Sally C. Pias, PhD

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CURRENT POSITION

Assistant Professor of Chemistry, 2012–
Faculty Adjunct in Biology, 2015–
New Mexico Institute of Mining and Technology (New Mexico Tech), Socorro, NM

POSTDOCTORAL TRAINING

Postdoctoral Associate with Carlos Simmerling, 2009–2011
Stony Brook University (SUNY Stony Brook), Stony Brook, NY
Research focus in computational chemistry—free energy study of HIV protease ligand gating and drug resistance with atomistic molecular dynamics simulations and enhanced sampling

EDUCATION

Doctor of Philosophy with Barbara Lyons, Chemistry with Biochemistry specialization, 2009
New Mexico State University, Las Cruces, NM
Dissertation: Study of the Grb7-SH2 domain structure and self-association behavior using molecular dynamics simulations

Master of Arts with Distinction, Jewish Studies, 2003
Emory University, Atlanta, GA
Emphasis: Interpretation of texts in Hebrew, Aramaic, and Sanskrit; additional study in Religions of South Asia

Bachelor of Arts with Highest Honors, 1998
Emory University, Atlanta, GA
Majors in Chemistry and Religion (comparative); honors thesis in Religion (ethics)

HONORS AND AWARDS

Melvin H. Knisely Award, the highest honor given to a junior investigator by the International Society on Oxygen Transport to Tissue, 2016

Gordon Research Conferences (GRC) financial award – GRC Computational Chemistry, 2016

New Mexico Consortium travel grant – Symposium on Cell Signaling, 2016

Gordon Research Conferences financial award – GRC Bioenergetics, 2015

Computing Innovation Postdoctoral Fellowship, sponsored by the Computing Community Consortium and the Computing Research Association with funding from the National Science Foundation, 2009–2011

Integrative Graduate Education and Research Traineeship (IGERT) in Computational Molecular Biology, supported by the National Science Foundation, 2006–2008

Graduate STEM Fellowship in K–12 Education (GK–12), supported by the National Science Foundation, 2004–2006

Excellence in Sanskrit Award, Emory University, 2003

Honorable Mention, Marion Luther Brittain Award, generally acknowledged to be the highest honor given to an undergraduate student by Emory University, 1998

Phi Beta Kappa honor society, 1997–

Robert W. Woodruff Scholarship, endowed undergraduate merit scholarship, Emory University, 1994–1998

PREVIOUS POSITIONS

Freelance Scientific Editor, 2011–2012
Editage/Cactus Communications, based in Mumbai, India

Graduate Assistant, New Mexico State University, Las Cruces, NM, 2004–2009

Teaching Assistant (Biochemistry Laboratory Instructor), Summer term 2004
Department of Chemistry and Biochemistry, New Mexico State University, Las Cruces, NM

Data Analyst, Single nucleotide polymorphism mapping, 2004
NIEHS Environmental Genome Project, University of Washington, Seattle, WA

Post-Graduate Researcher, Cell biology of neuronal synapse formation, 2003
Center for Neuroscience, University of California, Davis, CA

Teaching Assistant, Emory University, Atlanta, GA
Department of Religion, 2001–2003
Department of German Studies, 1995–1997

U.S. Peace Corps Volunteer, Bangladesh, 1998–2000
English instructor at training institutes for primary school teachers

COURSES TAUGHT

General Chemistry I
Biochemistry I and II
Biochemistry I and II Laboratory
Advanced Topics in Biochemistry

MENTORING

Graduate Students

1. Gary Angles, PhD candidate, graduation expected in December 2017
2. Rajendra Prasad Gautam, MS, 2017 – PhD student in Chemistry, University of Nevada, Reno
3. James Ryan Bredin, MS, 2016 – PhD student in Chemistry, New Mexico State University
4. Ryan Shea, MS, 2014 – Chemistry instructor at West Texas A&M University

