

Science Education Fellow

Howard Hughes Medical Institute
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EDUCATIONAL HISTORY

- 2014 Ph.D. Chemistry, Northeastern University, Boston, MA
Thesis: Applications of molecular modeling techniques in the design of xanthine based adenosine receptor antagonists and the development of the protein function annotation method SALSA
Thesis Mentor(s): Mary Jo Ondrechen, Ph.D. and Graham Jones, Ph.D.
- 2006 B.S. Biochemistry and Cellular & Molecular Biology, Fort Lewis College, Durango, CO
Mentor: Leslie Sommerville, Ph.D.

EMPLOYMENT HISTORY

- 2017 – present Science Education Fellow, Howard Hughes Medical Institute, Chevy Chase, MD and University of Maryland, Baltimore County (UMBC), Baltimore, MD
- 2015 – 2017 Data Science Educator, Cold Spring Harbor Laboratory, DNA Learning Center, Cold Spring Harbor, NY
- 2014 – 2015 Post-doctoral Research Associate, University of Minnesota Medical School, Duluth, MN
Mentor: Matthew G. Slattery, Ph.D.
- 2006 – 2008 Research Associate, Vertex Pharmaceuticals Inc., Cambridge, MA, Drug Innovative Pharmacokinetics (DIPK) - Discovery Bioanalytical Chemistry group
- 2006 Summer Undergraduate Research Fellow (SURF), Dartmouth Medical School, Department of Biochemistry, Hanover, NH
Mentor: Henry Higgs, Ph.D.
- 2005 Minority Access for Research Careers (MARC) Fellow, Fort Lewis College, Durango, CO
Mentor: Leslie Sommerville, Ph.D.

TEACHING EXPERIENCE

Microbiome CRE Training, Little Big Horn Community College, Crow, MT (3-day)

July 2018 UNIX Commands, QIIME2 Software Analysis, Faculty Training
Github: <https://github.com/joslynnlee/qiime2-workflow-cyverse/wiki>

Microbiome Analysis, Genomic Science and Leadership Initiative Workshop, (4-day)

May 2018 Sample Collection, UNIX Commands, QIIME2 Software Analysis, Fort Lewis College, Durango, CO

May 2017 Sample Collection, UNIX Commands, QIIME2 Software Analysis, Fort Lewis College, Durango, CO
<https://joslynnlee.github.io/2017-05-25-GSLI/>

May 2016 Sample Collection, UNIX Commands, QIIME2 Software Analysis, J Craig Venter Institute, Rockville, MD
https://github.com/josleecsh/qiime_watersamples/blob/master/instructions.md

Science Education Alliance (SEA) – Phage Hunters Advancing Genomics and Evolutionary Sciences (PHAGES), Short Course (3-day)

Aug 2017 NIH Summer Interns, HS and undergrad students, Baltimore, MD

HHMI Science Education Alliance (SEA) – Phage Hunters Advancing Genomics and Evolutionary Sciences (PHAGES) – Faculty Workshop (7-days)

June 2018 Laboratory Training, Teaching Assistant, Baltimore, MD

July 2018 Laboratory Training, Teaching Assistant, Baltimore, MD

Dec 2017 Bioinformatics Training, Teaching Assistant, Chevy Chase, MD

June 2017 Laboratory Training, Teaching Assistant, Baltimore, MD

July 2017 Laboratory Training, Teaching Assistant, Baltimore, MD

Software and Data Carpentry, one-day basic lab skills for research computing lessons

Oct 2018 Lesson: The UNIX Shell, SACNAS National Conference, San Antonio, TX
<https://galaxyproject.org/events/2018-sacnas/>

Oct 2017 Lesson: The UNIX Shell, SACNAS National Conference, Salt Lake City, UT
<https://galaxyproject.org/events/2017-sacnas/>

April 2017 Lessons: The UNIX Shell & Programming with R, Cornell University, Ithaca, NY
<https://joslynnlee.github.io/2017-04-15-cornell/>

Feb 2017 Lesson: The UNIX Shell, NM STEM Food For Thought Professional Development and Networking Workshop, Santa Fe, NM
Github: <https://joslynnlee.github.io/2017-02-25-sfcc/>

Oct 2016 Lesson: The UNIX Shell, SACNAS National Conference, Long Beach, CA,
Github: <https://josleecshl.github.io/2016-10-12-sacnas/>
Jan 2016 Lesson: The UNIX Shell, Stony Brook University, Stony Brook, NY

Cold Spring Harbor Laboratory: RNA-Seq for the Next Generation Virtual Workshop

June 2016 Faculty Training, Teaching R and RNA-Seq analysis

CyVerse Tools and Services Workshop, For undergraduate/graduate students,
postdocs and faculty (2-day)

