

Education

Doctor of Philosophy in Biochemistry and Molecular Biophysics, 2020

University of Pennsylvania, Philadelphia, PA

Recipient of the 2021 Saul Winegrad Award for Outstanding Dissertation in Biochemistry

Honors Bachelor of Science in Chemistry, 2014

University of Delaware, Newark, DE

Academic Research Experience

Postdoctoral Fellow, National Institute of Diabetes Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Bethesda, MD, September 2020-present (Mentor: Priyanka Narayan, PhD)

Graduate Research Fellow, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, August 2014-August 2020 (Mentor: Prof. James Shorter, PhD)

Undergraduate Research Fellow, Department of Chemical and Biomolecular Engineering, University of Delaware, February 2011-August 2013 (Mentor: Prof. David Colby, PhD)

Publications

March Z.M., K. Sweeny, H. Kim, X. Yan, L.M. Castellano, M.E. Jackrel, E. Chuang, E. Gomes, K. Michalska, R. Jedrzejczak, A. Joachimiak, K. Caldwell, G. Caldwell, O. Shalem, and J. Shorter. Therapeutic genetic variation revealed in diverse Hsp104 homologs *eLife* 9e57457.

Jones R.D., C. Enam, R. Ibarra, H.R. Borrer, K.E. Mostoller, E. K. Fredrickson, J. Lin, E. Chuang, **Z. March**, J. Shorter, T. Ravid, G. Kleiger, and R.G. Gardner (2019). The extent of Ssa1/Ssa2 Hsp70 chaperone involvement in nuclear protein quality control varies with the substrate. *Mol Biol Cell* **31**(3), 221-33.

March Z.M.*, K.L. Mack*, and J. Shorter (2019). AAA+ protein-based technologies to counter neurodegenerative disease. *Biophys J* **116**(8), 1380-5. (**Equal contributions*)

Michalska K.* , K. Zhang* , **Z.M. March***, C. Hatzos-Skintges, G. Pintilie, L. Bigelow, L.M. Castellano, L.J. Miles, M.E. Jackrel., E. Chuang, R. Jedrzejczak, J. Shorter[^], W. Chiu[^], and A. Joachimiak[^] (2019). Structure and function of an Hsp104 orthologue from the thermophilic fungus *Calcarisporiella thermophila*. *Structure* **27**(3), 449-63. (**Equal contributions*)

March Z.M., O.D. King, and J. Shorter (2016). Prion-like domains as epigenetic regulators, scaffolds for subcellular organization, and drivers of neurodegenerative disease. *Brain Res* **1647**, 9-18.

Magin R.S., **Z.M. March**, and R. Marmorstein (2016). The N-terminal acetyltransferase Naa10/ARD1 does not acetylate lysine residues. *J Biol Chem* **291**(10), 5270-7.

Kramer M.C., D. Liang, D.C. Tatomer, B. Gold, **Z.M. March**, S. Cherry, and J.E. Wilusz (2015). Combinatorial control of *Drosophila* circular RNA expression by intronic repeats, hnRNPs, and SR proteins. *Genes & Dev* **29**(20), 2168-82.

Morozova O.A., **Z.M. March**, A.S. Robinson, and D.W. Colby (2013). Conformational features of tau fibrils from Alzheimer's disease brain are faithfully propagated by unmodified recombinant protein. *Biochemistry* **52**(40), 6960-6967.

Grants

NINDS Competitive Fellowship Award* “Deciphering molecular mechanisms of Alzheimer’s disease risk and resilience,” 2022-2025 (~\$270,000) (**intramural equivalent to NIH F32*)

American Heart Association Postdoctoral Fellowship “Defining molecular mechanisms of APOE-mediated risk and resilience to cerebral amyloid angiopathy,” 2021 (\$138,384) (declined)

NIH F31 NS101807 “Defining the molecular basis of substrate selection by diverse Hsp104 homologues,” 2017-2020 (\$120,754)

NIH T32 GM071399 “Training at the Chemistry-Biology Interface,” 2016-2017 (\$39,220)

HHMI Undergraduate Fellowship, “Biochemical evidence for the prion-like propagation of tau,” 2011-2013 (\$10,500)

