

Theresa E. Rogers, Ph.D.

Curriculum Vitae

PROFESSIONAL EXPERIENCE

- 2019-2020 *Associate Professor, Biology, California Lutheran University, Thousand Oaks, CA*
- 2013-2019 *Assistant Professor, Biology, California Lutheran University, Thousand Oaks, CA*
- 2012-2013 *Visiting Assistant Professor, Biology & Environmental Studies, Alma College, Alma, MI*
- 2011-2012 *Postdoctoral Research Fellow, Microbiology and Immunology, University of Michigan, Ann Arbor, MI. Advisor: Eric Martens, Ph.D.*

EDUCATION

- 2006-2010 *Doctor of Philosophy, Microbiology, The Ohio State University, Columbus, OH.*
Thesis: Elucidating the Function of a Pseudo-tRNA in *Bacillus cereus*.
Advisor: Michael Ibba, Ph.D.
- 2003-2005 *Master of Science, Microbiology, University of Georgia, Athens, GA.*
University-Wide Fellowship Recipient
Thesis: Cellulase and Hemicellulase Activity within the Crane Fly, *Tipula abdominalis*, Larval Gut. Advisor: Joy Doran Peterson, Ph.D.
- 1998-2002 *Bachelor of Science, Biology, The Ohio State University, Columbus, OH.*
Magna cum Laude with Distinction in Biology
Honors Thesis: The serologic profile of patients with fibromyalgia.

PUBLICATIONS

1. Tamura, K., Hemsworth, G.R., Dejean, G., **Rogers, T.E.**, Pudlo, N.A., Urs, K., Jain, N., Davies, G.J., Martens, E.C., & Brumer, H. (2017). Molecular mechanism by which prominent human gut Bacteroidetes utilize mixed-linkage-glucans, major health-promoting cereal polysaccharides. *Cell Reports*, 21, 417-430. doi: 10.1016/j.celrep.2017.09.049
2. Bågenholm, V., Reddy, S.K., Bouraoui, H., Morrill, J., Kulcinskaja, E., Bahr, C.M., Aurelius, O., **Rogers, T.**, Xiao, Y., Logan, D.T., Martens, E.C., Koropatkin, N.M., and Stålbrand, H. (2017). Galactomannan catabolism conferred by a polysaccharide utilisation locus of *Bacteroides ovatus*: enzyme synergy and crystal structure of a β -mannanase. *Journal of Biological Chemistry*, 292, 229-243. doi:10.1074/jbc.M116.746438.
3. Rogowski, A., Briggs, J.A., Mortimer, J.C., Tryfona, T., Terrapon, N., Lowe, E.C., Baslé, A., Morland, C., Day, A.M., Zheng, H., **Rogers, T.E.**, Thompson, P., Hawkins, A.R., Yadav, M.P., Henrissat, B., Martens, E.C., Dupree, P., Gilbert, H.J., & Bolam, D.N. (2015). Glycan complexity dictates microbial resource allocation in the large intestine. *Nature Communications*, 6, 7481. doi:10.1038/ncomms8481

