Curriculum Vitae

Chad R. Borges

January 2023

School of Molecular Sciences (SMS)
The Biodesign Institute – Center for Personalized Diagnostics
Arizona State University (ASU)
P.O. Box 876401
Tempe, AZ 85287

Phone: (480) 727-9928
Email: chad.borges@asu.edu

Website: https://borgeslab.org

EDUCATION

Postdoc: Michigan State University, 2001-2003 under J. Throck Watson (Biological Mass Spectrometry)

Graduate school: University of Utah, 1997-2001 under Douglas Rollins (Analytical Toxicology / Pharmacology), Ph.D.

Undergraduate: Walla Walla College, Major in Chemistry, B.S.

EMPLOYMENT

Associate Professor (with tenure)	***School of Molecular Sciences & The Biodesign Institute (ASU)***	***8/2019 – Present***
Assistant Professor	*School of Molecular Sciences & The Biodesign Institute (ASU)*	*8/2013 – Present*
Associate Research Prof.	*The Biodesign Institute (ASU)*	*9/2012 - 8/2013*
Assistant Research Prof.	*The Biodesign Institute (ASU)*	*5/2008 - 9/2012*
Asst. Research Scientist	*The Biodesign Institute (ASU)*	*1/2007 - 5/2008*
Research Assistant Prof.	*Dept. of Pharmacol. & Toxicol. (U of Utah)*	*12/2003 - 1/2007*

RESEARCH INTERESTS

1) Developing endogenous markers and exogenous indicators of archived biospecimen integrity
2) Analytical techniques for glycan analysis and glycan-based markers of disease

3) Discovery, characterization, and validation of protein posttranslational modifications as indicators of disease and physiological function

4) Development of new bio-analytical modalities

OTHER EXPERIENCE AND HONORS/AWARDS

2022-	Co-Founder and Chief Scientific Officer of CryoVeritas, Inc.: An ASU spin-out company co-founded in partnership with start-up incubator General Inception
2022-	Associate Director of Undergraduate Programs for ASU's School of Molecular Sciences
2022	Nominated for the Zebulon Pearce Distinguished Teaching Award
2021-	Associate Editor for *Journal of Mass Spectrometry & Advances in the Clinical Lab* (JMSACL), the official journal of MSACL
2019	Nominated for Outstanding Doctoral Mentor (ASU)
2019	Best Poster Award, Mass Spectrometry Applications to the Clinical Lab (MSACL) Annual Meeting. Poster presented by graduate student Yueming Hu on the topic of glycan node analysis for the detection and prognosis of lung cancer in women
2017-	Consultant for ASU's Bioscience Mass Spectrometry Facility
2017-2021	Governance Board Member for ASU's Bioscience Mass Spectrometry Facility
2015	Invited American Chemical Society Book Chapter in *Oxidative Stress: Diagnostics and Therapy Volume 2*. Eds. Hepel M, Andreescu S.
2015-	NIH Peer Review Panelist (served on 12 different NIH review panels since 2015)
2014	Invited lead forum editor for an issue of *Antioxidants & Redox Signaling* (Impact Factor 7.7) on the topic of oxidative protein folding (Vol. 21, Issue 3, 2014)
2012-2014	Consultant to Orb Health, Phoenix, AZ
2010-2012	Consultant to Immune Research, Inc. Sonora, CA
2009	Data Analysis Consultant to Aegis Sciences Corporation (Nashville, TN)
2008	Invited paper to the *Journal of Biomolecular Techniques* (based on poster submitted to the annual Association of Biomolecular Resource Facilities (ABRF) meeting)
2007-2008	Data Analysis Consultant to the Sports Medicine Research and Testing Laboratory at the University of Utah
2000	Best Student Platform Presentation -- 18th annual Mountain West Society of Toxicology meeting
1999	University of Utah Graduate Research Fellowship Award ($10,000)
1999	University of Utah Graduate Research Supplemental Travel Award
1999	Finalist, 1999 Society of Toxicology's Mechanisms Specialty Section's Carl C. Smith Fourteenth Annual Graduate Student Awards for Meritorious Research in Mechanisms of Toxicology
1996	Walla Walla College Department of Chemistry Merit Award (included partial scholarship)

I. SCHOLARSHIP

PUBLICATIONS

h-index = 28 (as determined by Google Scholar search)

A. Journal Articles

Format Key:

* Indicates Borges as Corresponding Author	Underline indicates graduate students in Borges group	# indicates postdocs in Borges group	^ indicates undergraduates in Borges group	*Italics* indicates students in other groups

ASU publications are separated from postdoctoral, grad school, and undergraduate publications

Peer Reviewed Publications as a Tenured/Tenure Track ASU faculty member

72. Jehanathan N., Kapuruge E.P., Rogers S.P., Williams S., Chung Y., ***Borges C.R.**: Oxidized LDL is stable in human serum under extended thawed-state conditions ranging from -20 °C to room temperature. *J Mass Spectrom Adv Clin Lab* **27**:18-23, 2023.
[*Corresponding Author]
Journal Impact Factor = Not yet available

71. Kapuruge E.P., Jehanathan N., Rogers S.P., Williams S., Chung Y., ***Borges C.R.**: Tracking the Stability of Clinically Relevant Blood Plasma Proteins with Delta-S-Cys-Albumin-A Dilute-and-Shoot LC/MS-Based Marker of Specimen Exposure to Thawed Conditions. *Molecular and Cellular Proteomics* **21**(11):100420, 2022.
[*Corresponding Author]
Journal Impact Factor = 7.38

70. Yang, M., Walker, S.A., Aguilar Díaz de león, J.S., Davidovich, I., Broad, K., Talmon, Y., ***Borges, C.R.**, Wolfram, J. Extracellular vesicle glucose transporter-1 and glycan features in monocyte-endothelial inflammatory interactions. *Nanomedicine: Nanotechnology, Biology and Medicine* **42**:102515, 2022.
[*Corresponding Author (1 of 2)]
Journal Impact Factor = 6.46

69. Aguilar Díaz de león, J.S., Glenn, H.L., Knappenberger, M. and ***Borges, C.R.**: Oxidized-Desialylated Low-Density Lipoprotein Inhibits the Antitumor Functions of Lymphokine Activated Killer Cells. *Journal of Cancer*, **12**(16): 4993-5004, 2021.
Journal Impact Factor = 3.61

68. Kratz, M., Zelnick, L.R., #Trenchevska, O., Jeffs, J.W., **Borges, C.R.**, Tseng, H.H., Booth, S.L., Kestenbaum, B.R., Utzschneider, K.M., de Boer, I.H.: Relationship between chronic kidney disease, glucose homeostasis, and plasma osteocalcin carboxylation and fragmentation. *Journal of Renal Nutrition*, **31**(3): 248-256, 2021. doi: 10.1053/j.jrn.2020.05.013

Journal Impact Factor = 3.66

67. Aguilar Díaz de león, J.S. and ***Borges, C.R.**: Glycosylation Profiling of Glycoproteins Secreted from Cultured Cells Using Glycan Node Analysis and GC-MS. *Methods in Molecular Biology*, **2271**: 317-330, 2021.
[*Corresponding Author]
Journal Impact Factor = 1.17

66. Walker S.A., Aguilar Díaz De León J.S., Busatto S., Wurtz G.A., Zubair A.C., ***Borges C.R.**, *Wolfram J. Glycan Node Analysis of Plasma-Derived Extracellular Vesicles. *Cells* 2020 Aug 22;**9**(9):E1946. doi: 10.3390/cells9091946
[*Co-Corresponding Author]
Journal Impact Factor = 4.83

