

Laganowsky, Arthur - Curriculum Vitae

Arthur Laganowsky, PhD

Associate Professor

Department of Chemistry

Address: Texas A&M University

ILSB RM 1154

301 Old Main Dr.

College Station, TX 77843

Office Phone: (979) 458-0357

Email: ALaganowsky@chem.tamu.edu

Website: <https://www.chem.tamu.edu/rgroup/laganowsky/>

Biographical Data

Dr. Arthur Laganowsky obtained his Ph.D. in Chemistry and Molecular Biology from the University of California, Los Angeles in 2011. His doctoral work under the mentorship of Professor David Eisenberg received the biochemistry distinguished dissertation award. He then pursued postdoctoral studies in the laboratory of Professor Dame Carol V. Robinson at the University of Oxford, and soon after arriving became a Nicholas Kurti Junior Research Fellow of Brasenose College. Dr. Laganowsky joined the IBT within Houston's Texas Medical Center as an assistant professor and director of the Waters Collaboratory for the Analysis of Membrane Proteins in 2014. He also held a joint appointment in Texas A&M Department of Chemistry, which he joined full-time in January 2017. Dr. Laganowsky's research focuses on membrane protein-ligand interactions and how these interactions modulate membrane protein structure and function. His research lies at the unique interface between native mass spectrometry and X-ray crystallography. Dr. Laganowsky has an exceptional record of accomplishments and publications. He has filed a number of patents at UCLA, University of Oxford, and Texas A&M University, written 38 publications, with a number published in high-impact journals, three book chapters, and invited to numerous talks. Dr. Laganowsky has received nearly \$2.3 million in direct research funding. He is also a recipient of the prestigious NIH New Innovator Award in 2016, representing the first recipient of this award at Texas A&M University.

Education

University of Oxford, Oxford UK, Postdoc, 2011-2014, Physical and Theoretical Chemistry (Dame Carol V. Robinson)

University of California, Los Angeles, CA, Ph.D., 2006-2011, Chemistry and Biochemistry (David Eisenberg)

California State University, Chico, CA, M.S. 2006 Biological Sciences (John Nishio)

California State University, Chico, CA, B.S. 2004 Biological Sciences (John Nishio)

Honors and Awards

2017 Plenary speaker, Mechanisms of Membrane Transport, Gordon Research Seminar

2016 National Institute of Health, New Innovator Awardee (DP2)

Prior to TAMU appointment

2013 Protein Science Young Investigator Travel Grant/Protein Society Finn World Travel Award

2012-2014 Nicholas Kurti Junior Research Fellow, Brasenose College, Oxford

2011 Biochemistry Distinguished Dissertation Award, UCLA

2011 Presentation Award, West Coast Protein Crystallography Workshop, 2011

2010-2011 UCLA Dissertation Year Fellowship

2007-2010 NIH Chemistry Biology Interface (CBI) Predoctoral Research Training Program Trainee

Research Awards Received by Students and Postdocs (from my group)

2018 A.I. Scott Medal Symposium Poster Award

2017 A.I. Scott Medal Symposium Poster Award

2015 ASMS Asilomar Oral presentation and travel award (graduate student section)

Research Experience (prior to TAMU appointment)

2011-2014 University of Oxford, laboratory of Professor Dame Carol V. Robinson. Ion mobility mass spectrometry of membrane proteins

2009 California Institute of Technology, California, CBI Summer Internship in laboratory of Douglas Rees. Membrane protein expression, purification, and crystallization.

2006-2011 University of California, Los Angeles, laboratory of Professor David Eisenberg. Structural studies of amyloid-related proteins.

2004-2006 California State University, Chico, laboratory of Professor John Nishio. Proteomics of membrane proteins using liquid chromatography mass spectrometry

Positions and Employment

2017-present, Assistant Professor, Department of Chemistry, College of Science, Texas A&M University, College Station TX

2015-2016, Joint Assistant Professor, Department of Chemistry, College of Science, Texas A&M University, College Station TX

2015-2016, Joint Assistant Professor, Department of Microbial Pathogenesis & Immunology, College of Medicine, Texas A&M Health Science Center, Bryan TX

2014-2016, Assistant Professor, Center for Infectious and Inflammatory Diseases, Institute of Biosciences and Technology, Texas A&M Health Sciences Center

Prior to TAMU appointment

2006-2007 University of California, Los Angeles, Teaching Assistant for Biochemistry Lab

2004-2006 California State University, Chico, Teaching Assistant for General Biology Lab

Scientific Conferences

Oral Presentations (all invited)

2022 ACS (?)

2022 Pittcon Conference (cancelled)

2022 ASMS Sanibel (postponed a year)

2021 UCB seminar

2021 PEGS, Difficult-to-Express Proteins, virtual presentation

2021 PEGS, Analytical Future Directions in Mass Spectrometry, virtual presentation

2021 Discovery on Target, Small G Protein: Targeting KRAS and Other GTPases, virtual presentation

2020 Molecular Structure Elucidation, Gordon Research Conference - postponed

2020 Difficult-to-Express Proteins conference, Boston MA – given virtual

2020 University of Texas Proteomics Network – given virtual

2020 University of Alabama, Birmingham

2019 17th annual drug on target conference

2019 Advancing mass spectrometry for biophysics & structural biology conference

2019 ACS spring national meeting, advances in ion mobility spectrometry

2019 ACS spring national meeting, advances in ligand-binding assays involving integral membrane proteins

2019 Baylor College of Medicine

2019 University of Akron, Department of Chemistry

2018 TTP Labtech mosquito & dragon fly user group

2018 AAAS conference, Austin, TX

2018 NIH campus, Membrane Protein Interest Group Seminar Series Speaker

2017 Washington University St. Louis, Midwest MS Discussion Group

2017 University of Chicago, Department of Biochemistry and Molecular Biology

2017 Mechanisms of Membrane Transport, Gordon Research Conference

2017 Mechanisms of Membrane Transport, Gordon Research Seminar (plenary speaker)

2017 Membrane Protein Folding, Gordon Research Conference

2016 Purdue University, Department of Biological Sciences

2016 Indiana University, Department of Chemistry

2016 Keck Seminar, Bioscience Research Collaborative, Houston
2016 Waters Native Mass Spectrometry Workshop, Houston
2015 Lipids, Molecular & Cellular Biology of, Gordon Research Conference
2014 Center for Membrane Biology, UT HSC

Prior to TAMU appointment

2011 Royal Society Meeting on small heat shock proteins
2011 ARVO 2011 Visionary Genomics
2011 20th West Coast Protein Crystallography Workshop
2007 16th Western Photosynthesis Conference
2005 19th annual California State University (CSU) system wide student research competition on campus competition
2004 18th annual CSU system wide student research competition at CSU Northridge
2004 18th annual CSU system wide student research competition internal campus competition

