

Liam M. Longo

CONTACT INFORMATION

Weizmann Institute of Science
Department of Biological Chemistry
Rehovot, Israel

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PROFESSIONAL EXPERIENCE

Weizmann Institute of Science

Postdoctoral Fellow, Department of Biological Chemistry, 2015 - Present

★ Postdoctoral Advisor: Sarel Fleishman

EDUCATION

Florida State University

Ph.D., *Molecular Biophysics*, 2014

★ Dissertation: "Symmetry and Simplicity in Protein Evolution and Design"

★ Thesis Director: Michael Blaber

B.A., *Biochemistry* with distinction, 2009

JOURNAL ARTICLES

19. *Sequence Repetition Promotes Cooperative Unfolding and Disfavors Aggregation of a Symmetric Single-domain Globular Protein*, **Longo, L.M.**, Gao, Y., Tenorio, C.A., Paravastu, A.K. and Blaber, M. (in preparation) (2015)
18. *Evolution of a Protein Folding Nucleus*, Xia, X., **Longo, L.M.**, Sutherland, M.A. and Blaber, M. *Protein Science* (in press) (2015)
 - ★ Xia, X. and Longo, L.M. contributed equally to this work
 - ★ Selected for "Protein Evolution" Special Edition
17. *Mutation Choice to Eliminate Buried Free Cysteines in Protein Therapeutics*, Xia, X., **Longo, L.M.** and Blaber, M. *J. Pharm. Sci* **104**, 566-576 (2015)
 - ★ Selected for "Two Decades of Publishing Excellence in Biotechnology" Special Edition
16. *Emergence of Aromatic Amino Acid Biosynthesis Enables Halophile to Mesophile Protein Adaptation*, **Longo, L.M.**, Tenorio, C.A., Kumru, O.S., Middaugh, C.R. and Blaber, M. *Protein Science* **24**, 27-37 (2015)
15. *Characterization of binding of LARP6 to the 5' stem-loop of collagen mRNAs: implications for synthesis of type I collagen*, Stefanovic, L., **Longo, L.M.**, Zhang, Y., Stefanovic, B. *RNA Biology* **11**, 1386-1401 (2014)
14. *Evolution and Design of Protein Structure by Folding Nucleus Symmetric Expansion*, **Longo, L.M.**, Kumru, O.S., Middaugh, C.R. and Blaber, M. *Cell: Structure* **22**, 1377-1384 (2014)
13. *Symmetric Protein Architecture in Protein Design: Top-Down Symmetric Deconstruction*, **Longo, L.M.** and Blaber, M. *Protein Design, Methods in Molecular Biology* **1216**, 161-182 (2014)
 - ★ Cover article
12. *Prebiotic Protein Design Supports a Halophile Origin of Foldable Proteins*, **Longo, L.M.** and Blaber, M. *Frontiers in Microbiology* **4**, 418 (2014)
11. *Biophysical Characterization of a Thermoalkalophilic Esterase from Geobacillus sp.*, **Longo, L.M.**, Şanlı-Mohamed, G. and Blaber, M. *Journal of Proteins and Proteomics* **4**, 123-128 (2013)

10. *Kallikrein-related Peptidase 6: A Biomarker for Traumatic Brain Injury in Rat*, Phipps, H., **Longo, L.M.**, Blaber, S.I., Blaber, M. and VanLandingham, J. *Brain Injury* **27**, 1698-1706 (2013)
9. *Alternative Folding Nuclei Definitions Facilitate the Evolution of a Symmetric Protein Fold from a Smaller Peptide Motif*, **Longo, L.M.***, Lee, J. *, Tenorio, C.A. and Blaber, M. *Cell: Structure* **21**, 2042-2050 (2013)
 - * Longo, L.M. and Lee, J. contributed equally to this work
8. *Simplified Protein Design Biased for Prebiotic Amino Acids Yields a Foldable, Halophilic Protein*, **Longo, L.M.**, Lee, J. and Blaber, M. *Proc. Natl. Acad. Sci. U S A.* **110**, 2135-2139 (2013)
 - * Faculty of 1000 Highlight
 - * Kasha Award for the best publication in 2013 by a Molecular Biophysics graduate student
7. *Experimental Support for the Foldability-Function Tradeoff Hypothesis: Segregation of the Folding Nucleus and Functional Regions in FGF-1*, **Longo, L.M.**, Lee, J. and Blaber, M. *Protein Science* **21**, 1911-1920 (2012)
 - * 2012 Protein Science Best Paper Award
6. *Protein Design at the Interface of the Prebiotic and Biotic Worlds*, **Longo, L.M.** and Blaber, M. *Archives of Biochemistry & Biophysics* **526**, 16-21 (2012)
5. *Protein Design--A Vast Unexploited Resource*, **Longo, L.M.** and Blaber, M. *Journal of Proteins and Proteomics* **3**, 78-83 (2012)
4. *Emergence of Symmetric Protein Architecture from a Simple Peptide Motif: Evolutionary Models*, Blaber, M., Lee, J. and **Longo, L.M.** *Cellular and Molecular Life Sciences* **69**, 3999-4006 (2012)
3. *A Logical OR Redundancy within the Asx-Pro-Asx-Gly Type I β -turn Motif*, Lee, J., Dubey, V.K., **Longo, L.M.** and Blaber, M. *J. Mol. Biol.* **377**, 1251-1264 (2008)
2. *Bacterial wilt induced changes in nutrient distribution and biomass and the effect of acibenzolar-S-methyl on bacterial wilt in tomato*, Hacısalihoglu, G., Ji, P., **Longo, L.M.**, Olson, S. and Momol, T.M. *Crop Protection* **26**, 978-982 (2007)
1. *Differential Response of Common Bean Genotypes to Mycorrhizal Colonization*, Hacısalihoglu, G., Duke, E. and **Longo, L.M.** *Proc. Fla. State. Hortic. Soc.* **118**, 150-152 (2005)