Undergraduates

1. Kristina Bueche‡, Computer Science
2. Alexander (Luna) Burd, Biomedical Sciences
3. Evelyn Byrd‡, Biomedical Sciences and Chemistry
4. Angelica Cave‡, Biology
5. Cassidy Coleman‡, Chemistry
6. David DeVries, Biology and Chemistry – MS student in Materials Engineering, NMT
7. Joshua Ingram‡, Chemistry (Senior Thesis)
8. Michael Malett‡, Chemistry – MS student in Petroleum Engineering, NMT
9. Mendi Marquez‡, Chemical Engineering – PhD student in Materials Engineering, NMT
10. Emily McClenahan‡, Chemistry
11. Timothy Ricard‡, Chemistry (Senior Thesis) – PhD student in Chemistry, Indiana University, Bloomington
12. Sergio Torres‡, Chemistry (Senior Thesis)
13. Jonathan Tsosie‡, Biology and Chemistry – PhD student in Biomedical Engineering, Massachusetts Institute of Technology; NSF Graduate Research Fellow

‡ Supported financially – for research contributions not associated with academic credit.

PROFESSIONAL SOCIETY MEMBERSHIPS AND SERVICE

International Society on Oxygen Transport to Tissue – Scientific Committee (awards selection) and session chair, 2017; Executive Committee, 2017–

Biophysical Society – Actively involved in the Bioenergetics Subgroup

American Chemical Society and its Computers in Chemistry (COMP) division

PEER-REVIEWED PUBLICATIONS

1. Dotson, R. J.; Smith, C. R.; Bueche, K.; Angles, G.; **Pias, S. C.** Influence of cholesterol on the oxygen permeability of membranes: Insight from atomistic simulations. *Biophys. J.* 2017, *112* (11), 2336–2347.
2. Angles, G.; Dotson, R.; Bueche, K.; **Pias, S. C.** Predicted decrease in membrane oxygen permeability with addition of cholesterol. *Adv. Exp. Med. Biol.* 2017, *977*, 9–14.
3. Shea, R.; Smith, C.; **Pias, S. C.** Magnification of cholesterol-induced membrane resistance on the tissue level: Implications for hypoxia. *Adv. Exp. Med. Biol.* 2016, *923*, 43–50.

4. **Pias, S. C.**; Johnson, D. L.; Smith, D. E.; Lyons, B. A. Water-refined solution structure of the human Grb7-SH2 domain in complex with the erbB2 receptor peptide pY1139. *Protein Pept. Lett.* 2012, *19* (8), 832–838.
5. Peterson, T. A.; Benallie, R. L.; Bradford, A. M.; **Pias, S. C.**; Yazzie, J.; Lor, S. N.; Haulsee, Z. M.; Park, C. K.; Johnson, D. L.; Rohrschneider, L. R.; et al. Dimerization in the Grb7 protein. *J. Mol. Recognit.* 2012, *25* (8), 427–434.
6. **Pias, S.**; Peterson, T. A.; Johnson, D. L.; Lyons, B. A. The intertwining of structure and function: Proposed helix-swapping of the SH2 domain of Grb7, a regulatory protein implicated in cancer progression and inflammation. *Crit. Rev. Immunol.* 2010, *30* (3), 299–304.

GRANTS AND FOUNDATION FUNDS

Active Grant

1. "Lipids regulate oxygen bioavailability: Simulations of membranes and fat droplets," New Mexico IDeA Network of Biomedical Research Excellence (INBRE) "FULL" project award, National Institutes of Health (NIH) grant P20GM103451, 2014–2018 (renewed yearly, contingent on progress), Director: Arterburn/Lusetti, Principal investigator (PI): Pias, FULL project total over 4 years: $450,300.
   Awarded following competitive evaluation of a proposal submitted in March 2014. Supports a full-time staff research assistant, 1 or 2 graduate students with summer and partial academic year funding (usually 1 semester), and an undergraduate research assistant.