Conference Organizer/Chair

2021 ASMS Native Mass Spectrometry Workshop
2020 ASMS Native Mass Spectrometry Workshop, virtual
2019 ASMS Native Mass Spectrometry Workshop
2018 ASMS Native Mass Spectrometry Workshop
2017 ASMS session chair
2016 Waters Native Mass Spectrometry Workshop
2016 Waters Structural Biology Symposium

Poster Presentations (prior to TAMU appointment)

2013 Protein Society
2012 American Society for Mass Spectrometry (ASMS)
2010 HHMI Scientific Meeting, Protein-Protein and Protein-Nucleic Acid Interactions
2009 MBI Lake Arrowhead Retreat
2009 ASMS
2008 ASMS
2008 MBI Lake Arrowhead Retreat
2007 ASMS
2006 HUPO 5th Annual Conference
2006 15th Western Photosynthesis Conference
2005 14th Western Photosynthesis Conference
2005 Plant Biology, American Society of Plant Biologists, 2005.

Publications

Research Articles

74. Tetreau G, Sawaya MR, De Zitter E, Andreeva EA, Banneville AS, Schibrowsky NA, Coquelle N, Brewster AS, Grünbein ML, Kovacs GN, Hunter MS, Kloos M, Sierra RG, Schiro G, Qiao P, Stricker M, Bideshi D, Young ID, Zala N, Engilberge S, Gorel A, Signor L, Teulon JM, Hilpert M, Foucar L, Bielecki J, Bean R, de Wijn R, Sato T, Kirkwood H, Letrun R, Batyuk A, Snigireva I, Fenel D, Schubert R, Canfield EJ, Alba MM, Laporte F, Després L, Bacia M, Roux A, Chapelle C, Riobé F, Maury O, Ling WL, Boutet S, Mancuso A, Gutsche I, Girard E, Barends TRM, Pellequer JL, Park HW, Laganowsky AD, Rodriguez J, Burghammer M, Shoeman RL, Doak RB, Weik M, Sauter NK, Federici B, Cascio D, Schlichting I, Colletier JP. De novo determination of mosquitocidal Cry11Aa and Cry11Ba structures from naturally-occurring nanocrystals. Nat Commun. 2022 Jul 28;13(1):4376. doi: 10.1038/s41467-022-31746-x.

73. Walker TE, Laganowsky A, Russell DH. Surface Activity of Amines Provides Evidence for the Combined ESI Mechanism of Charge Reduction for Protein Complexes. Anal Chem. 2022 Aug 2;94(30):10824-10831. doi: 10.1021/acs.analchem.2c01814.

- 72.** Zhu Y, Schrecke S, Tang S, Odenkirk MT, Walker T, Stover L, Lyu J, Zhang T, Russell D, Baker ES, Yan X, Laganowsky A. Cupric Ions Selectively Modulate TRAAK-Phosphatidylserine Interactions. *J Am Chem Soc.* 2022 Apr 27;144(16):7048-7053. doi: 10.1021/jacs.2c00612.
- 71.** Lyu RL, Joy S, Packianathan C, Laganowsky A, Burgess K. Small molecule peptidomimetic trypsin inhibitors: validation of an EKO binding mode, but with a twist. *Org Biomol Chem.* 2022 Mar 9;20(10):2075-2080.
- 70.** Walker TE, Shirzadeh M, Sun HM, McCabe JW, Roth A, Moghadamchargari Z, Clemmer DE, Laganowsky A, Rye H, Russell DH. Temperature Regulates Stability, Ligand Binding (Mg^{2+} and ATP), and Stoichiometry of GroEL-GroES Complexes. *J Am Chem Soc.* 2022 Feb 16;144(6):2667-2678.
- 69.** Abramsson ML, Sahin C, Hopper JTS, Branca RMM, Danielsson J, Xu M, Chandler SA, Österlund N, Ilag LL, Leppert A, Costeira-Paulo J, Lang L, Teilum K, Laganowsky A, Benesch JLP, Oliveberg M, Robinson CV, Marklund EG, Allison TM, Winther JR, Landreh M. Charge Engineering Reveals the Roles of Ionizable Side Chains in Electrospray Ionization Mass Spectrometry. *JACS Au.* 2021 Nov 29;1(12):2385-2393. doi: 10.1021/jacsau.1c00458
- 68.** Laganowsky A, Clemmer DE, Russell DH. Variable-Temperature Native Mass Spectrometry for Studies of Protein Folding, Stabilities, Assembly, and Molecular Interactions. *Annu Rev Biophys.* 2021 Dec 21. doi: 10.1146/annurev-biophys-102221-101121
- 67.** Qiao P, Schrecke S, Walker T, McCabe JW, Lyu J, Zhu Y, Zhang T, Kumar S, Clemmer D, Russell DH, Laganowsky A. Entropy in the Molecular Recognition of Membrane Protein-Lipid Interactions. *J Phys Chem Lett.* 2021 Dec 30;12(51):12218-12224. doi: 10.1021/acs.jpcllett.1c03750
- 66.** Qiao P, Schrecke S, Lyu J, Zhu Y, Zhang T, Benavides A, Laganowsky A. Insight into the Phospholipid-Binding Preferences of Kir3.4. *Biochemistry.* 2021 Dec 21;60(50):3813-3821. doi: 10.1021/acs.biochem.1c00615
- 65.** Implementing Digital-Waveform Technology for Extended m/z Range Operation on a Native Dual-Quadrupole FT-IM-Orbitrap Mass Spectrometer. McCabe JW, Jones BJ, Walker TE, Schrader RL, Huntley AP, Lyu J, Hoffman NM, Anderson GA, Reilly PTA, Laganowsky A, Wysocki VH, Russell DH. *J Am Soc Mass Spectrom.* 2021 Dec 1;32(12):2812-2820. doi: 10.1021/jasms.1c00245
- 64.** Cong X, Patrick JW, Liu Y, Liang X, Liu W, Laganowsky A. Investigation of Protein-Lipid Interactions Using Native Mass Spectrometry. *Methods Mol Biol.* 2022;2349:41-64. doi: 10.1007/978-1-0716-1585-0_3
- 63.** Mellott DM, Torres D, Krieger IV, Cameron SA, Moghadamchargari Z, Laganowsky A, Sacchettini JC, Meek TD, Harris LD. Mechanism-Based Inactivation of Mycobacterium tuberculosis Isocitrate Lyase 1 by (2R,3S)-2-Hydroxy-3-(nitromethyl)succinic acid. *J Am Chem Soc.* 2021 Oct 27;143(42):17666-17676. doi: 10.1021/jacs.1c07970
- 62.** Li L, Chenna BC, Yang KS, Cole TR, Goodall ZT, Giardini M, Moghadamchargari Z, Hernandez EA, Gomez J, Calvet CM, Bernatchez JA, Mellott DM, Zhu J, Rademacher A, Thomas D, Blankenship LR, Drelich A, Laganowsky A, Tseng CK, Liu WR, Wand AJ, Cruz-Reyes J, Siqueira-Neto JL, Meek TD. Self-Masked Aldehyde Inhibitors: A Novel Strategy for Inhibiting Cysteine Proteases. *J Med Chem.* 2021 Aug 12;64(15):11267-11287. doi: 10.1021/acs.jmedchem.1c00628
- 61.** Raab SA, El-Baba TJ, Laganowsky A, Russell DH, Valentine SJ, Clemmer DE. Protons Are Fast and Smart; Proteins Are Slow and Dumb: On the Relationship of Electrospray Ionization Charge States and Conformations. *J Am Soc Mass Spectrom.* 2021 Jul 7;32(7):1553-1561. doi: 10.1021/jasms.1c00100
- 60.** El-Baba TJ, Raab SA, Buckley RP, Brown CJ, Lutomski CA, Henderson LW, Woodall DW, Shen J, Trinidad JC, Niu H, Jarrold MF, Russell DH, Laganowsky A, Clemmer DE. Thermal Analysis of a Mixture of Ribosomal Proteins by vT-ESI-MS: Toward a Parallel Approach for Characterizing the Stabilitome. *Anal Chem.* 2021 Jun 22;93(24):8484-8492. doi: 10.1021/acs.analchem.1c00772