65. Henderson J.N., Simmons C.R., Fahmi N.E., Jeffs J.W., **Borges C.R.**, Mills J.H. Structural Insights into How Protein Environments Tune the Spectroscopic Properties of a Noncanonical Amino Acid Fluorophore. *Biochemistry* **59**(37):3401-3410, 2020.
Journal Impact Factor = 2.87

64. Hu, Y., Mulot, C., Bourreau, C., Martin, D., Laurent-Puig, P., Radoi, L., Radoï L, Guénel P, ***Borges, C.R.**: Biochemically Tracked Variability of Blood Plasma Thawed-State Exposure Times in a Multisite Collection Study. *Biopreservation and Biobanking* **18**(5):376-388, 2020.
[*Corresponding Author]
Journal Impact Factor = 2.02

63. Aguilar Díaz de león, J.S. and ***Borges, C.R.**: Evaluation of Oxidative Stress in Biological Samples Using the Thiobarbituic Acid Reactive Substances Assay. *Journal of Visualized Experiments*. **12**: 159, 2020. doi: 10.3791/61122
[*Corresponding Author]
Journal Impact Factor = 1.16

62. Hu, Y., Ferdosi, S., Kapuruge, E.P., Aguilar Diaz de Leon, J., Stücker, I, Radoï L, Guénel P, ***Borges, C.R.**: Diagnostic and Prognostic Performance of Blood Plasma Glycan Features in the Women Epidemiology Lung Cancer (WELCA) Study. *Journal of proteome research* **18**(11): 3985-3998, 2019.
[*Corresponding Author]
Journal Impact Factor = 3.78

61. Jeffs, J.W., Jehanathan, N., Thibert, S.M.F., Ferdosi, S., Pham, L., *Wilson, Z.T.*, Breburda, C., ***Borges, C.R.** Delta-S-Cys-Albumin: A Lab Test that Quantifies Cumulative Exposure of Archived Human Blood Plasma/Serum Samples to Thawed Conditions. *Molecular & cellular proteomics* 2019, **18**(10):2121-2137, 2019.
[*Corresponding Author]
Journal Impact Factor = 4.83

- #1 Altmetric score (58) over the past 3 months at *Mol Cell Proteomics* (as of 10/11/19). This score places this paper in the top 5% of all research outputs scored by Altmetrics.

- Featured in the October 2019 issue of ASBMB Today in an article entitled, "Better specimens, better science".

60. Chen, H., Ambadapadi, S., Wakefield, D., Bartee, M., Yaron, J.R., Zhang, L., Archer-Hartmann, S.A., Azadi, P., Burgin, M., **Borges, C.**, Zheng, D., Ergle, K., Muppala, V., Morshed, S., Rand, K., Clapp, W., Proudfoot, A., Lucas, A.: Selective Deletion of Heparan Sulfotransferase Enzyme, Ndst1, in Donor Endothelial and Myeloid Precursor Cells Significantly Decreases Acute Allograft Rejection. *Scientific reports* **8**(1):13433, 2018.
Journal Impact Factor = 4.122

59. Ferdosi, S., Ho, T.H., Castle, E.P., Stanton, M.L., ***Borges, C.R.**: Behavior of blood plasma glycan features in bladder cancer. *PloS One*, **13**(7):e0201208, 2018.
[*Corresponding Author]
Journal Impact Factor = 2.766

58. Ferdosi, S., Rehder, D.S., Maranian, P., Castle, E.P., Ho, T.H., Pass, H.I., Cramer, D.W., Hollingsworth, M.A., Anderson, K.S., Fu, L., Cole, D.E.C., Le, T., Wu, X., ***Borges, C.R.**: Stage Dependence, Cell-Origin Independence and Prognostic Capacity of Serum Glycan Fucosylation, β1-4 Branching, β1-6 Branching and α2-6 Sialylation in Cancer. *J Proteome Res* **17**: 543-558, 2018.
[*Corresponding Author]
Journal Impact Factor = 4.268

57. Jeffs, J.W., Ferdosi, S., Yassine, H.N., ***Borges, C.R.**: *Ex vivo* instability of glycated albumin: A role for autoxidative glycation. *Archives of Biochemistry and Biophysics* **629**: 36-42, 2017.
[*Corresponding Author]
Journal Impact Factor = 3.017

56. Hu, Y. and ***Borges, C.R.**: A spin column-free approach to sodium hydroxide-based glycan permethylation. *Analyst* **142**(15): 2748-2759, 2017.
[*Corresponding Author]
Journal Impact Factor = 4.107

55. *Ingram, T., Zuck, J.*, **Borges, C.R.**, Redig, P., Sweazea, K.: Variations in native protein glycation and plasma antioxidants in several birds of prey. *Comparative Biochemistry & Physiology Part B* **210**: 18-28, 2017.
Journal Impact Factor = 1.551

54. Deb, A., Johnson, W.A., Kline, A.P., Scott, B.J., Meador, L.R., Srinivas, D., Martin-Garcia, J.M., Dorner, K., **Borges, C.R.**, Misra, R., Hogue, B.G., Fromme, P., Mor, T.S.: Bacterial expression, correct membrane targeting and functional folding of the HIV-1 membrane protein Vpu using a periplasmic signal peptide. *PLoS One* **12**(2): e0172529, 2017.
Journal Impact Factor = 3.234

53. *Biswas, S., Sen, S.*, Im, J., Biswas, S., Krstic, P., Ashcroft, B., **Borges, C.**, Zhao, Y., Lindsay, S., Zhang, P.: Universal Readers Based on Hydrogen Bonding or π-π Stacking for Identification of DNA Nucleotides in Electron Tunnel Junctions. *ACS Nano* **10**(12): 11304-11316, 2016.
Journal Impact Factor = 12.881

52. Im, J., *Biswas, S.*, Liu, H., Zhao, Y., *Sen, S., Biswas, S.*, Ashcroft, B., **Borges, C.**, Wang, X., Lindsay, S., Zhang, P.: Electronic Single Molecule Identification of Carbohydrate Isomers by Recognition Tunneling. *Nature Communications* **7**: 13868, 2016.
Journal Impact Factor = 10.742

51. *Zuck, J.*, **Borges, C.R.**, Braun, E.J., Sweazea, K.L.: Chicken albumin exhibits natural resistance to glycation. *Comparative Biochemistry & Physiology Part B* **203**: 108-114, 2016.
Journal Impact Factor = 1.551

50. ***Borges, C.R.** and Rehder, D.S.: Glycan structure of Gc Protein-derived Macrophage Activating Factor as revealed by mass spectrometry. *Arch Biochem Biophys* **606**:167-179, 2016.
[*Corresponding Author]
Journal Impact Factor = 3.043

49. Trenchevska O., Yassine, H.N., **Borges, C.R.**, Nelson, R.W., Nedelkov, D.: Development of quantitative mass spectrometric immunoassay for serum amyloid A. *Biomarkers*, 1-9, 2016. DOI: 10.1080/1354750X.2016.1201533.
Journal Impact Factor = 2.522

48. ^Zaare, S., Aguilar, J., Hu, Y., Ferdosi, S., ***Borges, C.R.**: Glycan Node Analysis: A Bottom-Up Approach to Glycomics. *J Vis Exp* **111**:e53961, 2016.
[*Corresponding Author]
Journal Impact Factor = 1.325

47. Fu L., **Borges C.R.**, Rehder D.S., Wong B.Y., Williams R., Carpenter T.O., Cole D.E.: Characterization of additional vitamin D binding protein variants. *J Steroid Biochem Mol Biol*, **159**:54-59, 2016.
Journal Impact Factor = 4.049

46. *Biswas S.*, Song W., **Borges C.R.**, Lindsay S., Zhang P.: Click Addition of a DNA Thread to the N-termini of Peptides for Their Translocation through Solid-State Nanopores. *ACS Nano*, **9**(10): 9652-9664, 2015.
Journal Impact Factor = 12.033

45. *Hanavan, P.D.*, **Borges, C.R.**, Katchman, B.A., Faigel, D.O., Ho, T.H., Meurice, N., Petit, J.L., Ma, C.-T., Sergienko, E.A., Lake, D.F. Ebselen inhibits QSOX1 enzymatic activity and suppresses invasion of pancreatic and renal cancer cell lines. *Oncotarget*, **6**(21): 18418-28, 2015.

