, Nataro, JP and Kaper, JB. 2001. The *espC* pathogenicity island of enteropathogenic *E. coli* encodes an enterotoxin. *Infection and Immunity* **69**: 315-324.
- Sperandio, V, Mellies, JL, Delagay, RM, Frankel, G, Crawford, JA, Nguyen, W, and Kaper, JB. 2000. Activation of the enteropathogenic *E. coli* (EPEC) *LEE2* and *LEE3* operons by Ler. *Molecular Microbiology* **38**: 781-793.
- Elliott, SJ, Sperandio, V, Girón JA, Shin, Mellies, JL, Wainwright, L, Hutcheson, SW, McDaniel, T, and Kaper, JB. (2000) The locus of enterocyte effacement (LEE)-encoded regulator controls expression of both LEE- and non-LEE-encoded virulence factors in enteropathogenic and enterohemorrhagic *Escherichia coli*. *Infection and Immunity* **68**: 6115-6126.
- Sperandio, V, JL Mellies, W Nguyen, S Shin, and JB Kaper. 1999. Quorum sensing controls expression of the type III secretion gene transcription and protein secretion in enterohemorrhagic and enteropathogenic *Escherichia coli*. 1999. *Proceedings of the National Academy of Sciences USA* **96**:15719-15201.
- Mellies, JL, Elliott, S, Sperandio, V, Donnenberg, MS and Kaper, JB. 1999. The Per regulon of enteropathogenic *Escherichia coli*: identification of a regulatory cascade and a novel transcriptional activator, the locus of enterocyte effacement (LEE)-encoded regulator, (Ler). *Molecular Microbiology* **33**: 296-306.
- Elliott, S, Dubois, MS, Hutcheson, SW, Mellies, JL, Wainwright, WA, Batchelor, M, Frankel, G, Knutton, S, and Kaper, JB. 1999. Identification of CesT, a chaperone for the type III secretion of Tir in Enteropathogenic *Escherichia coli*. *Molecular Microbiology* **33**:1176-89.

Mellies, JL, Jose, J, and Meyer, TF. 1997. The *Neisseria gonorrhoeae* gene *aniA* encodes an inducible nitrite reductase. *Molecular and General Genetics* **256**: 525-532.

Mellies, JL, Rudel, T, and Meyer, TF. 1997. Transcriptional regulation of *pilC2* of *Neisseria gonorrhoeae*: Response to oxygen availability and evidence for growth phase regulation in *E. coli*. *Molecular and General Genetics*, **255**: 285-293.

Mellies, JL, Wise, A, and Villarejo, M. 1995. Two different *Escherichia coli* *proP* promoters respond to osmotic and growth phase signals. *Journal of Bacteriology* **177**: 144-151.

Mellies, JL, Brems, R, and Villarejo, M. 1994. The *Escherichia coli* *proU* promoter element and its contribution to osmotically signaled transcription activation. *Journal of Bacteriology* **176**: 3638-3645.

## Reviews

Mellies, JL, and **ER Lawrence-Pine**. 2010. Interkingdom signaling between pathogenic bacteria and *Caenorhabditis elegans*. *Trends in Microbiology* **18**: 448-454.

Mellies, JL, **Carmona, A**, and **AMS Barron**. 2007. Enteropathogenic and Enterohemorrhagic *Escherichia coli* Virulence Gene Regulation. MiniReview *Infection and Immunity* **75** 4199-4210.

## Book Chapters

Mellies, JL and **Lorenzen, Emily**. 2014. “EHEC virulence gene regulation” in V. Sperandio and C. Hovda (eds). Enterohemorrhagic *Escherichia coli*, ASM Press, Washington, D.C. In press.

Mellies, JL, and **AMS Barron**. 6 June 2006, posting date. Chapter 8.9.1, Virulence Gene Regulation in *Escherichia coli*. In A. Böck, R. Curtiss III, J. B. Kaper, F. C. Neidhardt, T. Nyström, K. E. Rudd, and C. L. Squires (ed.), EcoSal—*Escherichia coli* and *Salmonella*: cellular and molecular biology. [Online.] <http://www.ecosal.org>. ASM Press, Washington, D.C.

Kaper, JB, Mellies, JL, and Nataro, JP. Chapter 3. “Pathogenicity Islands and Other Genetic Elements of Diarrheagenic *Escherichia coli*”. In: J. Kaper, J. Hacker (eds) “Pathogenicity Islands and Other Mobile Virulence Elements” American Society for Microbiology, Washington, DC, 1999.

## Education

Bacterial Flagella Stain. Protocol published 2 September 2008, as part of the Atlas-Protocol Collection on the MicrobeLibrary.org curriculum resource website maintained by ASM.  
<http://www.microbelibrary.org/about/index.asp?bid=1358>

## Patent

Title: Using the *Caenorhabditis elegans* Infection Model to Develop Chemotherapeutic Agents Against Diarrheagenic *Escherichia coli*. Patent # 8216592, issued 10 July 2012.