59. McCabe JW, Shirzadeh M, Walker TE, Lin CW, Jones BJ, Wysocki VH, Barondeau DP, Clemmer DE, Laganowsky A, Russell DH. Variable-Temperature Electrospray Ionization for Temperature-Dependent Folding/Refolding Reactions of Proteins and Ligand Binding. *Anal Chem*. 2021 May 11;93(18):6924-6931. doi: 10.1021/acs.analchem.1c00870
58. Moghadamchargari Z, Shirzadeh M, Liu C, Schrecke S, Packianathan C, Russell DH, Zhao M, Laganowsky A. Molecular assemblies of the catalytic domain of SOS with KRas and oncogenic mutants. *Proc Natl Acad Sci U S A*. 2021 Mar 23;118(12):e2022403118. doi: 10.1073/pnas.2022403118
57. Pham TV, Mellott DM, Moghadamchargari Z, Chen K, Krieger I, Laganowsky A, Sacchettini JC, Meek TD. Covalent Inactivation of Mycobacterium tuberculosis Isocitrate Lyase by cis-2,3-Epoxy-Succinic Acid. *ACS Chem Biol*. 2021 Mar 19;16(3):463-470. doi: 10.1021/acscchembio.0c00740
56. Schrecke S, Zhu Y, McCabe JW, Bartz M, Packianathan C, Zhao M, Zhou M, Russell D, Laganowsky A. Selective regulation of human TRAAK channels by biologically active phospholipids. *Nat Chem Biol*. 2021 Jan;17(1):89-95. doi: 10.1038/s41589-020-00659-5
55. Raab SA, El-Baba TJ, Woodall DW, Liu W, Liu Y, Baird Z, Hales DA, Laganowsky A, Russell DH, Clemmer DE. Evidence for Many Unique Solution Structures for Chymotrypsin Inhibitor 2: A Thermodynamic Perspective Derived from vT-ESI-IMS-MS Measurements. *JACS*. 2020 doi: 10.1021/jacs.0c05365.
54. Khan D, Lee D, Gulten G, Aggarwal A, Wofford J, Krieger I, Tripathi A, Patrick JW, Eckert DM, Laganowsky A, Sacchettini J, Lindahl P, Bankaitis VA. A Sec14-like phosphatidylinositol transfer protein paralog defines a novel class of heme-binding proteins. *Elife*. 2020;9:e57081. doi: 10.7554/eLife.57081.
53. Lyu J, Liu Y, McCabe JW, Schrecke S, Fang L, Russell DH, Laganowsky A. Discovery of Potent Charge-Reducing Molecules for Native Ion Mobility Mass Spectrometry Studies. *Anal Chem*. 2020;92(16):11242-11249. doi: 10.1021/acs.analchem.0c01826.
52. McCabe JW, Mallis CS, Kocurek KI, Poltash ML, Shirzadeh M, Hebert MJ, Fan L, Walker TE, Zheng X, Jiang T, Dong S, Lin CW, Laganowsky A, Russell DH. First-Principles Collision Cross Section Measurements of Large Proteins and Protein Complexes. *Anal Chem*. 2020;92(16):11155-11163. doi: 10.1021/acs.analchem.0c01285.
51. Qiao P, Liu Y, Zhang T, Benavides A, Laganowsky A. Insight into the Selectivity of Kir3.2 toward Phosphatidylinositides. *Biochemistry*. 2020;59(22):2089-2099. doi: 10.1021/acs.biochem.0c00163.
50. Dong S, Shirzadeh M, Fan L, Laganowsky A, Russell DH. Ag⁺ Ion Binding to Human Metallothionein-2A Is Cooperative and Domain Specific. *Anal Chem*. 2020;92(13):8923-8932. doi: 10.1021/acs.analchem.0c00829.
49. Zheng X, Kurulugama RT, Laganowsky A, Russell DH. Collision-Induced Unfolding Studies of Proteins and Protein Complexes using Drift Tube Ion Mobility-Mass Spectrometer. *Anal Chem*. 2020;92(10):7218-7225. doi: 10.1021/acs.analchem.0c00772.
48. Wang L, Qian H, Nian Y, Han Y, Ren Z, Zhang H, Hu L, Prasa BVV, Laganowsky A, Yan N, Zhou M. Structure and mechanism of human diacylglycerol acyltransferase 1. *Nature*. 2020;581(7808):329-332. doi: 10.1038/s41586-020-2280-2.
47. Pillai AS, Chandler SA, Liu Y, Signore AV, Cortez-Romero CR, Benesch JLP, Laganowsky A, Storz JF, Hochberg GKA, Thornton J. Origins of complexity in haemoglobin evolution. *Nature*. 2020;581(7809):480-485. doi: 10.1038/s41586-020-2292-y.
46. Poltash ML, McCabe JW, Shirzadeh M, Laganowsky A, Russell DH. Native IM-Orbitrap MS: Resolving What Was

Hidden. *Trends Analyt Chem.* 2020;124:115533. doi:10.1016/j.trac.2019.05.035

45. Shirzadeh M, Poltash ML, Laganowsky A, Russell DH. Structural Analysis of the Effect of a Dual-FLAG Tag on Transthyretin. *Biochemistry.* 2020;59(9):1013–1022. doi:10.1021/acs.biochem.0c00105