4. Larsbrink, J.*, **Rogers, T.E.***, Hemsworth, G.R.*, McKee, L.S., Tauzin, A.S., Spadiut, O., Klintner, S., Pudlo, N.A., Urs, K., Koropatkin, N.M., Creagh, A.L., Haynes, C.A., Kelly, A.G., Cederholm, S.N., Davies, G.J., Martens, E.C., & Brumer, H. (2014). A discrete genetic locus confers xyloglucan metabolism in select human gut Bacteroidetes. *Nature*, 506, 498-502. doi: 10.1038/nature12907 ***Authors contributed equally**
5. **Rogers, T.E.**, Koropatkin, N.M., Bell, J.S., Moya-Balash, M., Jasker, K., & Martens, E.C. (2013). Dynamic responses of *Bacteroides thetaiotaomicron* during growth on complex glycan mixtures. *Molecular Microbiology*, 88, 876-890. doi: 10.1111/mmi.12228
6. **Rogers, T.E.**, Ataide, S.F., Dare, K., Katz, A., Seveau, S., Roy, H., & Ibba, M. (2012). A pseudo-tRNA modulates antibiotic resistance in *Bacillus cereus*. *PLoS ONE*, 7, e41248. doi: 10.1371/journal.pone.0041248
7. Banerjee, R., Chen, S., Dare, K., Gilreath, M., Praetorius-Ibba, M., Reina, M., Reynolds, N., **Rogers, T.**, Roy, H., Yadavalli, S.S., & Ibba, M. (2010). tRNA: Cellular barcodes for amino acids. *FEBS Letters*, 584, 387-395. doi: 10.1016/j.febslet.2009.11.013
8. **Rogers, T.E.**, & Doran Peterson, J.B. (2010). Analysis of cellulolytic and hemicellulolytic enzyme activity within the *Tipula abdominalis* (Say) (Diptera; Tipulidae) larval gut and characterization of *Croceobacterium ilecola* gen. nov., sp. nov., isolated from the *Tipula abdominalis* larval hindgut. *Insect Science*, 17, 291-302. doi: 10.1111/j.1744-7917.2010.01346.x
9. Ataide, S.F., **Rogers, T.E.**, & Ibba, M. (2009). The CCA anticodon specifies separate functions inside and outside translation in *Bacillus cereus*. *RNA Biology*, 6, 479-487. PMID: PMC2784187
10. Cook, D.M., Henriksen, E.D., **Rogers, T.E.**, & Peterson, J.D. (2008). *Klugiella xanthotipulae* gen. nov., sp. nov., a novel member of the family Microbacteriaceae. *International Journal of Systematic and Evolutionary Microbiology*, 58, 2779-2782. doi: 10.1099/ijs.0.65748-0
11. Ataide, S.F., Wilson, S.N., Dang, S., **Rogers, T.E.**, Roy, B., Banerjee, R., Henkin, T.M., & Ibba, M. (2007). Mechanisms of resistance to an amino acid antibiotic that targets translation. *ACS Chemical Biology*, 2, 819- 827. doi: 10.1021/cb7002253
12. Praetorius-Ibba, M., Hausmann, C., Paras, M., **Rogers, T.E.**, & Ibba, M. (2007). Functional association between three archaeal aminoacyl-tRNA synthetases. *Journal of Biological Chemistry*, 282, 3680-3687. doi: 10.1074/jbc.M609988200
13. Praetorius-Ibba, M., **Rogers, T.E.**, Samson, R., Kelman, Z., & Ibba, M. (2005). Association between archaeal prolyl- and leucyl-tRNA synthetases enhances tRNA^{Pro} aminoacylation. *Journal of Biological Chemistry*, 280, 26099- 26104. doi: 10.1074/jbc.M503539200

PROFESSIONAL AFFILIATIONS

2003 – Present	American Society for Microbiology
2012 – Present	American Association for the Advancement of Science

EXTERNAL FUNDING

W.M. Keck Life Sciences Advanced Instrumentation Suite and Data Analysis/Active Learning

Classroom. \$300,000. W.M. Keck Foundation Undergraduate Education Grant Program. December 2015 Grant Cycle. Awarded to: Barber, C., LeBlanc, M., Marcey, D., Revie, D., and **Rogers, T.E.**

INTERNAL FUNDING (CALIFORNIA LUTHERAN UNIVERSITY)

Ronald E. McNair Postbaccalaureate Achievement Program

McNair Scholars received stipends to support living costs during their Summer Research Fellowship. McNair Faculty Mentor received \$1,000 stipend and \$500 for laboratory supplies per year per student.

Jung Summer Research Fellowships for Biological Science

Jung Fellows received stipends to support living costs during their Summer Research Fellowship. Mentor received \$500 stipend and \$500 for laboratory supplies per summer per student.

Swenson Science Summer Research Fellowships for the Natural Sciences

Swenson Fellows received stipends to support living costs during their Summer Research Fellowship. Mentor received \$500 stipend and \$500 for laboratory supplies per summer per student.

Steven Dorfman Research Fellows Program in the Environmental Sciences

Dorfman Fellows received stipends to support living costs during their Summer Research Fellowship. Mentor received \$500 stipend and \$500 for laboratory supplies per summer per student.

RESEARCH EXPERIENCE

Associate Professor of Biology.

