

Rebecca Landry Stubbert

EDUCATION

NORTHWESTERN UNIVERSITY, Evanston, IL

Ph.D., Inorganic Chemistry, 2005

- *Advisor:* Professor Joseph T. Hupp

Dissertation title: *Pseudomonas aeruginosa* Biofilms as an Important Host-Pathogen Relationship in Cystic Fibrosis: Design and Implementation of Biorelevant Surfaces in the Study of Disease.

LOUISIANA STATE UNIVERSITY, Baton Rouge, LA

B.S., Chemistry, 1999

Minor: Zoology with emphasis on environmental studies

- Undergraduate research under the guidance of Professor William E. Crowe (LSU)
- Undergraduate research with Professor Robert Bowman (Colgate University, REU)
- Undergraduate research under the guidance of Professor Robert M. Strongin (LSU/REU)

RESEARCH EXPERIENCE

FACULTY EXPERIENCE

- Assistant Faculty, University of St. Thomas **2025 – Present**
 - Natural Products Discovery and Chemical Biology: Investigating antimicrobial secondary metabolites produced by novel environmental microorganisms, using microbiological, analytical, and chemical approaches (e.g., bioassay-guided fractionation, solid-phase extraction, and LC–MS) to identify bioactive compounds with potential therapeutic applications.
 - AI in STEM Education: Evaluating the use of instructor-directed AI tutoring to support student learning, metacognition, and scientific communication in introductory STEM courses. Current work examines how AI-assisted tutoring influences General Chemistry students' ability to develop and revise formal laboratory reports, with a focus on writing quality, conceptual understanding, and responsible AI use in education.

POSTDOCTORAL EXPERIENCE

- Howard Hughes Medical Institute Postdoctoral Fellow, Occidental College **2008 - 2010**

Advisor: Professor Eileen M. Spain

 - Microbial Chemistry of *Bdellovibrio bacteriovorus* – phenotypic variance at high cell densities using AFM, PCR, FISH (fluorescence in situ hybridization), and microscopy.
 - Extraction, separation (including HPLC), and characterization (including UV-vis spectroscopy) of *B. bacteriovorus* surface-associated isoprenoid compound, characteristic of host-independent phenotype.
 - Isolation of environmental strains of *B. bacteriovorus* using enrichment culture techniques.
- Postdoctoral Researcher, Northwestern University **2005**

Advisor: Professor Martina Hausner

- Characterized ammonia and nitrite oxidizing bacteria in heterotrophic and autotrophic biofilms using SCLM (scanning confocal laser microscopy) combined with FISH (fluorescence in situ hybridization).

GRADUATE EXPERIENCE

- Research Assistant, Northwestern University 2000 – 2005
Advisor: Professor Joseph T. Hupp, Morrison Professor of Chemistry, in collaboration with Professor Matthew R. Parsek.
 - Developed new methods for investigating bacterial attachment and biofilm development on specifically defined biotic surfaces in real time.
 - Functionalized glass surfaces to display proteins and supported hybrid bilayer membranes containing peptides or carbohydrates relevant to cystic fibrosis in flow cell experiments.
 - Used microbiological laboratory methods extensively: sterile technique; culturing and staining microorganisms; light microscopy, phase contrast microscopy, and SCLM.
 - Designed and implemented surfaces that inhibit bacterial growth by patterning UV irradiated, silver doped TiO₂ nanoparticle films in order to study microcolony growth and the *P. aeruginosa* quorum sensing system.
 - Studied diffraction-based sensing to detect and monitor bacterial attachment and microcolony growth.
 - Generated sensors consisting of protein-patterned surfaces via microcontact printing of fibronectin-inked PDMS stamps.
 - Studied photolithography to explore new patterning methods for biotic and biomimetic surfaces.

INDUSTRIAL EXPERIENCE

- Research Laboratory Technician, Grant Chemical Division Ferro Corp, 2000
 Zachary, LA
 - Led R&D project incorporating plant-produced solvents into a new pilot plant process.