Journal Impact Factor = 6.627

44. Ho, T. H., Nateras, R. N., Yan, H., Park, J. G., Jensen, S., **Borges, C.**, Lee, J. H., Champion, M. D., Tibes, R., Bryce, A. H., Carballido, E. M., Todd, M. A., Joseph, R. W., Wong, W. W., Parker, A. S., Stanton, M. L., Castle, E. P. A Multidisciplinary Biospecimen Bank of Renal Cell Carcinomas Compatible with Discovery Platforms at Mayo Clinic, Scottsdale, Arizona. *PloS One* 10(7):e0132831, 2015.
Journal Impact Factor = 3.534

43. Rehder, D.S., Gundberg, C.M., Booth, S.L., ***Borges, C.R.** Gamma-Carboxylation and Fragmentation of Osteocalcin in Human Serum Defined by Mass Spectrometry. *Mol Cell Proteomics* **14**(6): 1546-1555, 2015.
[*Corresponding Author]
Journal Impact Factor = 7.254

42. Yassine, H.N., Trenchevska, O., He, H., **Borges, C.R.**, Nedelkov, D., Mack, W., Kono, N., Koska, J., Reaven, P.D., Nelson, R.W. Serum Amyloid A Truncations in Type 2 Diabetes Mellitus. *PLoS One*, **10**(1):e0115320, 2015.
Journal Impact Factor = 3.534

41. Sherma N.D., **Borges C.R.**, Trenchevska O., Jarvis J.W., Rehder D.S., Oran P.E., Nelson R.W., Nedelkov D. Mass Spectrometric Immunoassay for the Qualitative and Quantitative Analysis of the Cytokine Macrophage Migration Inhibitory Factor (MIF). *Proteome Science* **12**(1):52, 2014.
Journal Impact Factor = 1.878

40. ***Borges C.R.** and Lake D.F. Oxidative Protein Folding: Nature's Knotty Challenge. *Antioxid Redox Signal* **21**(3): 392-395, 2014.
[*Corresponding Author]
Journal Impact Factor = 7.667

39. ***Borges C.R.**, Rehder D.S., Jensen S., Schaab M.R., Sherma N.D., Yassine H., Nikolova B., Breburda C. Elevated Plasma Albumin and Apolipoprotein A-I Oxidation under Suboptimal Specimen Storage Conditions. *Mol Cell Proteomics* **13**(7):1890-1899, 2014.
[*Corresponding Author]
Journal Impact Factor = 7.254

- Featured as an in-depth highlighted article in *ASBMB Today* (Vol 13 No.6 June/July 2014 issue, p. 16) and on the ASBMB Blog "Wild Types" (http://wildtypes.asbmb.org/2014/04/23/realizing-when-proteins-go-bad/)

-Featured as "Paper of the Week" on the National Cancer Institute's Biorepositories and Biospecimen Research Branch's Research Network (June 16, 2014)

38. Zhao, Y., Ashcroft, B., Zhang, P., Liu, H., *Sen, S.*, Song, W., Im, J., Gyarfas, B., Manna, S., *Biswas, S.*, **Borges, C.**, Lindsay, S. Single-molecule spectroscopy of amino acids and peptides by recognition tunneling. *Nat Nanotechnol* **9**(6): 466-473, 2014.

Journal Impact Factor = 33.265

37. Oran P.E., Trenchevska O., Nedelkov D., **Borges C.R.**, Schaab M.R., Rehder D.S., Jarvis J.W., Sherma N.D., Shen L., Krastins B., Lopez M.F., Schwenke D.C., Reaven P.D., Nelson R.W. Parallel workflow for high-throughput (>1,000 samples/day) quantitative analysis of human insulin-like growth factor 1 using mass spectrometric immunoassay. *PLoS One*, **9**(3): e92801, 2014. doi: 10.1371/journal.pone.0092801.
Journal Impact Factor = 3.534

36. ***Borges C.R.**, Sherma N.D. Techniques for the Analysis of Cysteine Sulfhydryls and Oxidative Protein Folding. *Antioxid Redox Signal*, **21**(3): 511-531, 2014.
[*Corresponding Author]
Journal Impact Factor = 7.667

35. Yassine H.N., Jackson A.M., **Borges C.R.**, Billheimer D., Koh H., Smith D., Reaven P., Lau S.S., Borchers C.H. The application of multiple reaction monitoring and multi-analyte profiling to HDL proteins. *Lipids Health Dis* **13**(1): 8, 2014.
Journal Impact Factor = 2.31

Publications as a Research Track faculty member

34. Yassine, H., ***Borges, C.R.**, Schaab, M.R., Billheimer, D., Stump, C., Reaven, P., Lau, S.S., Nelson, R.W. Mass Spectrometric Immunoassay and Multiple Reaction Monitoring as Targeted MS-based Quantitative Approaches in Biomarker Development: Potential Applications to Cardiovascular Disease and Diabetes. *Proteomics Clin Appl*, **7**(7-8): 528-540, 2013.
[*Corresponding Author]
Journal Impact Factor = 2.683

33. ***Borges, C.R.**, Rehder, D.S., Boffetta, P. Multiplexed surrogate analysis of glycotransferase activity in whole biospecimens. *Anal Chem*, **85**: 2927-2936, 2013.
[*Corresponding Author]
Journal Impact Factor = 5.825

- Featured in the "Concentrates" section of the February 25, 2013 issue of *Chemical & Engineering News*

32. Orsak, T., Smith, T.L., Eckert, D., Lindsley, J.E., **Borges, C.R.**, Rutter, J. Revealing the Allosterome: Systematic Identification of Metabolite/Protein Interactions. *Biochemistry*, **51**(1):225-32, 2012.
Journal Impact Factor = 3.377

- Highlighted in *Nature Chemical Biology's* "Research Highlights" section of the February 2012 issue
- Selected and Evaluated by the Faculty of 1000

31. Bley, C.J., Qi, X., Rand, D.P., **Borges, C.R.**, Nelson, R.W., Chen, J.J.L. RNA-protein binding interface in the telomerase ribonucleoprotein. *PNAS*, **108**(51): 20333-8, 2011.
Journal Impact Factor = 9.681

30. Oran, P.E., Jarvis, J.W., **Borges, C.R.**, Sherma, N.D., Nelson, R.W. Mass Spectrometric Immunoassay of Intact Insulin and Related Variants for Population Proteomics Studies. *Proteomics Clin Appl* **5**: 454-9, 2011.
Journal Impact Factor = 1.97

29. **Borges, C.R.**, Oran, P.E., Buddi, S., Jarvis, J.W., Schaab, M.R., Rehder, D.S., Rogers, S. P., Taylor, T. and Nelson, R.W. Building Multidimensional Biomarker Views of Type 2 Diabetes Based on Protein Microheterogeneity. *Clin.Chem* **57**: 719-728, 2011.
Journal Impact Factor = 7.905

28. Nelson, R.W., **Borges, C.R.** Mass spectrometric immunoassay revisited. *J Am Soc Mass Spectrom* **22**: 960-968, 2011.
Journal Impact Factor = 4.002

27. Rehder, D. S., ***Borges, C. R.** Cysteine Sulfenic Acid as an Intermediate in Disulfide Bond Formation and Nonenzymatic Protein Folding. *Biochemistry* **49**: 7748-7755, 2010.
*[Corresponding Author]
Journal Impact Factor = 3.226

– Top Google hit in search for "cysteine sulfenic acid" (2014 – present)

26. Oran, P.E., Sherma, N.D., **Borges, C.R.**, Jarvis, J.W., Nelson, R.W. Intrapersonal and Populational Heterogeneity of the Chemokine RANTES. *Clin Chem* **56**: 1432-1441, 2010.
Journal Impact Factor = 6.886

25. Rehder, D. S., ***Borges, C. R.** Possibilities and pitfalls in quantifying the extent of cysteine sulfenic acid modification of specific proteins within complex biofluids. *BMC Biochemistry* **11**: 25, 2010.
[*Corresponding Author]
Journal Impact Factor = 1.988

– Achieved "Highly Accessed" Status.