44. Woodall DW, Brown CJ, Raab SA, et al. Melting of Hemoglobin in Native Solutions as measured by IMS-MS. *Anal Chem.* 2020;92(4):3440–3446. doi:10.1021/acs.analchem.9b05561

43. Sipe SN, Patrick JW, Laganowsky A, Brodbelt JS. Enhanced Characterization of Membrane Protein Complexes by Ultraviolet Photodissociation Mass Spectrometry. *Anal Chem.* 2020;92(1):899–907. doi:10.1021/acs.analchem.9b03689

42. Woodall DW, El-Baba TJ, Fuller DR, et al. Variable-Temperature ESI-IMS-MS Analysis of Myohemerythrin Reveals Ligand Losses, Unfolding, and a Non-Native Disulfide Bond. *Anal Chem.* 2019;91(10):6808–6814. doi:10.1021/acs.analchem.9b00981

41. Zhao B, Du F, Shu C, Sankaran B, Bell SL, Liu M, Lei Y, Gao X, Fu X, Fanxiu Z, Liu Y, Laganowsky A, Zheng X, Ji J, West AP, Watson RO, Li P. A Conserved PLPLRT/SD Motif of STING Mediates the Recruitment and Activation of TBK1. *Nature.* 2019 May;569(7758):718-722. doi: 10.1038/s41586-019-1228-x.

40. Moghadamchargari Z, Huddleston J, Shirzadeh M, Zheng X, Clemmer DE, M Raushel F, Russell DH, Laganowsky A. Intrinsic GTPase Activity of K-RAS Monitored by Native Mass Spectrometry. *Biochemistry.* 2019 Aug 6;58(31):3396-3405. doi: 10.1021/acs.biochem.9b00532.

39. Liu Y, LoCaste CE, Liu W, Poltash ML, Russell DH, Laganowsky A. Selective binding of a toxin and phosphatidylinositides to a mammalian potassium channel. *Nat Commun.* 2019 Mar 22;10(1):1352. doi: 10.1038/s41467-019-09333-4.

38. Poltash ML, Shirzadeh M, McCabe JW, Moghadamchargari Z, Laganowsky A, Russell DH. New insights into the metal-induced oxidative degradation pathways of transthyretin. *Chem Commun (Camb).* 2019 Apr 2;55(28):4091-4094. doi: 10.1039/c9cc00682f.

37. Patrick JW, Laganowsky A. Generation of Charge-Reduced Ions of Membrane Protein Complexes for Native Ion Mobility Mass Spectrometry Studies. *J Am Soc Mass Spectrom.* 2019 Mar 18. doi: 10.1007/s13361-019-02187-6.

36. Shirzadeh M, Boone CD, Laganowsky A, Russell DH. Topological Analysis of Transthyretin Disassembly Mechanism: Surface-Induced Dissociation Reveals Hidden Reaction Pathways. *Anal Chem.* 2019 Feb 5;91(3):2345-2351. doi: 10.1021/acs.analchem.8b05066.

35. Poltash ML, McCabe JW, Shirzadeh M, Laganowsky A, Clowers BH, Russell DH. Fourier Transform-Ion Mobility-Orbitrap Mass Spectrometer: A Next-Generation Instrument for Native Mass Spectrometry. *Anal Chem.* 2018 Sep 4;90(17):10472-10478. doi: 10.1021/acs.analchem.8b02463.

34. Poltash ML, McCabe JW, Patrick JW, Laganowsky A, Russell DH. Development and Evaluation of a Reverse-Entry Ion Source Orbitrap Mass Spectrometer. *J Am Soc Mass Spectrom.* 2019 Jan;30(1):192-198. doi: 10.1007/s13361-018-1976-0.

33. Patrick JW, Boone CD, Liu W, Conover GM, Liu Y, Cong X, Laganowsky A. Allostery revealed within lipid binding events to membrane proteins. *Proc Natl Acad Sci U S A.* 2018 Mar 5. pii: 201719813. doi: 10.1073/pnas.1719813115.

32. Hochberg GKA, Shepherd DA, Marklund EG, Santhanagopalan I, Degiacomi MT, Laganowsky A, Allison TM, Basha E, Marty MT, Galpin MR, Struwe WB, Baldwin AJ, Vierling E, Benesch JLP. Structural principles that enable oligomeric small heat-shock protein paralogs to evolve distinct functions. *Science.* 2018 Feb 23;359(6378):930-935. doi: 10.1126/science.aam7229.

- 31.** Cong X, Liu Y, Liu W, Liang X, Laganowsky A. Allosteric modulation of protein-protein interactions by individual lipid binding events. *Nat Commun.* 2017 Dec doi: 10.1038/s41467-017-02397-0.
- 30.** Bergdoll LA, Lerch MT, Patrick JW, Belardo K, Altenbach C, Bisignano P, Laganowsky A, Grabe M, Hubbell WL, Abramson J. Protonation state of glutamate 73 regulates the formation of a specific dimeric association of mVDAC1. *PNAS.* 2017 Dec doi: 10.1073/pnas.1715464115.
- 29.** El-Baba TJ, Woodall DW, Raab SA, Fuller DR, Laganowsky A, Russell DH, Clemmer DE. Melting Proteins: Evidence for Multiple Stable Structures upon Thermal Denaturation of Native Ubiquitin from Ion Mobility Spectrometry-Mass Spectrometry Measurements. *J Am Chem Soc.* 2017 May 10;139(18):6306-6309. doi: 10.1021/jacs.7b02774.
- 28.** Harvey SR, Liu Y, Liu W, Wysocki VH, Laganowsky A. Surface induced dissociation as a tool to study membrane protein complexes. *Chem Commun (Camb).* 2017 Mar 9;53(21):3106-3109. doi: 10.1039/c6cc09606a.
- 27.** Liu Y, Cong X, Liu W, Laganowsky A. Characterization of Membrane Protein-Lipid Interactions by Mass Spectrometry Ion Mobility Mass Spectrometry. *JASMS.* 2017 Apr;28(4):579-586. doi: 10.1007/s13361-016-1555-1.
- 26.** Cong X, Liu Y, Liu W, Liang X, Russell DH, Laganowsky A. Determining Membrane Protein-Lipid Binding Thermodynamics Using Native Mass Spectrometry. *J Am Chem Soc.* 2016 Apr 6;138(13):4346-9. doi: 10.1021/jacs.6b01771.