July 2016 Genetics Society of America National Conference (half day)

Mar 2016 [University of Southern Illinois](#), Carbondale, IL

Mar 2016 The Ohio State University, Wooster, OH

Feb 2016 -University of Delaware, Newark, DE

CyVerse Genomics in Education Workshop, For Faculty (2-day)

March 2016 [University of Southern Illinois](#), Carbondale, IL

Feb 2016 University of Delaware, Newark, DE

Introduction to Molecular Modeling, HS/Undergraduate, Lecture and Lab Course (2-day)

2015 University of Minnesota Medical School, Duluth, MN

2014 University of Minnesota Medical School, Duluth, MN

Advanced Lab Techniques, 1st Year Graduate students, Molecular Modeling (1 week)

2012 Northeastern University, Boston, MA

2011 Northeastern University, Boston, MA

Undergraduate General Chemistry 1 Lab (TA), Non-chemistry Majors (Fall Semester)

2009 Northeastern University, Three lab sections

Undergraduate General Chemistry 1 Lab (TA), Honors Chemistry Majors (Semester)

2009 Northeastern University, One lab, Three recitation sections

2008 Northeastern University, One lab, Three recitation sections

Undergraduate Student Tutor, Fort Lewis College, Durango, CO

2006 Individual Tutor Services, Biochemistry I

2005 Group Tutor Services, General Chemistry I & II

2004 Individual Tutor Services, General Chemistry I

MENTORING EXPERIENCE

Undergraduate students

Emily Davis, UMBC undergraduate student, Spring Semester 2018, Title of Project: "Microbial composition of various soil samples" Currently applying to physician assistant schools in the Maryland area.

Roberto Tapia, NEU Summer REU program, May 2013 – August 2013, "Computationally Guided Drug Discovery of Human Prostate Specific Membrane Antigen (PSMA) Inhibitors." Currently a medical student at Rush Medical College

Dorothy Tovar, NEU Summer REU program, May 2012 – August 2012, "Function prediction on a Co-enzyme A Disulfide Reductase family protein from *Clostridium difficile*." Currently a Biosciences graduate student at Stanford University

Martha Torres, NEU Summer REU program, May 2010 – August 2010, "Determine the functional sites of proteins using homology models of the protein structures." Currently a Chemistry graduate student at UCLA

Other Student mentoring

2017-2018	NIH Summer Internship Program (SIP) mentor for local students in the Greater Maryland area
2015	Chapter Advisor, American Indian Science and Engineering Society (AISES), University of Minnesota - Duluth (UMD), Duluth, MN
2010 – Current	NSF-GRFP Application Consultant, Provide feedback to applicants

PROFESSIONAL RECOGNITION, HONORS, ETC.

2015	National Postdoctoral Association - National Cancer Institute (NCI) Travel Award
2015	Travel award Committee for the Advancement of Women Chemists (COAch)
2014	Cold Spring Harbor Lab Computational and Comparative Genomics Scholarship
2013	Presidential Volunteer Service Award from the White House – Bronze
2012	Protein Society Finn Wold Travel Award to San Diego, CA
2012	St. Jude's Hospital National Graduate Student Symposium (NGSS) Speaker
2011	Travel Award to AISES National Conference, Minneapolis, MN
2011	ISMB/ECCB International Conference Travel Award to Vienna, Austria
2010	National Science Foundation - Graduate Research Fellowship Program
2010	NSF-IGERT Nanomedicine Traineeship at Northeastern University
2010	Graduate Student Oral Presentation (1 st Place) AISES National Conference
2010	AISES Sequoyah Fellow
2008	Laguna Pueblo Education Foundation Scholar
2008	Catching the Dream Scholarship
2008	Vertex Team VOCAP (*2nd highest company award)
2006	Fort Lewis Chemistry Department Senior Award

2005 Fort Lewis College Dean's List

2004 Minority Access for Research Careers (MARC) U*STAR Fellow

EXTRAMURAL PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

2017 Reviewer, NSF Tribal Colleges and Universities Program (TCUP)

2016 - 2017 Education Committee, NIH Genomic Literacy Education and Engagement Initiative

2016 - present Advisor, NIH Tribal Colleges Consortium on Genomics Training

2016 - 2017 Community Instructor, The Carpentries

2016 - 2017 Community Member, R-Forwards

2015 - 2016 Technical Advisor Navajo Nation, NIH Tribal Advisory Committee

2015 - 2016 Member, NSF Northeast Big Data Innovation Hub

2014 - 2015 Member, National Postdoctoral Association

2014 Reviewer, American Indian Graduate Center

2013 - present Member, Society for Advancement of Chicano and Native Americans in Science

