

# LISA M. RYNO

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## Experience

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### **Oberlin College** Oberlin, OH

Associate Professor of Chemistry and Biochemistry

July 2021 – present

Assistant Professor of Chemistry and Biochemistry

July 2014 – July 2021

### **The University of San Diego** San Diego, CA

Postdoctoral Research Associate, Adviser: Prof. Peter Iovine

Jan. 2013 – June 2014

Adjunct Assistant Professor

## Education

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### **The Scripps Research Institute** La Jolla, CA

2008 – 2012

Ph.D., Chemical Biology, Adviser: Prof. Jeffery Kelly,

“*Adapting Proteostasis Through Stress-Responsive Signaling*”

### **Trinity University** San Antonio, TX

2004 – 2008

B.S. Chemistry, Research Adviser: Prof. Adam Urbach

## Publications

‡ Indicates Oberlin undergraduate co-author

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- (15) Buck, L.D. ‡, Paladino, M.M. ‡, Nagashima, K. ‡, Holtzman, J.S. ‡, Brezel, E.R. ‡, Urso, S.J. ‡, **Ryno, L.M.** Temperature-dependent influence of FliA overexpression on PHL628 *E. coli* biofilm growth and composition. *Frontiers in Cellular and Infection Microbiology*, **2021**, 11, 775270.
- (14) Bell, E.W. ‡; Zheng, E.J. ‡; **Ryno, L.M.** Identification of inhibitors of the *E. coli* chaperone SurA using *in silico* and *in vitro* techniques. *Bioorganic and Medicinal Chemistry Letters*, **2018**, 28(22), 3540-3548.
- (13) **Ryno, L.M.**; Cottine, C. The biological impact and ethical implications of pesticide use: a short module for upper-division undergraduate biochemistry courses. *Journal of Chemical Education*, **2018**, 95 (10), 1771-1777.
- (12) Genereux, J.C.; Qu, S.; Zhou, M.; **Ryno, L.M.**; Wang, S.; Shoulders, M.D.; Kaufman, R.J.; Lasmezas, C.I.; Kelly, J.W.; Wiseman, R.L. Unfolded protein response-induced ERdj3 secretion links ER stress to extracellular proteostasis. *EMBOJ*, **2015**, 34(1), 4-19.
- (11) Cooley, C.B.\*; **Ryno, L.M.\***; Morgan, G.F.; Hulleman, J.D.; Kelly, J.W.; Wiseman, R.L. Activating the ATF6 Arm of the UPR Decreases the Secretion of Amyloidogenic Immunoglobulin Light Chain. *Proceedings of the National Academy of Sciences*. **2014**, 111(36), 13046-13051.  
**\*equal authorship**
- (10) **Ryno, L.M.**; Reese, C.; Tolan, M.; O'Brien, J.; Short, G.; Sorriano, G.; Nettleton, J.; Fulton, K.; Iovine, P.M. Amphiphilic Graft Copolymers from End-Functionalized Starches: Synthesis, Characterization, Thin Film Preparation and Small Molecule Loading. *Biomacromolecules*. **2014**, 15 (8), pp 2944-2951.

- (9) Wang, X.; Cattaneo, F.; **Ryno, L.M.**; Hulleman, J.D.; Reixach, N.; Buxbaum, J.N. The Systemic Amyloid Precursor Transthyretin (TTR) Behaves as A Neuronal Stress protein regulated by HSF1 in SH- SY5Y human neuroblastoma cells and APP23 Alzheimer's disease Model Mice. *Journal of Neuroscience*. **2014**, 34(21), 7253–7265.
- (8) **Ryno, L.M.**; Genereux, J.C.; Naito, T.; Morimoto, R.I.; Powers, E.T.; Shoulders, M.D.; Wiseman, R.L. Characterizing the Altered Cellular Proteome Induced by the Stress-Independent Activation of Heat Shock Factor 1. *ACS Chemical Biology*. **2014**, 9(6), 1273–1283.
- (7) **Ryno, L.M.**; Levine, Y.; Iovine, P.M. Synthesis and Characterization of Amylose-Guest Complexes Prepared by Microwave Irradiation. *Carbohydrate Research*. **2014**, 383, 82-8.
- (6) Shoulders, M.D.\*; **Ryno, L.M.\***; Kelly J.W.; Wiseman, R.L. Broadly Applicable Methodology for the Doseable, Rapid, and Small Molecule-Mediated Regulation of Transcription Factors in Human Cells. *Journal of the American Chemical Society*. **2013**, 135(22), 8129–32.  
\*equal authorship
- (5) **Ryno, L.M.**; Wiseman, R. L.; Kelly, J.W. Targeting Unfolded Protein Response Signaling Pathways to Ameliorate Protein Misfolding Diseases. *Current Opinions in Chemical Biology*, **2013**, 17, 346-352.
- (4) Shoulders, M.D.; **Ryno, L.M.**; Genereux, J.C.; Moresco, J.J.; Tu, P.G.; Yates, J.R.; Su, A.I.; Kelly J.W.; Wiseman, R.L. Stress Independent Activation of XBP1s and/or ATF6 Reveals Three Functionally Diverse ER Proteostasis Environments. *Cell Reports*, **2013**, 3(4), 1279-92.
- (3) Ramalingam, V.; Kwee, S.K.; **Ryno, L.M.**; Urbach, A.R. A cucurbit[8]uril sponge. *Organic and Biomolecular Chemistry*, **2012**, 10(43), 8587-9.
- (2) Chinai, J.M.; Taylor, A.B.; **Ryno, L.M.**; Hargreaves, N.D.; Morris, C; Hart, P.J., Urbach, A.R. Molecular Recognition of Insulin by a Synthetic Receptor. *Journal of the American Chemical Society*; **2011**, 133(23), 8810-8813.
- (1) **Heitmann, L. M.**; Taylor, A. B.; Hart, P. J.; Urbach, A. R. Sequence specific recognition and cooperative dimerization of N-terminal aromatic peptides by a synthetic host. *Journal of the American Chemical Society*; **2006**, 128(38), 12574-12581.