Prior to TAMU appointment

- 25.** Allison TM, Reading E, Liko I, Baldwin AJ, Laganowsky A, Robinson CV. Quantifying the stabilizing effects of protein-ligand interactions in the gas phase. *Nat Commun.* 2015 Oct 6;6:8551. doi: 10.1038/ncomms9551. PubMed PMID: 26440106.
- 24.** Reading E, Walton TA, Liko I, Marty MT, Laganowsky A, Rees DC, Robinson CV. The Effect of Detergent, Temperature, and Lipid on the Oligomeric State of MscL Constructs: Insights from Mass Spectrometry. *Chem Biol.* 2015 May 21;22(5):593-603. doi:10.1016/j.chembiol.2015.04.016. PubMed PMID: 26000747.
- 23.** Reading E, Liko I, Allison TM, Benesch JL, Laganowsky A, Robinson CV. The role of the detergent micelle in preserving the structure of membrane proteins in the gas phase. *Angew Chem Int Ed Engl.* 2015 Apr 7;54(15):4577-81. doi: 10.1002/anie.201411622. Epub 2015 Feb 18. PubMed PMID: 25693501.
- 22.** Lai YT, Reading E, Hura GL, Tsai KL, Laganowsky A, Asturias FJ, Tainer JA, Robinson CV, Yeates TO. Structure of a designed protein cage that self-assembles into a highly porous cube. *Nat Chem.* 2014 Dec;6(12):1065-71. doi: 10.1038/nchem.2107. Epub 2014 Nov 10. PubMed PMID: 25411884.



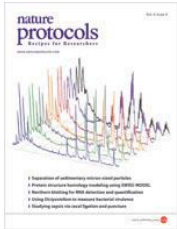
- 21.** Laganowsky A,^{ϕ, §} Reading E, Allison TM, Ulmschneider MB, Degiacomi MT, Baldwin AJ, Robinson CV. Membrane proteins bind lipids selectively to modulate their structure and function. *Nature.* 2014 Jun 5;510(7503):172-5. doi: 10.1038/nature13419. PubMed PMID: 24899312. ^ϕEqual authorship, [§]Corresponding author. (Cover Article)

- 20.** Hochberg GK, Ecroyd H, Liu C, Cox D, Cascio D, Sawaya MR, Collier MP, Stroud J, Carver JA, Baldwin AJ, Robinson CV, Eisenberg DS, Benesch JL, Laganowsky A.[§] The structured core domain of α B-crystallin can prevent amyloid fibrillation and associated toxicity. *Proc Natl Acad Sci U S A.* 2014 Apr 22;111(16):E1562-70. doi: 10.1073/pnas.1322673111. Epub 2014 Apr 7. PubMed PMID: 24711386. [§]Corresponding author.



19. Hopper JT, Yu YT, Li D, Raymond A, Bostock M, Liko I, Mikhailov V, Laganowsky A, Benesch JL, Caffrey M, Nietlispach D, Robinson CV. Detergent-free mass spectrometry of membrane protein complexes. *Nat Methods*. 2013 Dec;10(12):1206-8. doi: 10.1038/nmeth.2691. Epub 2013 Oct 13. PubMed PMID: 24122040. (Cover Article)

18. Hilton GR, Hochberg GK, Laganowsky A, McGinnigle SI, Baldwin AJ, Benesch JL. C-terminal interactions mediate the quaternary dynamics of α B-crystallin. *Philos Trans R Soc Lond B Biol Sci*. 2013 Mar 25;368(1617):20110405. doi: 10.1098/rstb.2011.0405. PubMed PMID: 23530258.



17. Laganowsky A, Reading E, Hopper JT, Robinson CV. Mass spectrometry of intact membrane protein complexes. *Nat Protoc*. 2013 Apr;8(4):639-51. doi: 10.1038/nprot.2013.024. Epub 2013 Mar 7. PubMed PMID: 23471109. (Cover Article)

16. Gallat FX, Laganowsky A, Wood K, Gabel F, van Eijck L, Wuttke J, Moulin M, Härtle M, Eisenberg D, Colletier JP, Zaccai G, Weik M. Dynamical coupling of intrinsically disordered proteins and their hydration water: comparison with folded soluble and membrane proteins. *Biophys J*. 2012 Jul 3;103(1):129-36. doi: 10.1016/j.bpj.2012.05.027. PubMed PMID: 22828339.

15. Senturia R, Laganowsky A, Barr I, Scheidemantle BD, Guo F. Dimerization and heme binding are conserved in amphibian and starfish homologues of the microRNA processing protein DGCR8. *PLoS One*. 2012;7(7):e39688. doi: 10.1371/journal.pone.0039688. PubMed PMID: 22768307.

14. Laganowsky A, Liu C, Sawaya MR, Whitelegge JP, Park J, Zhao M, Pensalfini A, Soriaga AB, Landau M, Teng PK, Cascio D, Glabe C, Eisenberg D. Atomic view of a toxic amyloid small oligomer. *Science*. 2012 Mar 9;335(6073):1228-31. doi: 10.1126/science.1213151. PubMed PMID: 22403391.

- Covered by *Science* in a 'perspective' article "Visualizing Amyloid Assembly", *Science* 2012, 336:308-309
- Covered by *Nature Structural & Molecular Biology* in Research Highlights "A glimpse at toxicity" *NSMB* 2012, 19:369
- Covered by *Science* in 'This week in Science' article "A Toxic Barrel", *Science* 2012, 335:1146
- Covered at the Alzheimer Research Forum (<http://www.alzforum.org/new/detail.asp?id=3094>)
- Ranked "must read" by Faculty of 1000

13. Colletier JP,[§] Laganowsky A,[§] Landau M,[§] Zhao M, Soriaga AB, Goldschmidt L, Flot D, Cascio D, Sawaya MR, Eisenberg D. Molecular basis for amyloid-beta polymorphism. *Proc Natl Acad Sci U S A*. 2011 Oct 11;108(41):16938-43. doi: 10.1073/pnas.1112600108. Epub 2011 Sep 23. PubMed PMID: 21949245. [§]Equal authorship

12. Laganowsky A, Zhao M, Soriaga AB, Sawaya MR, Cascio D, Yeates TO. An approach to crystallizing proteins by metal-mediated synthetic symmetrization. *Protein Sci*. 2011 Nov;20(11):1876-90. doi: 10.1002/pro.727. Epub 2011 Sep 30. PubMed PMID: 21898649. Ranked "must read" in Faculty of 1000.

11. Landau M, Sawaya MR, Faull KF, Laganowsky A, Jiang L, Sievers SA, Liu J, Barrio JR, Eisenberg D. Towards a pharmacophore for amyloid. *PLoS Biol*. 2011 Jun;9(6):e1001080. doi: 10.1371/journal.pbio.1001080. Epub 2011 Jun 14. PubMed PMID: 21695112.