Aug. 2013 - May 2020

Biology Department, California Lutheran University, Thousand Oaks, CA

- Mentored 15 undergraduate students in research project development and implementation.
- Soil and Water Research Projects:
 - Identification of antimicrobial production gene in a novel antibiotic producing soil isolate by transposon mutagenesis and reverse PCR.
 - Diversity of microbial communities from soil affected by wildfire.
 - Antibacterial and anticancer compounds produced by soil microbial isolates.
 - Antibiotic resistance gene abundance in a local wastewater treatment plant and waterways.
- Native and Honey Bee Gut Microbiota Research Projects:
 - Characterizing the gut microbial community of native green sweat bees (*Agapostemon spp.*) from the coastal California mainland.
 - Antimicrobial production by lactic acid bacteria isolated from the honey stomachs of worker honey bees (*Apis mellifera*) exposed to different diets.
 - Diversity analysis of the gut microbial community of worker honey bees (*Apis mellifera*) exposed to different diets.
- Sea Lion Fecal Microbiota Research Projects:
 - Comparison of fecal microbiota of California sea lions (*Zalophus californianus*) before, during, and after rehabilitation at Channel Island Marine & Wildlife Institute.

RESEARCH EXPERIENCE CONTINUED

Postdoctoral Fellow. Laboratory of Eric C. Martens, Ph.D. Jan. 2011 – Jul. 2012

Department of Microbiology and Immunology, University of Michigan, Ann Arbor, MI

- Examined complex carbohydrate degradation by two common human gut symbionts, *Bacteroidetes thetaiotaomicron* and *Bacteroides ovatus*, by deleting polysaccharide degradation genetic loci and monitoring growth phenotypes and gene expression of the resulting mutants.

Graduate Research Assistant. Laboratory of Michael Ibba, Ph.D. Apr. 2006 – Dec. 2010

Department of Microbiology, The Ohio State University, Columbus, OH

- Investigated the role of a pseudo-tRNA in the common food pathogen, *Bacillus cereus*, via a variety of molecular and biochemical techniques to determine its role in antibiotic resistance.

Graduate Research Assistant. Laboratory of Joy Doran Peterson, Ph.D. Jan. 2004 – Dec. 2005

Department of Microbiology, University of Georgia, Athens, GA

- Examined the cellulolytic and hemicellulolytic enzyme activity of the hindgut microbial community of the aquatic crane fly, *Tipula abdominalis*, through culture-dependent and independent techniques as a means to find novel degradative capabilities for converting agricultural waste products into biofuel.

Research Assistant. Laboratory of Michael Ibba, Ph.D. Jan. 2002 – May 2003

Department of Microbiology, The Ohio State University, Columbus, OH

- Performed a yeast two-hybrid screen and purified proteins to study protein-protein interactions of aminoacyl-tRNA synthetases from the methanogen *Methanothermobacter thermautotrophicus*.

TEACHING EXPERIENCE

Associate Professor of Biology, California Lutheran University, Thousand Oaks, CA 2019 - 2020

- *Microbiology*, Lecture and Laboratory (BIOL 361)
- *Molecular Biology*, Lecture and Laboratory (BIOL 426)
- *Introduction to Cells and Organisms*, Lecture (BIOL 121)

Assistant Professor of Biology, California Lutheran University, Thousand Oaks, CA 2013 - 2019

- *Microbiology*, Lecture and Laboratory (BIOL 361)
- *Molecular Biology*, Lecture and Laboratory (BIOL 426)
- *Introduction to Cells and Organisms*, Lecture (BIOL 121)
- *Introduction to Biological Experimentation II*, Laboratory (BIOL 124L)
- *Scientific Literature*, Lecture (BIOL 463)
- *Environmental Microbiology*, Special Topics Seminar (BIOL 482)
- *Botany: Plant Function and Structure*, Lecture and Laboratory (BIOL 482)

Visiting Assistant Professor, Biology & Environmental Studies, Alma College, Alma, MI 2012 - 2013

- *Microbiology*, Lecture and Laboratory (BIO 308)
- *Introduction to Environmental Studies*, Lecture and Laboratory (ENV 105)
- *Plant Function and Structure*, Lecture and Laboratory (BIO 220)

TEACHING EXPERIENCE CONTINUED

Graduate Teaching Assistant, Department of Microbiology and Center for Life Sciences Education,
The Ohio State University, Columbus, OH 2007 - 2010

- *Microbial Genetics Laboratory* (Micro 581)
- *General Microbiology II Laboratory* (Micro 521)
- *Basic and Practical Microbiology Laboratory* (Micro 509)
- *Introductory Biology Recitation and Laboratory* (Bio 113, Majors, & Bio H115, Honors)

Graduate Teaching Assistant, Microbiology Department, Univ. of Georgia, Athens, GA 2004 - 2005

- *Introductory Microbiology Laboratory* (MIBO 3510L)
- *Introduction to Microbiology: Carbohydrate Utilization*, Guest Lecture (MIBO 3500)

PROFESSIONAL DEVELOPMENT (CALIFORNIA LUTHERAN UNIVERSITY)

Tiny Earth (Small World Initiative) Partner Instructor and Faculty Mentor. 2015 - 2019

California Lutheran University, Thousand Oaks, CA

- Implemented Tiny Earth (previously known as Small World Initiative) in all sections of BIOL 361L, Microbiology Laboratory courses.