24. Lopez, M.F., Rezai, T., Sarracino, D.A., Prakash, A., Krastins, B., Athanas, M., Singh, R.J., Barnidge, D.R., Oran, P.E., **Borges, C.R.**, Nelson, R.W. Selected Reaction Monitoring–Mass Spectrometric Immunoassay Responsive to Parathyroid Hormone and Related Variants *Clin Chem* **56**: 281-290, 2010.
Journal Impact Factor = 6.886

– Featured as one of *Clinical Chemistry*'s 2010 Journal Club articles

23. **Borges, C.R.**, Rehder, D.S., Jarvis, J.W., Schaab, M.S., Oran, P.E., Nelson, R.W. Full length characterization of proteins in human populations *Clin Chem* **56**: 202-211, 2010.
Journal Impact Factor = 6.886

22. Oran, P.E., Jarvis, J.W., **Borges, C.R.**, Nelson, R.W. C-peptide Microheterogeneity in Type 2 Diabetes Populations. *Proteomics Clin Appl* **4:** 1-6, 2010.
Journal Impact Factor = 1.807

21. Rehder, D. S., Nelson, R. W., ***Borges, C. R.** Glycosylation status of vitamin D binding protein in cancer patients. *Protein Sci* **18:** 2036-2042, 2009.
[*Corresponding Author]
Journal Impact Factor = 2.937

20. ***Borges, C.R.**, Jarvis, J.W., Oran, P.E., Rogers, S.P., Nelson, R.W. "Population Studies of Vitamin D Binding Protein Microheterogeneity by Mass Spectrometry Lead to Characterization of its Genotype Dependent O-glycosylation Patterns" *J. Proteom. Res.* **7**:4143-53, 2008.
[*Corresponding Author]
Journal Impact Factor = 5.684

19. ***Borges, C.R.**, Jarvis, J.W., Oran, P.E., Rogers, S.P., Nelson, R.W. "Population studies of intact Vitamin D binding protein by affinity capture ESI-TOF-MS" *J Biomolecular Techniques* **19**(3): 167-176, 2008.
[*Corresponding Author]
Journal Impact Factor = Not Available

18. Hoggan, A.M., Shelby, M.K., Crouch, D.J., **Borges, C.R.**, Slawson, M.H. "Detection of bumetanide in an over-the-counter dietary supplement" *J. Anal. Toxicol.* **31**(9):601-4, 2007.

17. ***Borges C.R.**, "Concept for facilitating analyst-mediated interpretation of qualitative chromatographic-mass spectral data: an alternative to manual examination of extracted ion chromatograms." *Anal. Chem.* **79**(13):4805-13, 2007.
[*Corresponding Author]

16. **Borges C.R.**, Miller N., Shelby M., Hansen M., White C., Slawson M.H., Monti K., and Crouch D.J. "Analysis of a challenging subset of World Anti-Doping Agency-banned steroids and anti-estrogens by LC/MS/MS" *J. Anal. Toxicol.* **31**(3):125-31, 2007.

15. ***Borges C.R.**, Taccogno J., Crouch D.J., Le L., Truong T.N. "Structure and Mechanism of Formation of an Important Ion in Doping Control." *Int. J. Mass Spectrom.* **247**: 48-54, 2005.
[*Corresponding Author]

Postdoctoral Publications

14. **Borges C.R.**, Qi J., Wu W, Torng E., Hinck A.P., and Watson J.T. "Algorithm-Assisted Elucidation of Disulfide Structure: Application of the Negative Signature Mass Algorithm to

Mass-Mapping the Disulfide Structure of the 12-Cysteine Transforming Growth Factor β Type II Receptor Extracellular Domain." *Anal Biochem.* **329**(1):91-103, 2004.

13. Qi, J., Hang, D., Rupp, M., **Borges, C.R.**, Wu, W., Torng E., and Watson, J.T. "Automated Data Interpretation Based on the Concept of 'Negative Signature Mass' for Mass-Mapping Disulfide Structures of Cystinyl Proteins." *J. Amer. Soc. Mass Spectrom.* **14**(9): 1032-1038, 2003.

– This article also selected for inclusion in (Issue 18, 29 August 2003) of "Proteomics Select – The Virtual Journal of Proteomics", http:\\www.proteomicsvj.com

12. **Borges, C.R.**, and Watson, J.T., "Recognition of Cysteine-Containing Peptides through Prompt Fragmentation of the 4-Dimethylaminophenylazophenyl-4'-maleimide Derivative During Analysis by MALDI-MS" *Protein Sci.* **12(7)**: 1567-72, 2003.

11. **Borges, C.R.**, Kuhn, D.M., and Watson, J.T. "Mass Mapping Sites of Nitration in Tyrosine Hydroxylase: Random versus Selective Nitration of Three Tyrosine Residues" *Chem. Res. Toxicol.* **16**(4): 536-40, 2003.

10. **Borges, C.R.**, Geddes, T., Watson, J.T., and Kuhn, D.M. "Dopamine biosynthesis is regulated by S-glutathionylation: Potential mechanism of tyrosine hydroxylase inhibition during oxidative stress." *J. Biol. Chem.* **277**(50): 48295-302, 2002.

9. Kuhn D.M., Sadidi M., Lu X., Kriepke C., Geddes T., **Borges C.**, Watson J.T. "Peroxynitrite-induced nitration of tyrosine hydroxylase: identification of tyrosines 423, 428, and 432 as sites of modification by MALDI-TOF mass spectrometry and tyrosine-scanning mutagenesis." *J. Biol. Chem.* **277**(16): 14336-42, 2002.

Graduate School and Earlier Publications

8. Rollins, D.E., Wilkins, D.G., Krueger, G.G., Augsburger, M.P., Mizuno, A., O'neal, C., **Borges, C.R.**, Slawson, M.H. "The Effect of Hair Color on the Incorporation of Codeine into Hair." *J. Anal. Toxicol.* **27**: 545-551, 2003.

7. Wilkins, D.G., Mizuno, A., **Borges, C.R.**, Slawson, M.H., and Rollins, D.E., "Ofloxacin as a reference marker in hair of various colors." *J. Anal. Toxicol.* **27**(3): 149-55, 2003.

6. **Borges, C.R.**, Roberts, J.C., Wilkins, D.G., and Rollins, D.E. "Cocaine, Benzoylecgonine, Amphetamine, and N-acetylamphetamine Binding to Melanin Subtypes." *J. Anal. Toxicol.* **27**(3): 125-34, 2003.

5. **Borges, C.R.**, Martin, S.D., Meyer, L.J., Wilkins, D.G., and Rollins, D.E. "Influx and Efflux of Amphetamine and N-acetylamphetamine in Keratinocytes, Pigmented Melanocytes, and Non-Pigmented Melanocytes." *J. Pharm. Sci.* **91**(6): 1523-35, 2002.