UNDERGRADUATE EXPERIENCE

- Research Assistant, Louisiana State University 1999 - 2000
Advisor: Professor William E. Crowe
 - Utilized synthetic organic chemistry for several individual projects.
- Research Assistant, Colgate University 1999
Advisor: Professor Robert Bowman
 - Studied energy/electron transfer dynamics of TiO₂ nanoparticles and molecular ruthenium systems via femtosecond laser spectroscopy.
- Research Assistant, Louisiana State University 1997 - 1999
Advisor: Professor Robert M. Strongin
 - Investigated the synthesis, isolation, and characterization of C₁₂₂.

TEACHING, LEADERSHIP, AND MANAGEMENT EXPERIENCE

-
- Assistant Faculty, University of St. Thomas 2024 – Present
 - General Chemistry I and Lab
 - General Chemistry II and Lab
 - Inorganic Chemistry and Lab
 - Mentored Undergraduate Research Students 2025 – Present

- Direct undergraduate research investigating novel antimicrobial secondary metabolites from soil-derived bacteria, including compound isolation, purification, and chemical characterization.
- Visiting Faculty, University of St. Thomas 2024 – 2025
 - General Chemistry I
 - General Chemistry II Lab
- Instructor, Houston Community College 2024
 - General Chemistry I
- Instructor, Delta College 2019 - 2021
 - Intro Chemistry and Lab
 - World of Chemistry and Lab
- Instructor, Occidental College 2010 - 2012
 - Introduction to Chemistry
 - General Chemistry – Worked to develop and implement new curriculum.
 - General Chemistry Lab – Developed and implemented new labs that demonstrate ‘real world’ applications of chemistry.
- Mentored Two Undergraduate Research Students 2010
 - Worked closely with Evan Chang identifying genes related to isoprenoid biosynthesis in *B. bacteriovorus* using BLAST and PCR
 - Worked closely with Andrew Ma isolating environmental strains of *B. bacteriovorus* and exploring phenotypic variance at high cell densities of these environmental strains.
- Instructor, Occidental College 2009
 - Science and Ethics, Freshman Writing Seminar (Fall Semester)
- Mentored Five Undergraduate Research Students 2009
 - Worked closely with Thomas Andre and Vicki Nguyen extracting and isolating biosurfactant from host-independent *B. bacteriovorus*.
 - Worked closely with Hunter Benveneu on possible quorum sensing behavior in *B. bacteriovorus*.
 - Worked closely with Evan Chang exploring *B. bacteriovorus* phenotypic variance at high cell densities and reversion to host-dependent phenotype.
 - Worked closely with Barry Kang on using Marangoni flow to pattern surfaces with metallic nanostructures.
- Instructor, Occidental College 2009
 - Physical Chemistry (Spring Semester)
 - General Chemistry Lab (Spring Semester)
 - Energy and Society, Freshman Writing Seminar (Spring Semester)
- Teaching Assistant, Northwestern University 2000 - 2002
 - Advanced Analytical Chemistry laboratories
 - Organic Chemistry laboratories
- Tutor, Northwestern University 2002
 - Led group and one-on-one tutor sessions for student athletes in the Study Skills Tutorial Program sponsored by the Athletic Department

AWARDS AND AFFILIATIONS

- Occidental College Undergraduate Research Council
- COACH Workshop Travel Grant, Washington, DC, August 2009

- Phi Lambda Upsilon honor society member
- NSF REU (Research Experience for Undergraduates) grant, Prof. Robert Bowman, Department of Chemistry, Colgate University, Hamilton, NY (1999)
- NSF REU grant, Prof. Robert Strongin, Department of Chemistry, Louisiana State University, Baton Rouge, LA (1998)
- American Chemical Society member
- American Society for Microbiology member

PUBLICATIONS

M. A. Ferguson, M. E. Nunez, H. J. Kim, S. Goffredi, E. Shamakhov, L. Faudree, E. Chang, R. M. Landry; A. Ma; D. E. Choi, et al. "Spatially organized films from *Bdellovibrio bacteriovorus* prey lysates." *Appl. Environ. Microbiol.* **2014**, 80(23), 7405-7414.

R. M. Landry, D. An, J. T. Hupp, P. K. Singh, M. R. Parsek. "Mucin-*Pseudomonas aeruginosa* interactions promote biofilm formation and antibiotic resistance." *Mol. Microbiol.* **2006**, 59(1), 142-151.