Mentor to faculty implementing the Small World Initiative at their institution.

- Stacey Peterson, PhD. Associate Professor, Department of Biological Sciences, Mount Saint Mary's University, Los Angeles, CA
- Joshua Caditz, MS. Science Faculty, Cate College Preparatory Boarding School, Carpinteria, CA

Small World Initiative Training Workshop, National University, Costa Mesa, CA Jun. 2-6, 2015

- Workshop to transform undergraduate life science education by introducing undergraduates to the process of scientific research based on the core project of antibiotic discovery.

GCAT-SEEK: NextGen Sequencing Undergraduate Education Workshop June 27 - July 1, 2016

California State University, Los Angeles, CA

The Genome Consortium for Active Teaching NextGen Sequencing Group

- Attended workshop with Dennis Revie to prepare faculty to conduct research and teach next-generation sequencing tools in our undergraduate courses.
- Designed semester-long research projects involving Next Generation DNA Sequencing with Dennis Revie for BIOL 426L, Molecular Biology and BIOL 428L, Virology Laboratory courses.

CAL-ACT Institute: *Center for Active Learning - Active, Collaborative, Transformative teaching & learning.*

A hands-on workshop intended to promote the spread of active learning in science classrooms.

- Evaluated and analyzed empirical studies that support active learning pedagogy.
- Converted at least one of their current passive teaching elements to an active learning one.

Howard Hughes Medical Institute and National Academies Summer Institute on Undergraduate Education in Biology. University of Colorado, Boulder, CO July 22-26, 2013 & July 20-21, 2014

- *Participant* in workshop to develop practical strategies for enhancing student learning using scientific teaching principles of active learning, assessment, and diversity in order to improve classroom education and attract more diverse students to research in the biological sciences.

PROFESSIONAL LABORATORY SKILLS

Molecular Biology:

- DNA and RNA extraction and purification from pure culture and environmental samples, including soil, water filtrate, insect and mammalian gut and fecal content
- Ribosome and polysome purification from *Bacillus cereus* and *Escherichia coli*
- *In vitro*: Molecular cloning, PCR, RT-PCR, qPCR, 5' and 3' RACE, site-directed mutagenesis
- Protein expression (*in vivo*), extraction, purification, and immunoblotting
- Metagenomic, RNA transcript, and 16S rRNA gene library construction
- NextGen Sequencing via the Illumina® MiSeq
- Transposon mutant library production in *Rhodobacter sphaeroides* (screen for ethylmalonyl-CoA pathway mutants) and *Pseudomonas spp.* (screen for antibiotic production mutants)
- Formation of single gene and large DNA locus deletion mutants in *Bacteroides spp.*
- Chemical probing and immunostaining of whole cells and flow cytometry (FACSCanto™, BD)

Microorganism Cultivation: Experienced with both model and non-model organisms

- Pure Cultures: *Acinetobacter baylyi* (soil isolate), *Bacillus cereus* (BSL-2), *Bacteroides ovatus* and *Bacteroides thetaiotaomicron* (anaerobes, BSL-2), *Croceobacterium ilecola* (soil isolate), *Escherichia coli* (model bacteria), *Pseudomonas spp.* (soil isolate), *Rhodobacter sphaeroides* (anoxygenic phototroph), *Saccharomyces cerevisiae* (model yeast)
- Environmental isolation from soil, hot springs, native and honey bee gut, and crane fly larva gut

Bioinformatics:

- Analysis of DNA sequence data obtained by Sanger and Illumina® sequencing, including 16S rRNA gene microbial community analysis (QIIME 2)
- Fluorescence microscopy intensity analysis (Metamorph Premier)
- Flow cytometry analysis (FacsDIVA v6)
- Transcriptional microarray analysis (ArrayStar® v2.1)
- Regulatory RNA-target interaction predictions (TargetRNA)
- Protein structure and ligand binding model formation (SWISS-MODEL)

Advanced Microscopy:

- Fluorescence Microscopy (Axio Observer D1 inverted, Zeiss; and Olympus BX60 upright)
- Confocal Microscopy (Nikon D-Eclipse C1): Experience using a laser scanning confocal microscope to view live/dead-stained biofilms for teaching purposes.
- Laser Capture Microdissection (Thermo Arcturus Veritas): Experience using a laser capture microdissection system to obtain localized gut samples for RNA analysis.
- Transmission Electron Microscopy (FEI Tecnai G2 Spirit): After I cultured and fixed cells, secondary fixation and staining were performed at the Ohio State University Campus Microscopy & Imaging Facility. Microscopy was performed alongside a microscopy technician.