2010 - present Member, American Indian Science and Engineering Society

2009 - 2015 Member, International Society for Computation Biology

2009 - 2012 Member, Protein Society

2004 - present Member, American Chemical Society

PROFESSIONAL DEVELOPMENT

2018 HHMI-NIH Center for Scientific Review Mock Review Workshop

2017 ACS National Conference: Chemistry and Culture Symposium Organizer

2016 QIIME 2 Workshop

2015 ASCB MAC Postdoctoral Fellows Career Development Program

2014 SACNAS Postdoc Writing Retreat Fellowship

2014 Cold Spring Harbor Lab Computational and Comparative Genomics Course

2012 Academy of Future Science Faculty

SCIENTIFIC LECTURES/TALKS/PRESENTATIONS

"Data Science Challenges and Solutions for Student Microbiome Research"

2017 Oral Presentation, Plant and Animal Genome Conference, San Diego, CO

2017 Oral Presentation, SACNAS National Conference, Salt Lake City, UT

"Resources and Techniques for Training Students in Computational Skills"

2017 Oral Presentation, SACNAS National Conference, Salt Lake City, UT

“The Power of Data to Change Climates: The Future of Food”

2016 Oral Presentation, Tribal Leader/Scholar Forum, Spokane, WA

“A global view of the genes controlling epithelial tube morphogenesis in Drosophila”

2015 Oral Presentation, Aufderheide Memorial Lecture and Research Symposium

“Using the Structurally Aligned Local Sites of Activity (SALSA) computational method to determine biochemical function of structural genomics proteins”

2013 Poster Presentation, Protein Society Meeting, Boston, MA

2013 Poster Presentation (Sci-Mix), ACS National Meeting, New Orleans, LA

2013 Poster Presentation, Pacific Symposium on Biocomputing, Big Island, HI

2012 Oral Presentation, Computational Biology and Innovation PhD Symposium, Dublin, Ireland.

2012 Poster Presentation, Trends in Enzymology Conference, Gottingen, Germany

2012 Poster Presentation, ACS National Meeting, Philadelphia, PA

2011 Oral Presentation, AISES National Conference, Minneapolis, MN

2011 Poster Presentation, ISMB/ECCB Meeting, Vienna, Austria

“Molecular modeling and small molecular design of xanthine based adenosine receptor antagonists”

2013 Poster Presentation, RICT International Conference on Medicinal Chemistry: Drug Discovery and Selection, Nice France

2012 Poster Presentation, Protein Society Meeting, San Diego, CA

2012 Oral Presentation, St. Jude’s Hospital National Graduate Student Symposium (NGSS), Memphis, TN

2010 Oral Presentation, AISES National Conference, Albuquerque, NM

“Glucose Metabolism and Enzymology in Acidobacterium capsulatum”

2006 Poster Presentation, ACS National Meeting, San Diego, CA

“Investigation Surface Structures of Lymphocytes”

2006 Poster Presentation, ASCB National Conference, San Francisco, CA

CULTURAL AND MENTORING LECTURES/TALKS/PRESENTATIONS

“Balancing Diné and Keres Cultural Heritage in Academic Science”

2017 Invited speaker, Native American Center STEM Speaker Series at Northern Arizona University, Flagstaff, AZ

2016 Keynote speaker, Maximizing Access to Research Careers at Fort Lewis College, Durango, CO

2016 Invited speaker, University of the Fraser Valley, Abbotsford, BC, Canada

“More Than Just a Researcher”

2015 National Postdoctoral Association National Meeting, Baltimore, MD

“Native American Women Chemists of Color”

2015 ACS National Conference, Denver, CO

“How to Overcome Challenges in Graduate School Programs”

2014 AISES National Conference, November 2014, Orlando, FL

2012 AISES National Conference, November 2012. Anchorage, AK

“Make the Best of Graduate School to Land that Next Opportunity: A Postdoctoral Position”

2013 AISES National Conference, November 2013. Denver, CO

“Discovering the Scientist Within: My perspective of interdisciplinary research”

2011 Invited speaker, Maximizing Access to Research Careers MARC U*STAR Symposium at Fort Lewis College, Durango, CO

SCHOLARLY ACTIVITIES

Original Research Articles

Mills, C. L., Garg, R. , **Lee, J. S.**, Tian, L. , Suci, A. , Cooperman, G. D., Beuning, P. J. and Ondrechen, M. J. (2018), Functional classification of protein structures by local structure matching in graph representation. Protein Science, **27**: 1125-1135.

Zhang, Y., Lee, J.K., Toso, E.A., **Lee, J.S.**, Choi S.H., Slattery, M.G., Aihara, H., Kyba, M. (2016). DNA-binding sequence specificity of DUX4. Skelet Muscle **6**: 8.