4. **Borges, C.R**., Wilkins, D.G., and Rollins, D.E. "Amphetamine and N-acetylamphetamine incorporation into hair: an investigation of the potential role of drug basicity in hair color bias." *J. Anal. Toxicol.* **25**: 221-227, 2001.

3. **Borges, C.R**., Roberts, J.C., Wilkins, D.G., and Rollins, D.E. "Relationship of melanin degradation products to actual melanin content: Application to human hair." *Anal. Biochem*. **290**: 116-125, 2001.

2. Denkinger, D.J., **Borges, C.R.**, Butler, C.L., Cushman, A.M., and Kawahara, R.S. "Genomic organization and regulation of the *vav* proto-oncogene." *Biochim. Biophys. Acta* **1491**: 253-262, 2000.

1. Hold, K.M., **Borges, C.R.**, Wilkins, D.G., Rollins, D.E., and Joseph, R.E. Jr. "Detection of nandrolone, testosterone and their esters in rat and human hair samples." *J. Anal. Toxicol.* **23**: 416-423, 1999.

Invited book chapters:

1. ***Borges, C.R.,** Jeffs J.W., Kapuruge E.P.: Impact of Artifactual, Ex Vivo Oxidation on Biochemical Research. In: *Oxidative Stress: Diagnostics and Therapy Volume 2*. Edited by Hepel M, Andreescu S. Washington, DC: American Chemical Society; Chapter 16, pp. 375-413; 2015.
[*Corresponding Author]

Press coverage:

- Interviewed and quoted in *Genetic Engineering & Biotechnology News: Translational Medicine* for an article entitled, "Biobanking Embraces Specialization and Interdependence" (August 2022 issue).

- Interviewed and quoted in *Lab Manager* magazine for an article entitled, "Overcoming Challenges in Plasma Sample Prep" May 2020

- Journal Article #61: Jeffs, J.W., Jehanathan, N., Thibert, S.M.F, Ferdosi, S., Pham, L., Wilson, Z.T., Breburda, C., ***Borges, C.R.** Delta-S-Cys-Albumin: A Lab Test that Quantifies Cumulative Exposure of Archived Human Blood Plasma/Serum Samples to Thawed Conditions. *Molecular & cellular proteomics* 2019, **18**(10):2121-2137, 2019.

    - #1 Altmetric score (58) over the past 3 months at *Mol Cell Proteomics* (as of 10/11/19). This score places this paper in the top 5% of all research outputs scored by Altmetrics.

    - Featured in the October 2019 issue of ASBMB Today in an article entitled, "Better specimens, better science".

- Interviewed and photographed for an ASU student newspaper article by Jose Ivan Cazares published in *The State Press*, entitled, "ASU researchers seek to create more effective diagnostics tests". Published September 6, 2017.

- Invited and Expenses-Paid Talk Entitled, *"Glycan 'Node' Analysis for Detecting and Monitoring Cancer"* Given at Cambridge Healthtech Institute's "Cancer Diagnosis at the Crossroads", Seattle, WA, Sept. 2014 was highlighted in an article in *Genetic Engineering & Biotechnology News* (Nov. 15, 2014; pgs. 1, 32-35) entitled, "Traversing the Cancer Biomarker Labyrinth".

- Journal Article #39, ***Borges C.R.**, Rehder D.S., Jensen S., Schaab M.R., Sherma N.D., Yassine H., Nikolova B., Breburda C. Elevated Plasma Albumin and Apolipoprotein A-I Oxidation under Suboptimal Specimen Storage Conditions. *Mol Cell Proteomics* **13**(7):1890-1899, 2014.

    - Was featured as an in-depth highlighted article in ASBMB Today (Vol 13 No.6 June/July 2014 issue, p. 16) and on the ASBMB Blog "Wild Types" (http://wildtypes.asbmb.org/2014/04/23/realizing-when-proteins-go-bad/)

    - Was featured as "Paper of the Week" on the National Cancer Institute's Biorepositories and Biospecimen Research Branch's Research Network (June 16, 2014)

- Journal Article #33, ***Borges, C.R.**, Rehder, D.S., Boffetta, P. Multiplexed surrogate analysis of glycotransferase activity in whole biospecimens. *Anal Chem*, **85**: 2927-2936, 2013.

    - Was featured in the "Concentrates" section of the February 25, 2013 issue of *Chemical & Engineering News*

- Journal Article #32, Orsak, T., Smith, T.L., Eckert, D., Lindsley, J.E., **Borges, C.R.**, Rutter, J. Revealing the Allosterome: Systematic Identification of Metabolite/Protein Interactions. *Biochemistry*, **51**(1):225-32, 2012.

    - Was highlighted in *Nature Chemical Biology's* "Research Highlights" section of the February 2012 issue

    - Was selected and Evaluated by the Faculty of 1000

PATENTS

Pending

US patent pending for "Visual Indicators of Biospecimen Time-Temperature exposure" Application number: US17/241,917

- License optioned to CryoVeritas, Inc.

US provisional patent filed for disclosure M22-281L entitled, "Anti-freeze Solutions for Visual Indicators of Biospecimen Time-Temperature Exposure"

Issued

US Patent No. 10,174,360 "Methods for Analyzing Glycan-Derived Monosaccharides" (2019)

US Patent Nos. 10,126,306 B2 & 10,126,308 B2 "Methods for Assessing Biospecimen Integrity" (2018)

US Patent No. 8,669,111 "Buffers for Stabilizing Biological Specimens and their Use" (2013)
- Nonexclusively licensed to Kerafast (No lab share royalty expenditures)

PRESENTATIONS

A. Conference Presentations (Talks) *(since joining ASU as a tenure-track faculty member;* **international conferences in bold***)*

***Linking the Stability of Clinical Proteins in Blood Plasma to ΔS-Cys-Albumin—a Marker of Plasma Exposure to Thawed Conditions*.** **Presented at the annual International Society for Biological and Environmental Repositories (ISBER) international meeting in Atlanta, GA, May 2022.**

Tracking the Stability of Clinical Blood Plasma Proteins with ΔS-Cys-Albumin—a Dilute-and-Shoot LC/MS Based Marker of Specimen Exposure to Thawed Conditions. Presented at the annual Association for Mass Spectrometry & Advances in the Clinical Lab (MSACL) national meeting in Monterey, CA, April 2022

Tracking the exposure of human plasma & serum samples to thawed conditions using mass spectrometry. Presented at the Biodesign China Symposium, March 2022

Empirically tracking the exposure of human plasma & serum samples to thawed conditions Presented at MSACL Connect (Online only), April 2021

Validation and Advanced Development of Albumin Oxidizability as a Marker of Plasma/Serum Integrity Presented at the NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Washington DC – Held Online, December 2020)

Biochemically Tracked Variability of Blood Plasma Thawed-State Exposure Times in a Multisite Collection Study. **(International Society for Biological and Environmental Repositories (ISBER); Online, August 2020)**

Delta-S-Cys-Albumin: A Lab Test that Quantifies Cumulative Exposure of Archived Human Blood Plasma and Serum Samples to Thawed Conditions**. (International Society for Biological and Environmental Repositories (ISBER); Minneapolis, MN, November 2019)**

Albumin Oxidizability: A Rigorous Yardstick of Plasma/Serum Exposure to Thawed Conditions. (Mass Spectrometry: Applications to the Clinical Laboratory 2018 / MSACL 2018; Palm Springs, CA, January 2018)

Validation and Advanced Development of Glycan Node Analysis in Lung Cancer Research (NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Washington DC, December 2017)

Albumin Oxidizability as a Metric of Blood Plasma/Serum Integrity **(International Society for Biological and Environmental Repositories (ISBER), May 2017, Toronto, Canada)**

Ex Vivo Protein Oxidation as a Metric of Plasma/Serum Integrity (5th National Cancer Institute's (NCI) Early Detection Research Network's (EDRN) Annual Steering Committee Meeting, *Invitation Only Conference*, held March 7 through March 9, 2017 in Tempe Arizona.)