## Seminars and Presentations

‡ Indicates Oberlin undergraduate, presenter is underlined

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“Searching for new antibiotics: chaperones and stress-responsive signaling pathways as targets for antibiotic development.” Invited seminar, Cleveland State University Chemistry Department, Cleveland, OH. January 31, 2020.

“Sabbatical Tales: Inhibiting Chaperones, Stressing Out Bacteria, and Detecting Antibiotics.” Oberlin Chemistry and Biochemistry Department Seminar. Oberlin, OH. December 11, 2019

“The biological impact and ethical implications of pesticide use: a short module for upper-division undergraduate biochemistry courses,” oral presentation at the 25<sup>th</sup> Biennial Conference on Chemical Education, July 29 – August 1, 2018, South Bend, IN.

“Improving retention of underrepresented minority students in STEM through near-peer mentoring,” oral presentation at the annual Cottrell Scholar Conference, July 12, 2018, Tucson, AZ.

“Investigating the impact of *fliA* overexpression on the formation and composition of *E. coli* biofilms at different temperatures,” Cottrell Scholar Conference, July 11 – 13, 2018, Tucson, AZ. (Poster)

“Discovering inhibitors of the chaperone SurA using *in silico* and *in vitro* techniques,” invited seminar in the Department of Chemistry at the University of Akron, December 5, 2017.

Sarel J. Loewus<sup>‡</sup>, Emma R. Brezel<sup>‡</sup>, Erica J. Zheng<sup>‡</sup>, Lisa M. Ryno. “Targeting stress-responsive and sigma factor-controlled signaling pathways to modulate biofilm growth and composition.” American Society of Biochemistry and Molecular Biology National Meeting at the Experimental Biology Conference, Antibacterial Targets and Drug Discovery Division, April 2017, Chicago, IL. (Poster)

Sarel J. Loewus<sup>‡</sup>, Emma R. Brezel<sup>‡</sup>, Erica J. Zheng<sup>‡</sup>, Lisa M. Ryno. “Targeting stress-responsive and sigma factor-controlled signaling pathways to modulate biofilm growth and composition.” Gordon Research Conference: Microbial Stress Responses, July 2016. (Poster)

“Protein homeostasis and prokaryotes: investigating unexplored signaling pathways and chaperones for the development of bactericidal agents.” Science Friday Seminar Series, Oberlin College. October 16, 2015

“Protein Homeostasis, Polymers and Prokaryotes” invited seminar at John Carroll University, October 29, 2014.

#### Off- Campus Student Presentations

Luke D. Buck<sup>‡</sup>, Sarel J. Loewus<sup>‡</sup>, Lisa M. Ryno. “Quantifying the Influence of *rpoF* Overexpression on Extracellular Biomolecules in PHL628 *E. coli* Biofilms by Confocal Microscopy” American Society of Biochemistry and Molecular Biology National Meeting at the Experimental Biology Conference, Antibacterial Targets and Drug Discovery Division, April 2021 (Poster, virtual)

Eunice Y. Kim<sup>‡</sup>, Charlotte L. Andrews<sup>‡</sup>, Lisa M. Ryno. “Understanding the Role of *yhjH* Phosphodiesterase on Biofilm Formation in *E. coli*” American Society of Biochemistry and Molecular Biology National Meeting at the Experimental Biology Conference, Antibacterial Targets and Drug Discovery Division, April 2021 (Poster, virtual)

Madison M. Paladino<sup>‡</sup>, Emma R. Brezel<sup>‡</sup>, Joshua S. Holtzman<sup>‡</sup>, Lisa M. Ryno. “Temperature-dependent Influence of RpoF Overexpression on the *E. coli* Extracellular Proteome” American Society of Biochemistry and Molecular Biology National Meeting at the Experimental Biology Conference, Antibacterial Targets and Drug Discovery Division, April 2021 (Poster, virtual)

Erica J. Zheng<sup>‡</sup>, Eric W. Bell<sup>‡</sup>, Lisa M. Ryno. “Exploring inhibitors of the periplasmic chaperone SurA using fluorescence anisotropy.” American Society of Biochemistry and Molecular Biology National Meeting at the Experimental Biology Conference, Antibacterial Targets and Drug Discovery Division, April 2017, Chicago, IL. (Poster)

Eric W. Bell<sup>‡</sup>, Lisa M. Ryno. “Insights into the binding behavior of chaperone SurA using *in silico* methods.” 251st American Chemical Society National Meeting, Chemical Education Division, March 2016, San Diego, CA (Poster).