OTHER
PUBLICATIONS

Proteins: Folding, misfolding, disordered proteins, and related diseases, **Longo, L.M.** and Blaber, M. *Encyclopedia of Cell Biology*, (Bradshaw and Stahl, eds.) Academic Press (Oxford), 108-114 (2015) ISBN: 9780123944474

INTELLECTUAL
PROPERTY

Synthetic Foldable Proteins Generated from Peptide Segments of Folding Nuclei of Reference Proteins, Blaber, M. and **Longo, L.M.**, U.S. Patent Application No. 14/707,691

AWARDS,
FELLOWSHIPS,
AND GRANTS

Koshland Prize, "the Feinberg Graduate School of the Weizmann Institute of Science awards a prestigious annual prize (the Koshland Prize) to a limited number of postdoctoral fellows," 2015

Dean of Faculty Fellowship, "the Deans of the Faculties of the Weizmann Institute of Science offer a limited number of fellowships to postdoctoral fellows," 2015

Dissertation Research Grant, “\$750 award paid by The [Florida State University] Graduate School to assist doctoral students with expenses associated with research necessary to prepare dissertations,” 2013

Kasha Award in recognition of “an outstanding publication” (Longo et. al. *PNAS* 2013) by a Florida State University Molecular Biophysics graduate student, 2013

Protein Science Best Paper Award, “intended to recognize outstanding contributions (Longo et. al. *Protein Science* 2012) of junior investigators,” 2012

American Cancer Society Fisher Undergraduate Fellowship, \$5,000 fellowship to undergraduates at Florida State University conducting cancer-related research, 2008

Undergraduate Research and Creativity Award, “these \$4,000 awards support students conducting summer research” at Florida State University, 2008

INVITED
TALKS

The β -trefoil: Evolution, Folding, and Design, Weizmann Institute of Science, Rehovot, Israel (2014)

Experimental Support for the Foldability-Function Tradeoff Hypothesis, 27th Annual Symposium of the Protein Society, Boston, MA (2013)

ABSTRACTS

7. *Efficient Protein Design by Folding Nucleus Symmetric Expansion (FNSE)*, **Longo, L.M.**, Kumru, O.S., Middaugh, C.R., Blaber, M., Biopolymers Gordon Research Conference, Newport, RI (2014)
6. *Efficient Protein Design by Symmetric Expansion of the Folding Nucleus*, **Longo, L.M.**, Kumru, O.S., Middaugh, C.R., Blaber, M. 4th Annual Life Sciences Symposium, Florida State University, Tallahassee, FL (2014)
★ Second Place Poster Award
5. *Simplified Protein Design Biased for Prebiotic Amino Acids Yields a Foldable, Halophilic Protein*, **Longo, L.M.**, Lee, J. and Blaber, M., 27th Annual Meeting of the Protein Society, Boston, MA (2013)
4. *How Protein Engineering can Afford a Rare Glimpse at the Origin of Life / Simplified Protein Design Biased for Prebiotic Amino Acids Yields a Foldable, Halophilic Protein*, **Longo, L.M.**, Lee, J. and Blaber, M., 3rd Annual Life Sciences Symposium, Florida State University, Tallahassee, FL (2013)
3. *Solid-state NMR structural analysis of Syfoil-1: A controllable amyloid-forming protein*, **Longo, L.M.**, Lee, J. Blaber, M. and Paravastu, A., 53rd Experimental Nuclear Magnetic Resonance Conference, Miami, FL (2012)
2. *Folding Pathway Redundancy and the Evolution of Symmetric Protein Architecture*, **Longo, L.M.**, Lee, J. and Blaber, M., 2nd Annual Life Sciences Symposium, Florida State University, Tallahassee, FL (2012)
1. *Turn Structure in the Transition State of Fibroblast Growth Factor-1*, **Longo, L.M.**, Lee, J., Lee, W. and Blaber, M., 1st Annual Life Sciences Symposium, Florida State University, Tallahassee, FL (2011)

TEACHING

Frontiers in Medicine (2 lectures on protein design), Florida State University, 2014

Introductory Biology Lab for Majors, Florida State University, 2012

Introductory Chemistry Lab for Majors, Florida State University, 2009

ACADEMIC
SERVICE

Referee for *Archives of Biochemistry and Biophysics*, *BMC Biotechnology*, *Journal of Theoretical Biology*, *Origin of Life and Evolution of the Biosphere*, *PLOS Computational Biology*

Science Advocate, American Society for Biochemistry and Molecular Biology Hill Day, 2014

PROFESSIONAL
DEVELOPMENT

Rosetta Boot Camp, Rosetta Academy, Chapel Hill, NC, June 2015

* Week-long course introducing Rosetta architecture and programming standards

MEMBERSHIPS

Alpha Chi Sigma, American Association for the Advancement of Science, American Society for Biochemistry and Molecular Biology, Protein Society