Panelist for the NCI's EDRN Meeting, "*Patenting Biomarkers*" Panel Discussion

Ex Vivo Protein Oxidation as a Metric of Blood Plasma/Serum Integrity (Lightning Talk & Poster; Presenting Author = Chad Borges; US HUPO; San Diego, CA March, 2017)

Albumin Oxidizability as a Forensic Marker of Blood Plasma/Serum Integrity (Society of Western Analytical Professors; Salt Lake City, UT, Feb. 2017)

Protein Oxidation as a Metric of Biospecimen Integrity (Lightening Talk; US HUPO conference, Tempe, AZ, March 2015)

Methodology for Condensing Interesting Glycan Features in Complex Biospecimens into Single Analytical Signals (Mini-Talk & Poster; Borges = Primary Author & Presenter; American Society for Mass Spectrometry – Asilomar Conference on Glycomics, Asilomar, CA, Oct. 2014)

Glycan 'Node' Analysis for Detecting and Monitoring Cancer (Cambridge Healthtech Institute's "Cancer Diagnosis at the Crossroads", Seattle, WA, Sept. 2014) – Expenses paid by conference organizer.

Invited leader of a roundtable discussion on "*Key Hurdles in Biomarker Development*" (Cambridge Healthtech Institute's "Cancer Diagnosis at the Crossroads", Seattle, WA, Sept. 2014) – Expenses paid by conference organizer.

Bottom-Up Glycomics (Society of Western Analytical Professors, Tempe, AZ, Jan. 2014)

B. Presentations at Academic Institutions (Talks) *(since joining ASU as a tenure-track faculty member)*

Practical Statistics for Graduate Students. (Arizona State University: The Biodesign Institute hosted by the Biodesign Student Ambassadors, November 2019).

Albumin Oxidizability as a Forensic Marker of Blood Plasma/Serum Exposure to Thawed Conditions. (Arizona State University: School of Molecular Sciences, Promotion and Tenure Seminar, August 24, 2018).

The Interconnectedness between Vitamin K, Aluminum Exposure and Alzheimer's Disease. (Arizona State University: Class of 1968 Golden Reunion, Biodesign Institute Tour Mini-Lecture; Tempe, AZ May 2018).

Albumin Oxidizability as a Forensic Marker of Blood Plasma/Serum Exposure to Thawed Conditions (Colorado State University; Natural Sciences, Engineering and Veterinary Medicine *Analytical Group* Seminar Series (Fort Collins, CO; Feb. 7, 2018. Host: Melissa Reynolds)

Unanticipated Data: How Perspective and Action Define Its Value. Given at ASU's Initiative for Maximizing Student Development (IMSD) Seminar Series, Nov. 17, 2017. Hosts: Madhavi Chakravadhanula and Stuart Newfeld

Glycan Node Analysis: Targeted, Bottom-Up Glycomics for Detecting and Predicting the Course of Cancer. Given at the University of the Pacific, Department of Chemistry Seminar Series. Stockton, CA; Oct. 17, 2017. Host: O. David Sparkman

Glycan Node Analysis: Targeted, Bottom-Up Glycomics for Detecting and Monitoring Cancer Given at Tufts University, as part of the Jean Mayer USDA Human Nutrition Research Center on Aging Monday Seminar Series. Boston, MA; September 25, 2017. Host: Sarah Booth. Expenses paid by Tufts University along with a modest honorarium.

A Human Bone Protein that Binds and Transports Aluminum in Vitamin K-Dependent Fashion (The Biodesign Institute's Faculty Chalk Talk Series; ASU, Feb. 2017)

Outside-the-Box Mass Spectrometry (Dept. of Biomedical Informatics Colloqium, Arizona State University, Sept. 2013)

C. Group Posters/Talks (*work conducted at ASU;* ***international conferences in bold*****)**
*: students sponsored by travel awards; Grad students underlined

Presenting Author = **Chad Borges** (Poster) *Aliquot-Level Visual Indicators of Biospecimen Exposure to Thawed Conditions*. Presented at the NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Lawrence, KS, December 2022.

Presenting Author = Nilojan Jehanathan (Poster) *Linking Blood Plasma Protein Stabilities to ΔS-Cys-Albumin—a Marker of Exposure to Thawed Conditions*. Presented at ASU's inaugural Inclusive Future Faculty Symposium (IFFS), March 2022.

Presenting Author = **Chad Borges** (Poster) *Validation and Advanced Development of Albumin Oxidizability as a Marker of Plasma/Serum Integrity*. Presented at the NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Online only, December 2021)

Presenting Author = Zachary Wilson (Poster) *S-Cysteinylation of Plasma and Serum Albumin is Associated With Risk Factors of Atherosclerotic Cardiovascular Disease* (American Heart Association – Boston, MA & Online, November 2021)

Presenting Author = Erandi Kapuruge (Poster) *Linking Blood Plasma Protein Stabilities to ΔS-Cys-Albumin—a Marker of Exposure to Thawed Conditions* (International Society for Biological and Environmental Repositories (ISBER) Virtual Symposium, October 2021)

Presenting Author = Zachary Wilson (Poster) *Questionable Utility of Methionine Sulfoxidation as a Biomarker for Atherosclerotic Cardiovascular Disease in Fresh Plasma and Serum Samples* (National Lipid Association - Online, May 2020)

Presenting Author = Zachary Wilson (Poster) *Plasma And Serum Glycated Albumin Are Associated With Coronary Artery Disease And A History Of Major Adverse Cardiac Events* (American Heart Association ATVB/Vascular Discovery Meeting - Online, May 2020)

Presenting Author = *Stephanie Thibert (Poster) Delta-S-Cys-Albumin: A Lab Test that Quantifies Cumulative Exposure of Archived Human Blood Plasma and Serum Samples to Thawed Conditions (US HUPO; Online, March 2020) **See also student award section**

Presenting Author = Erandi Kapuruge (Poster) Correlation of the plasma ΔS-Cys-Albumin integrity marker with changes in clinical analyte measurements founded on molecular interactions (US HUPO; Online, March 2020)

Presenting Author = **Chad Borges** (Poster) *Validation and Advanced Development of Albumin Oxidizability as a Marker of Plasma/Serum Integrity* (NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Los Angeles, CA, November 2019)

Presenting Author = Aguilar Díaz de león, J.S.: *Oxidized-Desilylated Low-Density Lipoprotein Inhibits the Anti-Tumor Functions of Lymphokine Activated Killer Cells*. Society for Glycobiology, Phoenix, AZ, November 2019.

Presenting Author = *Zachary Wilson*; *C Terminal Truncation of Apolipoprotein A-I Glutamine Residue 243 is Associated with Coronary Artery Diseases and Chronic Kidney Disease*. American Heart Association Scientific Sessions, Philadelphia, PA, November 2019.