10. Webb KJ, Zurita-Lopez CI, Al-Hadid Q, Laganowsky A, Young BD, Lipson RS, Souda P, Faull KF, Whitelegge JP, Clarke SG. A novel 3-methylhistidine modification of yeast ribosomal protein Rpl3 is dependent upon the YIL110W methyltransferase. *J Biol Chem*. 2010 Nov 26;285(48):37598-606. doi: 10.1074/jbc.M110.170787. Epub 2010 Sep 23. PubMed PMID: 20864530.

9. Laganowsky A, Eisenberg D. Non-3D domain swapped crystal structure of truncated zebrafish alphaA crystallin. *Protein Sci*. 2010 Oct;19(10):1978-84. doi: 10.1002/pro.471. PubMed PMID: 20669149.



8. Laganowsky A, Benesch JL, Landau M, Ding L, Sawaya MR, Cascio D, Huang Q, Robinson CV, Horwitz J, Eisenberg D. Crystal structures of truncated alphaA and alphaB crystallins reveal structural mechanisms of polydispersity important for eye lens function. *Protein Sci*. 2010 May;19(5):1031-43. doi: 10.1002/pro.380. PubMed PMID: 20440841. (Cover Article)

7. Puppione DL, Donna LD, Laganowsky AD, Bassilian S, Souda P, Ryder OA, Whitelegge JP. Mass spectral analyses of the two major apolipoproteins of great ape high density lipoproteins. *Comp Biochem Physiol Part D Genomics Proteomics*. 2009 Dec;4(4):305-9. PubMed PMID: 21298813.

6. Laganowsky A, Gómez SM, Whitelegge JP, Nishio JN. Hydroponics on a chip: analysis of the Fe deficient Arabidopsis thylakoid membrane proteome. *J Proteomics*. 2009 Apr 13;72(3):397-415. PubMed PMID: 19367733.

5. Webb KJ, Laganowsky A, Whitelegge JP, Clarke SG. Identification of two SET domain proteins required for methylation of lysine residues in yeast ribosomal protein Rpl42ab. *J Biol Chem*. 2008 Dec 19;283(51):35561-8. doi: 10.1074/jbc.M806006200. Epub 2008 Oct 28. PubMed PMID: 18957409.

4. Whitelegge JP, Laganowsky A, Nishio J, Souda P, Zhang H, Cramer WA. Sequencing covalent modifications of membrane proteins. *J Exp Bot*. 2006;57(7):1515-22. Epub 2006 Mar 30. PubMed PMID: 16574746.

Book Chapters

3. Patrick JW, Laganowsky A. Probing Heterogeneous Lipid Interactions with Membrane Proteins Using Mass Spectrometry. *Methods Mol Biol*. 2019;2003:175–190.

2. Cong X, Patrick JP, Liu Y, Liang X, Liu W, Laganowsky A. “Investigation of Protein-lipid interactions using Native Mass Spectrometry”. In: JH Kleinschmidt, editor: *Methods in Molecular Biology, Lipid-Protein interactions*. 2022;2349:41-64.

Prior to TAMU appointment

1. Faull KF, Dooley AN, Halgand F, Shoemaker LD, Norris AJ, Ryan CM, Laganowsky A, Johnson JV, Katz JE. “An introduction to the basic principles and concepts of mass spectrometry.” In: D. Barcelo, editor: *Comprehensive Analytical Chemistry, Vol 52, Protein Mass Spectrometry*, Julian P. Whitelegge. Elsevier BV: Elsevier, 2009, pp. 1–46. ISBN: 9780444530554

Dissertation

Laganowsky A. “Structural studies of amyloid-related proteins”, (PhD dissertation, University of California, Los Angeles, 2011). Biochemistry Distinguished Dissertation Award

Thesis

Laganowsky A. “Proteomic analyses of thylakoids using LCMS+ reveal changes in protein expression patterns and post transcriptional alteration in Fe deficient Arabidopsis thaliana”, (MS thesis, California State University, Chico, 2006).

Software

Prior to TAMU appointment

IsoArt (www.smirp.org). Mass isotopomer distribution analysis tools and software for subtle modification isotope ratio

proteomics mass spectrometry for quantitative proteomics. Designed website and programmed all algorithms. Currently under development.

Ion Mobility Mass Spectrometry Analysis Software. A wxPython-based software program that includes least squares peak fitting, assignment of masses, charge state envelope fitting, and additional features for visualizing mass spectra including gas-phase unfolding plotting and fitting (see Allison et al. Nature Communications 2015).

Protein Databank Deposits (Total 41)

7JWX – Crystal Structure of Trypsin Bound O-methyl Benzamidine, 7KFZ – Structure of a ternary KRas(G13D)-SOS complex, 6E0U – Staphylococcus pseudintermedius exfoliative toxin EXI, 6B21 – Crystal structure of AmtB from *E. coli* bound to TopFluor cardiolipin, 5DS2 – Core domain of the class I small heat-shock protein HSP 18.1 from *Pisum sativum*

Prior to TAMU appointment

3L1E – Bovine AlphaA crystallin Zinc Bound; 3L1F – Bovine AlphaA crystallin; 3L1G – Human AlphaB crystallin; 3N3E – Zebrafish AlphaA crystallin; 2Y3J – AIIGLM from Amyloid Beta peptide; 2Y3K – MVGGVVIA from Amyloid Beta peptide; 2Y3L – MVGGVVIA from Amyloid Beta peptide; 3PZZ – GAIIGL from Amyloid Beta peptide; 2Y29 – KLVFFA from Amyloid Beta peptide; 2Y2A – KLVFFA from Amyloid Beta peptide; 3Q2X – NKGAI from Amyloid Beta peptide; 3SB5 – Zn-mediated trimer of T4 Lysozyme R125C/E128C; 3SB6 – Cu-mediated dimer of T4 Lysozyme D61H/K65H/R76H/R80H; 3SB7 – Cu-mediated trimer of T4 Lysozyme D61H/ K65H/R76H/R80H; 3SB8 – Cu-mediated dimer of T4 Lysozyme D61H/ K65H; 3SB9 – Cu-mediated dimer of T4 Lysozyme R76H/R80H; 3SBA – Zn-mediated hexamer of T4 Lysozyme R76H/R80H; 3SBB – Disulphide-mediated tetramer of T4 Lysozyme R76C/R80C; 3SER – Zn-mediated polymer of Maltose-binding protein K26H/K30H; 3SES – Cu mediated dimer of Maltose-binding protein A216H/K220H; 3SET – Ni-mediated dimer of Maltose-binding protein A216H/K220H; 3SEU – Zn-mediated polymer of Maltose-binding protein A216H/K220H; 3SEV – Zn-mediated trimer of Maltose-binding protein E310H/K314H; 3SEW – Zn-mediated polymer of Maltose binding protein A216H/K220H; 3SEX – Ni-mediated dimer of Maltose-binding protein A216H/K220H; 3SEY – Zn-mediated polymer of Maltose-binding protein A216H/K220H; 3SGM – Bromoderivative-2 of cylindrin peptide; 3SGN – Bromoderivative-8 of cylindrin peptide; 3SGO – Cylindrin peptide; 3SGP – Cylindrin V2L mutant peptide; 3SGR – Cylindrin tandem repeat of V2L mutant peptide; 3SGS – Amyloid-related segment of alphaB crystallin residues 95-100; 4M5S – Human alphaB crystallin core domain in complex with C-terminal peptide; 4M5T – Disulfide trapped human alphaB crystallin core domain in complex with C-terminal peptide; 4MJH – Human Hsp27 core domain in complex with C-terminal peptide; 4NH2 - Crystal structure of AmtB bound to phosphatidylglycerol