Sarel J. Loewus<sup>‡</sup>, Emily M. Curley\*, Lisa M. Ryno. “Stress-responsive signaling pathways as targets for modulating biofilm growth.” 251st American Chemical Society National Meeting, Biological Chemistry Division, March 2016, San Diego, CA (Poster).

## Grants and Fellowships

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NSF-S-STEM Proposal (Co-PI): “Launching into STEM: Promoting long-term self-efficacy and confidence in low-income STEM students through early research and mentoring.” Submitted April 2021, not funded.

Research Corporation for Science Advancement (RCSA) Scialog Fellow. Microbiome, Neurobiology and Disease. Awarded January 2020. Travel and meeting expenses funded by the RCSA, the Paul G. Allen Frontiers Group and the Frederick Gardner Cottrell Foundation.

NSF MRI (Co-PI): “Acquisition of a Confocal Microscope for Student-Faculty Research and Research Training” 10/1/2018, \$576,185 (CHE-1828041).

Research Corporation for Science Advancement Cottrell Scholar Award: “Investigating the impact of *fliA* overexpression on the formation and composition of *E. coli* biofilms at different temperatures.” Received January 2018, \$100,000.

NSF MRI Award (Co-PI): “Acquisition of a Scanning Electron Microscope with integrated EDS, WDS, and EBSD for research and undergraduate research training” Awarded 6/6/2016, \$332,105 (CHE-1626271)

## Undergraduate Research Students Mentored

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Charlotte Andrews, Oberlin College '19  
Eric Bell, Oberlin College '17, Honors Student  
Emma Brezel, Oberlin College '17  
Luke Buck, Oberlin College '21, Honors Student  
Peter Choi, Oberlin College '23  
Emily Curley, Oberlin College '17  
Dorothy DeBiasse, Oberlin College '19  
Anna Francis, Oberlin College '23  
Aditi Gupta, Oberlin College '17  
Joshua Holtzman, Oberlin College '21  
Sarah Hughes, Oberlin College '18  
Eunice Kim, Oberlin College '21, Honors Student  
Sarel Loewus, Oberlin College '16, Honors Student  
Kyogo Nagashima, Oberlin College '24  
Maddison Paladino, Oberlin College '21  
Yasmine Ramachandra, Oberlin College '19  
Delia Scoville, Oberlin College '16  
Ryan Taylor, Oberlin College '23  
JoAnn Tinker, Oberlin College '20  
Yuan Tian, Oberlin College '21  
Gabrielle Walsh, Oberlin College '18  
Erica Zheng, Oberlin College '17, Honors Student

## Service

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### National

Manuscript Reviewer for *ACS Infectious Diseases*, 2020-present  
Manuscript Reviewer for *Bioorganic and Medicinal Chemistry Letters*, 2019-present  
Manuscript Reviewer for *Frontiers in Cell and Developmental Biology*, 2022-present  
Manuscript Reviewer for *Journal of Chemical Education*, 2019-present  
Manuscript Reviewer for *Organic Chemistry Letters*, 2019-present

Contributor for Council for Undergraduate Research (CUR) blog, 2019-present  
Annual Biomedical Research Conference for Minority Students (ABRCMS) abstract reviewer, October 2016, 2018, 2019 and 2021.

### *Oberlin College*

Institutional Animal Care and Use Committee (Fall 2015-present)  
Individual Major Committee (Fall 2015-Spring 2017)  
Health Careers Committee (Fall 2015-Spring 2017)  
Sigma Xi Membership Committee (Spring 2016)  
Science Friday Coordinator (Spring 2016 - Fall 2016)  
General Faculty Committee on Equity Diversity and Inclusion (Fall 2020 – present)  
General Faculty Committee on Undergraduate Research (Fall 2020 – present)  
Neuroscience Honors Committee Member, Weelic Chong OC '15  
Biology Honors Committee Member, Lisa-Qiao MacDonald OC '16  
Biology Honors Committee Member, Roger Ort OC '21  
Biology Honors Committee Member, Roberto Ramos OC '21

### **Other Scholarships/Awards**

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NSF Graduate Research Fellowship Honorable Mention (2008, 2009)  
William McGavock Award Recipient for Excellence in Undergraduate Research (2008)  
Barry M. Goldwater Scholarship (2007)  
Jean Dreyfus Boissevain Undergraduate Scholarship for Excellence in Chemistry (2007)  
Frank and Sarah McKnight Prize in Undergraduate Chemistry Finalist (2007)

### **Professional Associations**

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American Chemical Society (2010–present)  
American Society for Biochemistry and Molecular Biology (2014–present)  
Sigma Xi (2015–present)