Completed Grants

2. "Design for ultrasound theranostic agents carrying podophyllotoxin-like compounds," New Mexico INBRE "FOCUS" award, NIH grant P20GM103451, 2014–2016 (renewed once), Director: Arterburn/Lusetti, PI: Tartis, Pias role: Collaborator, FOCUS project total over 2 years: $75,050, Pias: ~$15,000.
3. "Lipids regulate oxygen bioavailability: Simulations of membranes and fat droplets," New Mexico INBRE pilot award, NIH grant 8P20GM103451-12, 2013–2014, Project director: Arterburn, PI: Pias, Pilot project total: $115,500.

Research Foundation Funds

1. "Investigating the influence of membrane lipid changes in breast cancer on cellular oxygenation," Glendorn Foundation, Funding expected in November 2017 (open-ended duration), Awardee: Pias, Expected amount: $30,000.
   Funding designated for cancer-related research, attained through proposal to the trustees. Provides support for travel, personnel, and other research costs.
2. "Mechanistic investigation of the role of cholesterol in tumor cell survival," Glendorn Foundation, Fund established in 2013 and replenished in 2015 (open-ended duration), Recipient: Pias, Total amount: $60,000.

PRESENTATIONS

Invited Presentations

1. Lipids as pathways for cellular O_2 diffusion: Molecular simulation studies. National Institutes of Health – Rockville, MD campus. July 2017.
2. Membrane cholesterol influences oxygen flux and bioavailability. Chemical and Biological Engineering/Biomedical Engineering/Nanoscience and Microsystems Seminar Series, University of New Mexico, Albuquerque, NM. September 2015.

Talks at International Meetings

3. Integral proteins influence membrane oxygen permeability: A molecular simulation study. International Society on Oxygen Transport to Tissue annual meeting, Halle, Germany. August 2017.
4. Atomistic simulations provide insight into electron paramagnetic resonance probe behavior. Biophysical Society annual meeting, New Orleans, LA. February 2017. Abstract published in *Biophysical Journal*.
5. Cholesterol-enriched membranes hinder oxygen flow. International Society on Oxygen Transport to Tissue annual meeting, Chicago, IL. July 2016.
6. High membrane cholesterol reduces oxygen permeation rate, with major implications for tissue-level transport. International Society on Oxygen Transport to Tissue annual meeting, Wuhan, China. July 2015.

Posters at International Meetings

7. Cholesterol reduces membrane permeability, impacting small molecule diffusion. Poster presentation. Gordon Research Conference on Computational Chemistry, Catalunya, Spain. July 2016.
8. Membrane cholesterol substantially alters the free energy topology of oxygen transport. Biophysical Society annual meeting, Los Angeles, CA. February 2016. Abstract published in *Biophysical Journal*.
9. Membrane cholesterol markedly influences the energetics and kinetics of oxygen transport. Poster presentation. Gordon Research Conference on Bioenergetics, Andover, NH. June 2015.

Presentations at Regional Meetings

10. Cellular lipids as pathways (or barriers) for oxygen diffusion. Regional Alliance of INBRE Networks, Big Sky, MT. June 2017. 3-minute rapid-fire presentation.
11. Molecular simulation studies of lipids as pathways (or barriers) for oxygen diffusion. New Mexico IDeA Networks of Biomedical Research Excellence (INBRE) symposium, Pojoaque, NM. March 2017. Talk.
12. Hidden influence of membrane composition on cellular level movement of oxygen and key signaling molecules. Symposium on Cell Signaling, Santa Fe, NM. Aug 2016. Poster.
13. Cholesterol as a modulator of membrane permeability: Implications for chronic and acute hypoxia. New Mexico INBRE symposium, Santa Fe, NM. March 2016. Talk.
14. Insight into the influence of structural and storage lipids on oxygen bioavailability. New Mexico INBRE symposium, Santa Fe, NM. March 2015. Talk.