Patents

Provisional patents at TAMU

Compositions for mass spectrometry and uses thereof. Laganowsky A (lead inventor), Schreck S. U.S. Patent Application Serial No. 63/057,556. Filed July 2020.

Inventions disclosed to TAMU

An approach to expression of multimeric protein complexes in *Pichia pastoris*. Laganowsky A (Lead inventor), Schreck S, Qiao P. 2019

Improved purification methods for membrane proteins for structural and biophysical studies. Laganowsky A, (Lead inventor), Liu Y. 2017

Thermodynamic ion mobility mass spectrometry of intact protein complexes. Laganowsky A, (Lead inventor), Cong X, Liu Y, Russell D. 2016

Prior to TAMU appointment

Cylindrin: the Possible Generic Etiologic Agent of Amyloid Diseases. U.S. Provisional Application Serial No. 61/590,085, filed on Jan 2012. Inventors: Laganowsky A, Eisenberg D. Currently under licensing agreement.

Detection of membrane proteins U.K. Provisional Application No. 1222833.4, filed on December 18, 2012 Inventors: Arthur

Laganowsky, Eamonn Reading, and Carol V. Robinson. Currently under licensing agreement.

A small folded protein inhibitor of amyloid fibrillation and toxicity U.S. Provisional Application Serial No. 61/947,665, filed on March 4, 2014 Inventors: Arthur Laganowsky, Cong Liu, and David Eisenberg

Grants

Current

A-2106-20220331 (PI: Laganowsky) 09/01/2021-08/31/2025 0.0 CM
Welch Foundation \$300,000

Molecular assemblies of oncogenic RAS mutants with SOS and BRAF

This proposal focuses on investigating the molecular interactions between oncogenic RAS mutants with SOS and BRAF using native mass spectrometry. We also are investigating how the type of guanosine nucleotide alters RAS properties and interactions with other molecules.

1 R01 GM139876-01 (PI: Laganowsky) 04/01/2021 – 03/31/2026 2.0 CM
NIH / NIGMS \$1,453,151 (\$1,000,000+\$453,151)

Developing new tools to probe membrane protein-lipid interactions for biomedical applications

This proposal seeks to develop new methods to better understand how lipids interact with membrane proteins and modulate their function using the bacterial ammonia channel as model membrane protein systems. Please note that \$150K/yr in direct for Laganowsky and \$50K/yr in direct for co-I, Dr. Lei Fang.

Role: PI

2 R44 GM133239-02 (PI: Bern) 02/01/2021 – 01/32/2023 0.12 CM
NIH \$148,132 (\$104,751+\$43,381)

New Algorithms and Software for Mass Spectrometric Analysis of Intact Proteins and Complexes

This proposal seeks to develop new algorithms and software for the analysis of native mass spectra. My lab will work with Bern and co-workers along with providing native mass spectra.

Role: Co-I

R01GM138863 (Multi-PI: Clowers, Laganowsky, Russell) 07/01/2020 – 06/31/2025 1.0 CM
NIH / NIGMS \$206,023

Innovative Native Ion Mobility Approaches for Transformational Measurements in Structural Biology

This is a multi-PI proposal seeks to develop and apply forefront ion mobility mass spectrometry technologies to address modern problems in structural biology that would otherwise remain intractable using other biophysical approaches. My part of the proposal is the application of this technology to study conformational dynamics of MsbA. My budget (provided above) covers supplies and support for one postdoc and one graduate student.

Role: Multi-PI

Completed

R01GM121751 Clemmer, Laganowsky, Russell (Multi-PI) 07/15/2017-06/30/2021
NIH / NIGMS / NCI \$474,568 (For Laganowsky)

Development of high resolution mobility measurements for structural biology

This proposal aims to develop a high-resolution ion mobility device for large protein complexes to be developed in Clemmer's laboratory, benchmarked by Russell's laboratory, and put to application in Laganowsky's laboratory.

Role: Multi-PI

RO1 Thornton (PI, University of Chicago), Laganowsky (co-I) 09/01/2019 - 09/31/2023
NIH/NIGMS \$331,840 (TDC for Laganowsky)

Evolutionary origins of hemoglobin: Genetic and biochemical mechanisms for the evolution of an allosteric molecular complex

For this proposal, my laboratory is responsible for native mass spectrometry analysis of soluble protein samples from Dr. Thornton's lab. My budget only covers a portion of a graduate student salary.

Role: Co-I

1 DP2 OD022672-01 (PI: Laganowsky) 09/30/2016 – 08/31/2021
NIH / NIGMS \$1,500,000

Native ion mobility mass spectrometry studies of potassium inward rectifier channels: insight into gating and lipid binding

This proposal will seek to better understand how lipids modulate the structure and function of eukaryotic inward rectifier potassium channels that are associated with a number of diseases. We also propose to use native ion mobility mass spectrometry to study channel gating.

T3-Triads for Transformation Burgess, Laganowsky, Alyismail (Multi-PI) 03/06/2018-03/01/2019
\$37,000

Project to develop compounds to disrupt k-ras interactions with Sons of Sevenless (SOS).

Clinical Science & Translational Research (CST*R) Institute Pilot Grant Program TAMHSC 08/27/2018-08/27/2019
Lawhorn, Skare, Threadgill, Laganowsky (Multi-Pi) \$100,000

Ensuring dogs remain man's best friend – Understanding how Staphylococcus pseudintermedius infects people and dogs
The team includes 5 TAMU co-PIs (Drs Sara Lawhorn, Magnus Hook, David Threadgill, Jon Skare, and Arthur Laganowsky) from the Colleges of Medicine, Veterinary Medicine and Science and has secured matching support from the Institute for Biosciences and Technology, the College of Veterinary Medicine & Biomedical Sciences, and the Department of Microbial Pathogenesis and Immunology, College of Medicine. Our unique multi-disciplinary team is focused on understanding the molecular foundations of staphylococcal infections in people and animals.