Loganathan, R., **Lee, J.S.**, Wells, M.B., Slattery, M.G., Andrew, D.J. (2016) Ribbon regulates morphogenesis of the Drosophila embryonic salivary gland through both transcriptional repression and activation. Dev Biol **409**(1): 234-250.

Lacher, S, **J.S. Lee**, Wang, X., Campbell, M.R., Bell, D.A. Bell, Slattery, M. (2015) Beyond antioxidant genes in the ancient Nrf2 regulatory network. *Free Radical Biology and Medicine*. Special Issue: Nrf2 Regulated Redox Signaling and Metabolism in Physiology and Medicine. **88**,Part B: 452-465.

Thomas, R., **Lee, JS**, Chevalier, V., Selesniemi, K., Hatfield, S., Ondrechen, MJ, Sitkovsky, M, Jones, GB. (2013) Design and evaluation of xanthine based adenosine

receptor antagonists: Potential hypoxia targeted immunotherapies. *Bioorganic & Medicinal Chemistry*. 21, 23, 7453-7464.

Wang, Z., Yin, P., **Lee, J.S.**, Parasuram, R., Somarowthu, S., Ondrechen, MJ. (2013) "Protein Function Annotation with Structurally Aligned Local Sites of Activity (SALSAs), *BMC Bioinformatics*. 14(Suppl 3):S13.

Parasuram, R., **Lee, J.** S., Yin, P., Somarowthu, S., Ondrechen, MJ. (2010) Functional Classification of Protein 3D Structures From Predicted Local Interaction Sites. *Journal of Bioinformatics and Computational Biology*. 8, S11, 1-15.

Chapters in Books

Lee, J.S. and MJ Ondrechen. (2011) Electrostatic Properties for Protein Functional Site Prediction. In: Kihara, D. (1st Ed.) *Protein Function Prediction for Omics Era*. (pp. 183-196) USA: Springer.

CURRENT GRANTS

NIH T15 LM009451-12S1 Hunter, Larry (PI) 09/2018 – 06/2019
Fund one Genomic Science and Leadership Initiative Workshop and the development of advanced bioinformatics of microbiome data (\$75,000)
Project Title: Colorado Biomedical Informatics Training Program

PRIOR GRANTS

NIH SEPA R25OD16511-03S1 Micklos, David (PI) 08/2016 – 07/2017
Covered partial salary, development of microbiome data analysis
Project Title: NIH Big Data to Knowledge (BD2K) Initiative Supplemental

NSF 1027445 Jackson, David (PI) 09/2010 – 09/2017
Covered partial salary and funded three Genomic Science and Leadership Initiative Workshop (\$80,000)
Project Title: TRPGR: Maize Cell Genomics: Resources for Visualizing Promoter Activity and Protein Dynamics using Fluorescent Protein Lines

FEATURED ARTICLES/INTERVIEW/BIOGRAPHIES

["NIH Summer Interns Bond Through HHMI Hands-on Phage-Hunting Workshop"](#) From HHMI SEA (August 2017)

["Lybrook Students Visit San Juan College"](#) From NIH SEPA Science Around Us (Feb 2017)

["Native chemist draws on life experiences to mentor Native students in higher education"](#) From Fort Lewis College Magazine (January 2017)

["Indigenizing Academia in the Sciences"](#) From SACNAS (June 2016)

["Chemistry grad's spirit carriers her far"](#) From Fort Lewis College Magazine (September 2012)

["Chemistry, Community and Change"](#) From News@Northeastern (August 2012)

["Setting the Pace"](#) From Winds of Change Magazine (July 2012)

COMMUNITY OUTREACH

2015 Science Fusion Exhibitor for American Indians in Science, Science Museum of Minnesota, St. Paul, MN

2015 Science Fair Judge, 2014 NE MN Regional Science Fair, Duluth, MN

2010 - 2013 Non-Residential Runner, Back on my Feet (BOMF), Boston, MA

2009 - 2012 Mentor Scientist, Science Club for Girls (SCFG), Cambridge, MA
Hands-on involvement as a mentor/teacher for the after-school (10-week) science club program for K-7 grade girls belonging to groups that are underrepresented in the sciences

2011 - 2012 Advisory Council, Youth Enrichment Services (Y.E.S.) Kids, Boston, MA
Served on the Program Committee that identifies program sustainability, the development of new programs and the expansion existing program.

2008 – 2011 Northeastern University Graduate Student Association (GSA) Colloquium Committee, Boston, MA

2007 - 2010 Gallery Guide, Harvard Museum of Natural History (HMNH), Cambridge, MA. Engage the public, children and adults, interpreting the various exhibits through hands-on activities, nature-story readings, and other public programs like lectures, festivals and family events to enhance understanding of the natural world.