Additional Relevant Skills:

- Ethanologenic fermentations of sugar beet pulp with ethanol-tolerant *E. coli* KO11
- Analyzed fermentation products by Gas chromatography

UNIVERSITY AND DEPARTMENT SERVICE (CALIFORNIA LUTHERAN UNIVERSITY)

- Illumina® MiSeq Next Generation DNA Sequencer Maintenance** 2016 - 2020
- Weekly standby washes, monthly maintenance washes, and computer program updates.
- Institutional Animal Care and Use Committee (IACUC)** 2014 - 2016
- Reviewed applications and protocols for the use of animal subjects in research.
- SEEd (Sustainable Edible Education) Project Garden** 2013 - 2014
- Assisted in the organization, preparation, maintenance, and harvest of the garden.
 - Integrated the SEEd garden with laboratory course work for Biol 482: Botany in Spring 2014.
- Supervisor of Departmental Assistants (DAs) for BIOL 361L and BIOL 426L** 2013 - 2020
- Trained DAs in preparation of microbial growth media, chemical solutions, & proper waste disposal.
- Beta Beta Beta (Tri-Beta) Biological Honor Society and Biology Club**
Faculty Advisor (2018 – 2020), Faculty Co-Advisor with Kristopher Karsten (2014 – 2018)
- Swenson Science Center: New Building Fundraising and Preparation** 2013 - 2020
- Identified specific needs for the proposed new science building with building architects, prepared documents for marketing, and provided feedback on interior architecture and design.
- Educational Policies and Planning Committee (EPPC)**
- Chair* (Interim chair for sabbatical replacement) Fall Semester, 2019
- Undergraduate Subcommittee Chair* 2016 - 2019
- Reviewed curricula and course additions and alterations.
 - Organized and ran bi-weekly meetings to review curricula and course additions and changes.

COMMUNITY SERVICE (VENTURA COUNTY)

- Next Generation Science Standards (NGSS) for California Public Schools**
- Presented current research to science and math teachers at Ventura and Thousand Oaks Middle Schools and helped develop lesson plans for NGSS. Sept. 23 & 24, 2015
 - Luncheon with STEM teachers from Ventura and Thousand Oaks Middle Schools. Jun. 18, 2016
- Exploring the effects of fermented foods on the human gut microbiome.** Mar. - Sept. 2018
- Citizen Science Project on the human gut microbiome with Slow Food Ventura County
- Analyzed metagenomic data for a citizen science study: Monitoring gut microbial communities before, during, and after the introduction of locally produced fermented foods.
- Fermenting Change: A Dinner for the Microbiome, Ventura, CA** June 11, 2018
- Presented results of Slow Food Ventura County microbiome study to participants and helped interpret Ubiome data to individual participants, with Janos Ertl and Sean Kalbak (students).
- Santa Barbara Fermentation Festival: Presentation and Panel Discussion.** Sept. 10, 2018
- Presented results of microbiome data analysis at the Santa Barbara Fermentation Festival.

REFERENCES

Kristopher B. Karsten, Ph.D.

Chair of Biology Department and Associate Professor of Biology

California Lutheran University, Thousand Oaks, CA

Relationship: Supervisor, mentor, and colleague

karsten@callutheran.edu

David Marcey, Ph.D.

Previous Chair of Biology, Professor and Fletcher Jones Professor of Developmental Biology

California Lutheran University, Thousand Oaks, CA

Relationship: Supervisor, mentor, and colleague

marcey@callutheran.edu

Michael Ibba, Ph.D.

Professor and Chair, Department of Microbiology, The Ohio State University, Columbus, OH

Future: Dean, Schmid College of Science and Technology, Chapman University, Orange, CA

Relationship: Doctoral thesis advisor and mentor

ibba.1@osu.edu

Katrina Brown

Scientist II, Technical Operations at Thermo Fisher Scientific, West Hills, CA

Relationship: Former Research Student and Departmental Assistant for Microbiology and Molecular Biology

Laboratory Classes at California Lutheran University, Thousand Oaks, CA

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