TAMU College of Science Strategic Transformative Research Program 06/01/2017-05/31/2018
\$50,000

Next generation detergents for biophysical studies of membrane proteins. This proposal seeks to generate preliminary data to support an NSF proposal.

5 R21 NS094882-02 (PI:Laganowsky) 09/21/2015–08/31/2017
NIH/NINDS \$250,000

Elucidating the stoichiometry of GPCR oligomers

G protein-coupled receptors (GPCRs) assemble as oligomers that determine their distinct functional properties. This proposal seeks to address the long-standing debate in the GPCR field regarding stoichiometry of GPCR oligomers by adapting new ion mobility mass spectrometry technology to determine the stoichiometry and distribution of GPCR oligomers.

Prior to TAMU appointment

Development of a mass spectrometry based method for studying drug binding to membrane protein complexes. Dr. Arthur Laganowsky and Professor Dame Carol V. Robinson, Isis Innovation Ltd., 2013-2014, Oxford, UK.

Pending

1 RM1 GM145416-01 (Multi-PI: Laganowsky, Baker, Marty, Zhou) 04/01/2022-08/31/2027 4.8 CM
NIH / NIGMS \$3,320,238 (\$2,250,000+\$1,070,238)

Understanding the role of lipids in structure and function of membrane proteins

This proposal seeks to apply highly innovative and integrative approaches, combining numerous biophysical techniques, to identify and characterize membrane protein-lipid interactions at the molecular level. Impact Score: 24

Role: Lead-PI

Teaching Record

courses taught

Fall 2022 CHEM 120, Fundamentals of Chemistry I – taught two sections

Fall 2021 CHEM 120, Fundamentals of Chemistry I – taught two sections

Laganowsky, Arthur

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Spring 2021 CHEM 670, Physical Methods in Biological Chemistry
 Fall 2020 CHEM 120, Fundamentals of Chemistry II
 Fall 2019 CHEM 120, Fundamentals of Chemistry II – taught two sections
 Spring 2019 CHEM 670, Physical Methods in Biological Chemistry
 Spring 2019 CHEM 681, Seminar
 Fall 2018 CHEM 681, Seminar
 Fall 2018 CHEM 102, Fundamentals of Chemistry II
 Spring 2018 CHEM 670, Physical Methods in Biological Chemistry
 Fall 2017 CHEM 102, Fundamentals of Chemistry II
 Fall 2016 MSCI 681, Journal club “PROTEINS”
 Spring 2016 CHEM 689, Special Topics in Biological Mass Spectrometry (co-taught with Dr. Russell)

Student committees

Ankith Sharma	2019-present	TAMU, Chem
Cheng-Wei (Jeff) Lin	2018-2021	TAMU, Chem
Chris Mallis	2016-2021	TAMU, Chem
Jacob McCabe	2018-2021	TAMU, Chem
Jixing Lyu	2018-present	TAMU, Chem
Johnathan Picker	2016-present	TAMU, BioBio
Joshi Alaamy	2020-present	TAMHSC, Molecular & Cellular Medicine
Joshua Diaz	2017-present	TAMU, BioBio
Joshua Kim	2019-present	TAMU, Chem
Kungho Kim	2016-2021	TAMU, Civil Engineering
Liqi Fan	2019-present	TAMU, Chem
Michael Hebert	2016-2019	TAMU, Chem
Pei Qiao	2019-2021	TAMU, BioBio
Sagnika Ghosh	2021-present	TAMU, BioBio
Samantha Schrecke	2017-present	TAMU, Chem
Seth Van Andel	2017-present	TAMU, Chem
Thomas Walker	2020-present	TAMU, Chem
Wei Gai	2021-present	TAMU, BioBio
Xi Chen	2020-present	TAMU, Chem
Xiaowen Liang	2017 graduated	TAMHSC, IBT
Xue Gong	2020-present	TAMU, BioBio
Yang Liu	2014-2019	TAMHSC, IBT
Yun Zhu	2018-present	TAMU, Chem

Professional Services

NIH study section (*ad hoc*) 2021
 NIH study section (*ad hoc*) 2019
 NIH BPNS study section (*ad hoc*) 2019
 Chemical Biology Division Speaker Organizer, 2021-present
 Faculty and Staff Awards Committee, 2020-present
 Chair of graduate awards committee, 2019-present
 Faculty search committee, 2018
 Secretary, Texas A&M Local Section of the American Chemical Society from 2017-present
 Faculty Meeting Minutes 2017-2018
 Active reviewer for a large number of scientific journals, including: *Nature Communications*, *Analytical Chemistry*, *Journal of The American Society for Mass Spectrometry*, *The Journal of Physical Chemistry Letters*, *Chemical Physics Letters*, *Protein Society*

Group Members

Laganowsky, Arthur

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Graduate students

2021-present Scott, Elena
2021-present Kumar, Smriti (transfer from another group)
2020-present Stover, Lauren
2020-present Yun, Sangho
2019-present Zhang, Tianqi
2019-2021 Qiao, Pei
2018-present Lyu, Jixing
2018-present Zhu, Yun
2017-present Schrecke, Samantha
2017-2021 Moghadamchargari, Zahra
2015-2019 Liu, Yang

Research Staff

2019-present Packianathan, Charles
2017-2018 LoCaste, Catherine

Undergraduates

2021-present Nicklaus Elam
2021 Mayur Aggarwal
2021 Caleb Russell
2020-2021 Elena Scott
2019-2021 Benavides, Amanda Medical School
2019 McEacharn, Kemper
2019 Kropp, Gabriella
2019 Wick, Benjamin
2019 Shrader, Eric
2018-2019 Bartz, Mariah Medical School
2018-2019 Hosea, Aiden
2018 Chapman, Samantha Optometry School
2018 Whitcher, Zachary
2017 Zlomie, Torie (Summer REU) Chemistry teacher, College Station High School
2017 Semper, James
2017 Ho, Ngoc

Former group members

2019-2021 Qiao, Pei Assistant Professor, Zhejiang University of Technology
2017-2021 Moghadamchargari, Zahra Resilience
2014-2019 Liu, Yang REGENXBIO
2017-2019 Boone, Christopher (postdoc) Xtal BioStructures
2017-2018 Patrick, John (postdoc) Janssen Pharmaceutical Company
2016-2017 Conover, Gloria (Research Staff) TAMHSC
2015-2016 Cong, Xiao (Postdoc) Pfizer
2014-2016 Liu, Wen (Research Staff) IBT, TAMHSC, Houston, TX