Presenting Author = Yueming Hu; Diagnostic and Prognostic performance of blood plasma glycan features in Women Epidemiology Lung Cancer (WELCA) study; Mass Spectrometry Applications for the Clinical Laboratory (MSACL) annual conference, Palm Springs, CA, April 2019) **See also student award section**

Presenting Author = **Chad Borges** (Poster) *Validation and Advanced Development of Albumin Oxidizability as a Marker of Plasma/Serum Integrity* (NIH/NCI – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Rockville, MD, December 2018)

Presenting Author = Joshua Jeffs; *Ex Vivo Oxidation of Human Serum Albumin as a Marker of Biospecimen Integrity*. (AAAS, Pacific Division Annual Meeting; Pomona, CA, June 2018) **See also student award section**

Presenting Author = Sriram Ambadapadi (Alexandra Lucas' group – ASU)) Modulating *Heparan Sulfation and Disaccharide Content Significantly Blocks Early Rejection in Mouse Renal Transplants* (AHA; Anaheim, CA, Nov. 2017)

Presenting Author = **Chad Borges** Poster & Lightning Talk: *Ex Vivo Protein Oxidation as a Metric of Blood Plasma/Serum Integrity.* (US HUPO; San Diego, CA March, 2017)

Presenting Author = Shadi Ferdosi; *Glycan 'Nodes' as Cancer Markers: Clinical Performance in Muscle Invasive Bladder Cancer*. (US HUPO; San Diego, CA March 2017)

Presenting Author = Yueming Hu; *A spin column-free permethylation procedure for glycan analysis*. (US HUPO; San Diego, CA March 2017)

Presenting Author = Joshua Jeffs; *Glycation of Human Serum Albumin Increases Ex Vivo in Poorly Handled Samples*. (US HUPO; San Diego, CA March 2017)

Presenting Author = Erandi Kapuruge; *Discovery of a novel interaction between Apolipoprotein E and Interferon-γ (IFNγ) that can be modulated by oxidation of IFNγ*. (US HUPO; San Diego, CA March 2017)

Presenting Author = Stephanie Thibert; *Elucidating the Biological Implications of Aluminum Binding to Osteocalcin*. (US HUPO; San Diego, CA March 2017)

*****Presenting Author = Jesús Aguilar Díaz de león; *Glycan Node Analysis Reveals Specific Glycosyltransferases Upregulated in HepG2 Cells Exposed to IL-6 and IL-1beta Cytokines*. (Glycobiology Gordon Research Conference; Ventura, CA, March 2017)

Presenting Author = **Chad Borges**; *Validation and Advanced Development of Glycan Node Analysis in Lung Cancer Research*. (NIH – Innovative Molecular Analysis Technologies (IMAT) annual grantee conference, *Invitation Only Conference*; Washington DC, December 2016)

Primary Author = Lei Fu (collaborator from Sunnybrook Health Sciences Centre, Toronto, Canada): *Noninvasive Biomarkers in the Assessment of Liver Fibrosis in Patients with Chronic Liver Diseases – a Pilot Study*. (APFCB Congress, Taipei, Taiwan, November 2016)

Presenting Author = Joshua Jeffs; *The Ex Vivo Oxidation Rate of Human Serum Albumin*. (AAAS conference, San Diego, CA, June 2016)

Presenting Author = ^Sahba Zaare; *Breast Cancer Biomarker Identification: Bottom-Up Glycomics and Glycan 'Node' Analysis*. (AZ Bio Expo, Phoenix, AZ, April 2016)

Presenting Author = Shadi Ferdosi; *Glycan 'Nodes' as Cancer Markers: Clinical Performance in Early Stage Lung Cancer*. (US HUPO conference, Boston, MA, March 2016)

Presenting Author = **Chad Borges**; *Validation and Advanced Development of Glycan Node Analysis in Lung Cancer Research*. (NIH – Innovative Molecular Analysis Technologies annual grantee conference, *Invitation Only Conference*; Washington DC, November 2015)

Presenting Author = **Chad Borges**; *Protein Oxidation as a Metric of Biospecimen Integrity*. (International Society for Biological and Environmental Repositories, Phoenix, AZ, May 2015)
Presenting Author = Lei Fu (collaborator from Sunnybrook Health Sciences Centre, Toronto, Canada): *Characterization of additional vitamin D binding protein variants* (Vitamin D Workshop, Delft, Netherlands, April 2015)

Presenting Author = *Shayesteh Ferdosi*; *Breast cancer classification using Gas Chromatography glycan analysis.* (Mass Spectrometry: Applications to the Clinical Lab (MSACL) conference, San Diego, CA, March 2015)

Presenting Author = Olgica Trenchevska (ASU); *Targeted quantitative mass spectrometric immunoassay for analysis of serum amyloid A (SAA) in human plasma*. (Mass Spectrometry: Applications to the Clinical Lab (MSACL) conference, San Diego, CA, March 2015)

Presenting Author = Karen Sweazea (faculty collaborator at ASU); *Unraveling the avian paradox: Avian resistance to protein glycation*. (Experimental Biology 2015 conference, Boston, MA, March 2015)

Presenting Author = *Noor Raad*; *Replacing dietary meat with fish significantly increases plasma glucose without affecting protein glycation*. (Experimental Biology 2015 conference, Boston, MA, March 2015)

Presenting Author = Sally Jensen; *Protein Oxidation as a Metric of Biospecimen Integrity*. (US HUPO conference, Tempe, AZ, March 2015)

-Competitively selected lightning talk on this poster given by **Chad Borges**

Presenting Author = Shadi Ferdosi; *Glycan 'Nodes' as Cancer Markers*. (US HUPO conference, Tempe, AZ, March 2015)

Presenting Author = Mark Tyson, M.D. (collaborator at Mayo Clinic Arizona); *Validation of 6-sialylation-based glycan capping as a blood plasma markder for invasive vs. non-invasive bladder cancer*. (Society of Urologic Oncology conference, Washington DC, Dec. 2014)

Presenting Author = **Chad Borges** (Mini-Talk & Poster); *Methodology for Condensing Interesting Glycan Features in Complex Biospecimens into Single Analytical Signals*. (American Society for Mass Spectrometry – Asilomar Conference on Glycomics, Asilomar, CA, Oct. 2014)

Presenting Author = Karen Sweazea (faculty collaborator at ASU); *The Avian Paradox: Avian resistance to protein glycation*. (Comparative and Evolutionary Physiology Intersociety Meeting, San Diego, CA, Oct. 2014)

Presenting Author = *Noor Raad*; *Replacing dietary meat with fish significantly increases plasma glucose without affecting protein glycation*. (Arizona Physiological Society, Tucson, AZ October 2014)

Presenting Author = Lei Fu (collaborator at Sunnybrook Health Sciences Centre, Toronto, Canada); *Screening and characterization of vitamin D binding protein variants*. (Canadian Society for Clinical Chemists, Charlottetown, PE, Canada, June 2014)

Presenting Author = Olgica Trenchevska (ASU); *Multiplexed Mass Spectrometry Immunoassay for Quantitative Determination of Apolipoprotein C-I, C-II and C-III and Their Isoforms*. (Mass Spectrometry: Applications to the Clinical Lab (MSACL) conference, San Diego, CA, March 2014)

Presenting Author = **Chad Borges**; *Glycan 'Node' Analysis for Detecting and Monitoring Cancer*. (Society for Glycobiology conference, St. Petersburg, FL, Nov. 2013)

Honors Awarded to ASU Students and Postdocs

List of fellowships, awards, etc. earned by trainees under my supervision.

ASU's School of Molecular Sciences' John Kacoyannakis (Koko) Award, presented annually to an outstanding graduate student in analytical chemistry, awarded to Nilojan Jehanathan, April 2022.

RSC Certificate of Excellence Award (issued by ASU), presented annually to an outstanding undergraduate student, awarded to Emil Ljungberg, April 2022.

ASU's School of Molecular Sciences' John Kacoyannakis (Koko) Award, presented annually to an outstanding graduate student in analytical chemistry, awarded to Jesús Aguilar Díaz de león, April 2020.

