

LUIS F. SCHACHNER

E-Mail: luisschachner2015@u.northwestern.edu | www.luisschachner.com

I employ cutting-edge mass spectrometry tools to study the biophysical structure and function of biomolecular machines. I developed deep expertise investigating the gas-phase behavior of proteins, and characterizing post-translational modifications, enzymatic cofactors, and metal content of protein complexes from endogenous and synthetic sources. My contributions to the field are exemplified by impactful and multi-disciplinary publications in chromatin biology, bioinorganic chemistry, enzymology, and neurochemistry.

Ph.D.: **Northwestern University**, Evanston, IL. June, 2021. Chemistry. GPA: 3.80
Howard Hughes Medical Institute Gilliam Fellow (2017)

B.S. Research: **Yale University**, New Haven, CT. May, 2015. *Distinction* in Chemistry. GPA: 3.78

RESEARCH & PROFESSIONAL EXPERIENCE

Northwestern University, *PhD candidate*. Advisor: Neil Kelleher. 2015-present.

Develop structural and native mass spectrometry methods to study targeted and untargeted protein complexes.

Yale University Physical Chemistry, *Research assistant*. Advisor: Mark Johnson. 2014-2015.

Evaluated a photofragmentation-mass spectrometric method for the characterization of drug molecule metabolites.

Genentech Inc., Proteomics Lab, *Intern*. Advisors: Wendy Sandoval, Jennie Lill. 2014.

Developed a method for the native mass spectrometry characterization of the chain-pairing mechanism in the assembly of co-expressed bispecific antibodies.

SELECTED PUBLICATIONS (Complete List in [Google Scholar](#))

Decoding the Protein Composition of Whole Nucleosomes with Nuc-MS.

Nature Methods **2020**. *Accepted*. In press.

[Luis F. Schachner](#), K. Jooß, M. A. Morgan, A. Piunti, M. J. Meiners, J. O. Kafader, A. S. Lee, M. Iwanaszko, M. A. Cheek, J. M. Burg, S. A. Howard, M. C. Keogh, A. Shilatfard, and N. L. Kelleher.

Native top-down mass spectrometry provides insights into the copper centers of membrane-bound methane monooxygenase.

Nature Communications **2019**, 10, 2675.

Soo Y. Ro*, [Luis F. Schachner](#)*, C. Koo, R. Purohit, J. Remis, G. E. Kenney, V. Sosnowsky, P. Thomas, B. Liauw, S. M. Patrie, N. L. Kelleher, A. C. Rosenzweig.

Native vs Denatured: An In-Depth Investigation of Charge State and Isotope Distributions

J. Am. Soc. Mass Spectrom. **2020**, 31, 3, 574-581.

J. O. Kafader, R. D. Melani, [Luis F. Schachner](#), A. N. Ives, S. M. Patrie, N. L. Kelleher, and P. D. Compton

Standard Proteoforms and Their Complexes for Native Mass Spectrometry.

J. Am. Soc. Mass Spectrom. **2019**, 30, 1190.

[Luis F. Schachner](#), A. N. Ives, J. O. Kafader, P. D. Compton, S. M. Patrie, N. L. Kelleher.

Best Practices and Benchmarks for Mass Spectrometry of Intact Proteins.

Nature Methods **2019**, 16 (7): 587-594.

D. P. Donnelly, C. M. Rawlins, C. J. DeHart, L. Fornelli, [Luis F. Schachner](#), Z. Lin, J. Wolff, J.R. Auclair, Y. Ge, N. L. Kelleher, J. N. Agar and The Consortium for Top-Down Proteomics.

Top-down characterization of endogenous protein complexes with native proteomics.

Nature Chemical Biology **2017**, *14*, 36.

O.S. Skinner, N. A. Haverland, L. Fornelli, R. D. Melani, L. H. F. Do Vale, H. S. Seckler, P. F. Doubleday, Luis F. Schachner, K. Srzentić, N. L. Kelleher, P. D. Compton.

The Biosynthesis of Methanobactin

Science **2019**, *359* (6382), 1411-1416.

G. E. Kenney, L.M. K. Dassama, M. Pandelia, A. Gizzi, R. J. Martinie, P. Gao, C. DeHart, Luis F. Schachner, O. S. Skinner, S. Y. Ro, X. Zhu, M. Sadek, P. M. Thomas, S. C. Almo, J. M. Bollinger, C. Krebs, N. L. Kelleher, A. C. Rosenzweig.

The Search Engine for Multi-Proteoform Complexes: An Online Tool for the Identification and Stoichiometry Determination of Protein Complexes.

Curr Protoc Bioinformatics, **2016**, p. 13.30.1-13.30.11.

O. S. Skinner*, Luis F. Schachner*, N. L. Kelleher

Characterization of Chain Pairing Variants of Bispecific IgG Expressed in a Single Host Cell by High-Resolution Native and Denaturing Mass Spectrometry.

Analytical Chemistry **2016**, *88* (24), 12122-12127.

Luis F. Schachner, G. Han, M. Dillon, J. Zhou, L. McCarty, D. Ellerman, Y. Yin, C. Spiess, J. R Lill, P. J Carter, W. Sandoval.

AWARDS, FELLOWSHIPS & GRANTS

Howard Hughes Medical Institute Gilliam Fellowship, 2017

National Academy of Sciences Ford Fellowship, 2017 Alternate Recipient and Honorable Mention

Chemistry of Life Processes Institute Training Grant Fellowship, Northwestern University 2016

Best Intern Poster Presentation Award, Genentech Inc., 2014

Presidential Award for Academic Excellence, U.S. Department of Education, 2011

Kupcinet-Getz Fellowship Award, Weizmann Institute of Science, Israel 2013

SELECTED TEACHING, PRESENTATIONS & LEADERSHIP

Course: *Philosophy and Art of Science*. Summer 2020. *Course Leader*, Northwestern University

Presentation: *Localization and activity of the metal centers of membrane complexes using micelles and nanodiscs coupled with native top-down mass spectrometry*. 2019. 67th Meeting of the American Society for Mass Spectrometry.

Course: *The Human Proteome*. Winter 2017. *Teaching Assistant*, Northwestern University.

Course: *Organic Chemistry Laboratory*. 2016. *Teaching Assistant*, Northwestern University.

Leadership: *Environmental Documentary in Amani Forest Reserve*. 2012. Tanzania.