L. Ma; K. D. Jackson; R. M. Landry; M. R. Parsek; D. J. Wozniak. "Analysis of *Pseudomonas aeruginosa* conditional Psl variants reveals roles for the Psl polysaccharide in adhesion and maintaining biofilm structure post attachment." *J. Bacteriol.* **2006**, 188(23), 8213-8221.

T. S. Fabre, W. D. Treleaven, T. D. McCarley, C. L. Newton, R. M. Landry, M. C. Saraiva, R. M. Strongin. "Fullerene-Derived Carbon Allotropes. Synthesis, Isolation and Characterization of C₁₂₂." *J. Org. Chem.* **1998**, 63, 3522-3523.

MEETINGS AND PRESENTATIONS

Wences, L., Ortiz, K., Stubbert, R. L., Stepp, C., Lopez Salinas, L., & Larios-Sanz, M. "Extraction and characterization of antimicrobial secondary metabolites in soil-dwelling bacteria." Presented at the American Chemical Society Spring 2026 National Meeting, Atlanta, GA, March 2026.

Ortiz, K.; Stubbert, R. "Upper Division Inorganic Lab Curriculum: Results from Student Accumulated Data." Presented at the University of St. Thomas Student Research Symposium, April 2025.

Wences, L.; Stubbert, R. "Quantitative Analysis of Silver Nanoparticles of Readily Available Colloidal Silver Supplements." Presented at the University of St. Thomas Student Research Symposium, April 2025.

C.B. Volle, M.A. Ferguson, M.E. Nunez, J.L. Schmitt, T. Andre, R. M. Landry, and Eileen M. Spain. "Physical and Chemical Properties of *Bdellovibrio bacteriovorus* and other Gram Negative Bacteria in Native Biofilm." Gordon Research Conference on Applied and Environmental Microbiology, Mount Holyoke College, South Hadley, MA, July 2009.

American Society for Microbiology, 5th Annual ASM Conference on Biofilms 2009, Cancun, Mexico, November 2009.

American Chemical Society, 238th National Meeting, Washington, D.C., August 2009. Participated in COACH Workshop, "Powerful Postdocs: Maximizing Your Potential in the Transition to the Job Market." (Group dedicated to supporting the success of women in science and engineering fields.)

American Chemical Society, 237th National Meeting, Salt Lake City, UT, March 2009.

R. M. Landry, J. T. Hupp, M. R. Parsek. "Influence of a Biotic Surface on *Pseudomonas aeruginosa* Biofilm Development" Inaugural Chemistry of Life Processes Institute Symposium, Northwestern University, Evanston, IL, April 2004.

R. M. Landry, J. T. Hupp, M. R. Parsek. "*Pseudomonas aeruginosa* Biofilm Development on Mucin-Derivatized Surfaces" American Society for Microbiology, 3rd Annual ASM Conference on Biofilms 2003, Victoria, British Columbia, November 2003.

T. S. Fabre, W. D. Treleaven, T. D. McCarley, C. L. Newton, R. M. Landry, M. C. Saraiva, R. M. Strongin. "Fullerene-derived carbon allotropes. Synthesis, isolation and characterization of C₁₂₂." Abstract of Papers, 215th ACS National Meeting, Dallas, TX, March 29th-April 2nd, 1998. ORGN-088.

REFERENCES:

JOSEPH T. HUPP

Morrison Professor of Chemistry
Department of Chemistry
Northwestern University
Evanston, IL 60208-3113
(847) 491-3504
j-hupp@northwestern.edu

EILEEN M. SPAIN

Professor of Chemistry
Chemistry Department
Occidental College
Los Angeles, CA 90041
(323) 259-2940
emspain@oxy.edu

BRIAN ALDRICH

Professor of Chemistry
Chemistry Department
Delta College
989-686-9115
brianaldrich@delta.edu

RICHA CHANDRA

Cullen Trust for Higher Education/
Dolores Welder Mitchell Chair in Chemistry
Associate Professor of Chemistry
Department of Chemistry and Biochemistry
University of St. Thomas
713-942-5928
chandrr@stthom.edu