## Meeting Abstracts

**Weinstein, J**, Yan, J, and JL Mellies. I48R substitution in the Ler Linker of Enteropathogenic *Escherichia coli* diminishes *in vivo* Activity. Presented General Meeting of the American Society for Microbiology, New Orleans, May 30-June 2, 2015.

**Xue, Y**, **Osborn, J**, and J Mellies. Molecular Mechanism of Zinc Disruption of Enteropathogenic *Escherichia coli* Pathogenesis. Presented at the Gordon Research Conference on Microbial Toxins & Pathogenicity, Waterville Valley, New Hampshire, July 20-25, 2014.

Mellies, J, **Lawrence-Pine, R, Gilbert, M, and Strominger, R**. The Plasmid-Encoded Regulator PerC stimulates central metabolism in enteropathogenic *E. coli*. To be presented at the General Meeting of the American Society for Microbiology, Denver, Colorado, May 18-21, 2013.

**Lawrence-Pine, R**, and J Mellies. Over-Expression of *yqeF*, a Putative Acetyl-CoA Acetyltransferase, Alters Motility in Enteropathogenic *Escherichia coli*. Presented at the Molecular Genetics of Bacteria and Phages Meeting, University of Wisconsin, Madison, August 2-7, 2011.

**Turvey, M, Thomas, K**, Crane, J, Boedecker, E, and J Mellies. The Regulatory Network Controlling Zinc Inhibition of the LEE of Enteropathogenic *Escherichia coli*. Presented at the General Meeting of the American Society for Microbiology, New Orleans, Louisiana, May 21-24, 2011.

Mellies, JL, Boniface, C, **Lorenzen, E** and G Benison. Structural Analysis of the N-Terminal and C-Terminal Domains of Ler in Enteropathogenic *Escherichia coli*. Presented at the General Meeting of the American Society for Microbiology, San Diego, California, May 23-27, 2010.

Mellies, JL, **Tenthorey, J**, Boniface, C, **Mavor, D** and **J Connell**. Molecular Features of Ler That Distinguish the Protein from H-NS. Presented at the Molecular Genetics of Bacteria and Phages Meeting, University of Wisconsin, Madison, August 4-9, 2009.

Mellies, JL, Larabee, F, **Fowlkes, J, Horback, K**, and **M Zarr**. The Ler Linker Domain is Necessary for Anti-Silencing Activity in Enteropathogenic *Escherichia coli*. Presented at the General Meeting of the American Society for Microbiology, Boston, June 1-5, 2008.

**Kreston, RJ, Barron, MS** and JL Mellies. Using the Nematode *Caenorhabditis elegans* to Model Enterotoxigenic *Escherichia coli* Infection. Presented at the General Meeting of the American Society for Microbiology, Toronto, Canada, May 20-25, 2007.

Larabee, FJ, Haack, KR, **Carmona, AM**, and JL Mellies Differences in Ler and H-NS Domain Function Contribute to Ler Regulation of the LEE of Enteropathogenic *Escherichia coli*. Presented at the Northwest Branch Meeting of the American Society for Microbiology, Seattle, Washington, March 9-11, 2007.

Mellies, JL, Haack, K and **DC Galligan**. SOS Regulation of the Type III Secretion System of Enteropathogenic *Escherichia coli*. Presented at the Gordon Research Conference on Microbial Stress Response, Mt. Holyoke College, South Hadley, Massachusetts, July 9-13, 2006.

**Carmona, A.M.**, Glasfeld, A., and JL Mellies. Molecular Mechanism of *LEE5* Transcription in Enteropathogenic *Escherichia coli*: *in vitro* Analysis of H-NS and Ler Binding. Presented at the Northwest Branch Meeting of the American Society for Microbiology, Seattle, Washington, March 10-12, 2006.

**Barron, A**, Haack, K, and JL Mellies. *Caenorhabditis elegans* as a Model for Enteropathogenic *Escherichia coli* Infection. Presented at the General Meeting of the American Society for Microbiology, Atlanta, Georgia, June 5-9, 2005.

**Galligan, D**, Haack, K, and JL Mellies. Regulation of EPEC Virulence Genes by DNA Damage Signaling. Presented at the General Meeting of the American Society for Microbiology, Atlanta, Georgia, June 5-9, 2005.

**Barron, A, Galligan, D** , and JL Mellies. *Caenorhabditis elegans* as a Model Host for Enteropathogenic *Escherichia coli* (EPEC) Pathogenesis. Presented at the Northwest Branch Meeting of the American Society for Microbiology, Vancouver, British Columbia, Canada, August 8-10, 2003.

Mellies, JL, **Ceesay, A, Fowlkes, J**, and Haack, K. Ler and H-NS Mediated Regulation of the *LEE5 (tir)* Operon in Enteropathogenic *E. coli*. Presented at the General Meeting of the American Society for Microbiology, Washington, D.C., May 18-22, 2003.

**Harper, KN** and **L Hoover**, K Haack, I Okeke and JL Mellies. Sucrose Utilization in Enteropathogenic *E. coli*. Presented at the General Meeting of the American Society for Microbiology, Salt Lake City, Utah, May 19-23, 2002

Note: The names of current or former Reed students appear in **bold type**.