University of Delaware full tuition merit scholarship, 2010-2014 (~\$120,000)

Awards

University of Pennsylvania, Saul Winegrad Award for Outstanding Dissertation in Biochemistry, 2021

ASBMB Graduate Student Travel Award, 2017

Honorable Mention, National Science Foundation (NSF) Graduate Research Fellowship Program, 2015 and 2016

Seminars

“Therapeutic genetic variation revealed in diverse Hsp104 homologs,” Gitler-Myong-Shorter-Ha Research Retreat, Dept. of Biophysics, Johns Hopkins University, Baltimore, MD (March 4, 2020)

“Defining functional diversity of Hsp104 homologs,” Friday Research Discussions, Dept. of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA (January 20, 2017)

“Defining Hsp104 homologs as selective modifiers of proteotoxicity,” Friday Research Discussions, Dept. of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA (January 15, 2016)

Conference presentations

“Therapeutic genetic variation revealed in diverse Hsp104 homologs,” Keystone Symposium on AAA+ Proteins: From Atomic Structures to Organisms, Tahoe City, CA (January 28, 2020)

“Profiling diverse Hsp104 homologs reveals natural disaggregases that antagonize proteotoxic misfolding events,” ASCBIEMBO, Washington, DC (December 9, 2019)

Profiling diverse Hsp104 homologs reveals natural disaggregases that antagonize proteotoxic misfolding events,” ASCBIEMBO, San Diego, CA (December 10, 2018)

“Profiling diverse Hsp104 homologs reveals natural disaggregases that modulate aberrant phase transitions,” EMBOEMBL Symposium on Cellular Mechanisms Driven by Liquid Phase Separation, EMBL-Heidelberg, Germany (May 14, 2018)

“Defining conserved and divergent functions of Hsp104,” ASBCIEMBO 2017, Philadelphia, PA (December 4, 2017)

“Defining functional variation among Hsp104 homologs,” Experimental Biology 2017, Chicago, IL (April 23, 2017)

“Defining the molecular basis of substrate selection by diverse Hsp104 homologs,” 252nd Annual Meeting of the American Chemical Society, Philadelphia, PA (August 21, 2016)

“Detection of pathological tau conformers in cerebrospinal fluid,” Experimental Biology 2013, Boston MA (April 23, 2013)

Teaching and Mentoring Experience

University of Pennsylvania

Teaching Assistant, Department of Biochemistry & Biophysics

- BMB650, Current Biochemical Topics, Spring 2017

Supervised graduate student rotation projects, Department of Biochemistry & Biophysics

- Pam Gallo, Fall 2018; Sydney Cason, Spring 2017; Leann Miles, Spring 2016

Supervised undergraduate research projects, Department of Biochemistry & Biophysics

- Megan Noll and Oscar Hernandez, 2015-2017

University of Delaware

Laboratory Teaching Assistant, Department of Chemistry & Biochemistry

- CHEM 104, General Chemistry II, Spring 2014
- CHEM 322, Organic Chemistry II, Winter 2014

Recitation Leader, Department of Chemistry & Biochemistry

- CHEM 103, General Chemistry I, Fall 2013

University Teaching Assistant, Department of Chemistry & Biochemistry

- CHEM 104, Honors General Chemistry II, Spring 2013
- CHEM 103, Honors General Chemistry I, Fall 2012

Leadership and Service

Co-Chair of Speakers Committee, Fellows Advisory Board, NIDDK/NIH, 2021-present

Responsible for soliciting nominations and inviting keynote speakers for annual fellows-run scientific conference

Ad hoc peer reviewer for research journals, including *EMBO Molecular Medicine* and *eLife*, 2020-present

Host for student-invited seminar speakers, Dept. of Biochemistry and Biophysics, University of Pennsylvania, 2016-2019

- Invited and hosted three seminar speakers (Randal Halfmann, Stowers and D. Allan Drummond, Univ. of Chicago in Fall 2016; Geraldine Seydoux, Johns Hopkins in Spring 2019) as part of weekly dept. seminar series

Organizer of Chemistry-Biology Interface Research Retreat, Fall 2016

- Invited and hosted external keynote speaker (Tania Baker, MIT) and selected student speakers for semi-annual research retreat at Penn