Biodesign Institute Travel Award for US HUPO 2020 made to Stephanie Thibert (no travel actually occurred due to COVID-19 pandemic)

Best Poster Award, Mass Spectrometry Applications to the Clinical Lab (MSACL) 2019 Annual Meeting. Awarded to Yueming Hu.

Second Place Award for Excellence in the Chemistry and Biochemistry Section of the General Student Paper Competition for Graduate and Advanced Undergraduate Students: 99th Annual Meeting of the Pacific Division of the American Association for the Advancement of Science, June 2018. Included a cash prize of $130. Awarded to Joshua Jeffs.

The Biodesign Institute's Annual FUSION Event: "Edwin Hubble Award for Best Science Research". Awarded to Shadi Ferdosi, April 2018.

The Biodesign Institute's Annual FUSION Event: "Einstein Award for Best Use of Physical Principles". Awarded to Joshua Jeffs, April 2018.

Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Conference 2017 Travel Fellowship. Awarded to Jesús Aguilar Díaz de león.

Carl Storm Underrepresented Minority (SCURM) Travel Fellowship to the Gordon Conference on Glycobiology, 2017. Awarded to Jesús Aguilar Díaz de león.

Emory University STEM Research and Career Symposium 2016 Travel Fellowship. Awarded to Jesús Aguilar Díaz de león.

ASU College of Liberal Arts and Sciences Dean's Medal. Awarded to Barrett Honors Thesis student Sahba Zaare, Spring 2016.

Initiative for Maximizing Student Development (IMSD) Graduate Scholarship, 2015-2018. Awarded to Jesús Aguilar Díaz de león.

FUNDING

Funding Agency	*Total Amount*	*Funding Period*

Current:

NIH/NCI – R21 (IMAT Program) $587,180 6/2022 - 5/2025
Plate reader assays to forensically assess exposure of plasma and serum to thawed conditions
PI: Chad Borges
Co-Investigator: Yunro (Roy) Chung (Biostatistician; College of Health Solutions)

NIH/NCI – R21 (IMAT Program) $542,300 2/2022 - 1/2025
Aliquot-level visual indicators of biospecimen exposure to thawed conditions
PI: Chad Borges
Co-Investigator: Yunro (Roy) Chung (Biostatistician; College of Health Solutions)

Completed:

NIH/NCI – R33 (IMAT Program) $1,100,000 8/2018 - 7/2022
Validation and Advanced Development of Albumin Oxidizability as a Marker of Plasma/Serum Integrity
PI: Chad Borges
Co-Investigators: Jeffrey Wilson (Statistician; W.P. Carey School of Business, ASU), Carolyn Compton (School of Life Sciences, ASU), Joshua LaBaer (School of Molecular Sciences, ASU)

ASU – Core Facilities Seed Grant $3,024 6/2021 – 6/2022
Assessment of TMT-Pro Methods for Serum Stability Monitoring
PI: Chad Borges

DARPA (LaBaer, PI) $4,539,173 7/2019 - 12/2020
Diagnostic Epigenetics of Infectious Agents and Chemical Toxicity (DEPICT)
PI: LaBaer
Co-I: Chad Borges (among several others)

Breast Cancer Research Foundation (BCRF) ~$1,375,000 3/2015-9/2020
Targeting Breast Cancer Tumor Antigens for Immunotherapy
PI: Karen Anderson
Co-Investigators: Chad Borges, Melissa Wilson-Sayres

ASU-Mayo Clinic Seed Grant $50,000 1/2019 - 12-2019
Impact of the Extracellular Vesicle Glycome in Breast Cancer Brain Metastasis
Co-PI: Chad Borges
Co-PI (Mayo Clinic): Joy Wolfram

ASU-Ben Gurion University Seed Grant $30,000 8/2018-7/2019
Glycan Structures in Alpha-1-Antitrypsin: Implications for Blocking Inflammation

Co-PI: Chad Borges
Co-PI: Eli Lewis (Ben Gurion University, Israel)

NIH/NCI - R33 (IMAT Program) $558,009 2/2015-1/2018
Validation and Advanced Development of Glycan Node Analysis in Lung Cancer Research
PI: Chad Borges
Co-Investigator: Garrick Wallstrom (Bioinformatics; no longer at ASU)

Flinn Foundation $100,000 10/2014-9/2017
Development of a Peripheral Blood Test to Identify Invasive Bladder Cancer using Standard Clinical Lab Equipment
PI: Chad Borges
Co-Investigators: Garrick Wallstrom (Bioinformatics; no longer at ASU), Erik Castle, Thai Ho and Melissa Stanton (Mayo Clinic Arizona)

The Fraternal Order of Eagles $9,812 (to ASU) 8/2013-7/2014
Epigenetic Regulation of Glycotransferase Enzymes in Urothelial Carcinoma
PI: Thai Ho (Mayo Clinic Arizona)
Co-Investigators (and ASU PI): Chad Borges

NIH/NIDDK – R24 $4,637,392 8/2011-7/2015
Team Approach to Translate Novel Biomarkers for Diabetes
PIs: Randall Nelson, Peter Reaven (Phoenix VA)
Co-Investigators: Chad Borges (primary proposal author along with Peter Reaven), Dean Billheimer, Serrine Lau, Hussein Yassine, Craig Stump (University of Arizona), Juraj Koska (Phoenix VA)

NIH/NIDDK – R01 $3,176,625 3/2010-2/2015
Population-Based Proteomic Investigation of Type 2 Diabetes Mellitus
PI: Randall Nelson
Co-Investigators: Chad Borges, Peter Reaven (Phoenix VA), Craig Stump (University of Arizona)

NIH/NCRR – R21 $372,651 12/2007-11/2010
Site-specific analysis of human cysteine sulfenic acid protein modifications
PI: **Chad Borges**

II. TEACHING EXPERIENCE

A. Courses Taught

Overview

Course	Year(s)	Semester	Credit hours	Enrollment
[a] CHM 494/598: Topic Topic – Mass Spectrometry	2023	Spring	3	10
CHM 194: Early Start	2022	Fall	1	11
CHM 325: Analytical Chemistry	2022	Fall	3	80 (w/ 4 Honors Contracts)
[a] CHM 494/598: Topic Topic – Mass Spectrometry	2022	Spring	3	7
CHM 325: Analytical Chemistry	2021	Fall	3	68 (w/ 8 Honors Contracts)
[a] CHM 494/598: Topic Topic – Mass Spectrometry	2021	Spring	3	15
CHM 325: Analytical Chemistry (Online but live/synchronous)	2020	Fall	3	125 (w/ 7 Honors Contracts)
CHM 325: Analytical Chemistry (Online; Co-instructor A. Ros)	2020	Spring	3	141
[a] CHM 598: Topic – Mass Spectrometry	2019	Fall	3	12
CHM 501: Seminar – Analytical Chemistry	2019	Fall	1	22
CHM 325: Analytical Chemistry (Online; Co-instructor A. Ros)	2019	Spring	3	143
[a] CHM 598: Topic – Mass Spectrometry	2018	Fall	3	22
CHM 501: Seminar – Analytical Chemistry	2018	Fall	1	13
CHM 328: Instrumental Analysis Laboratory	2018	Spring	2	26
[a] CHM 494/598: Topic – Mass Spectrometry	2017	Spring	3	7

CHM 325: Analytical Chemistry	2016	Fall	3	181 (w/ 20 Honors Contracts)
CHM 327: Instrumental Analysis	2016	Spring	3	16
CHM 326: Advanced Analytical Chemistry Lab	2015	Fall	1	50
(*Introduced a new gas chromatography-mass spectrometry based lab exercise to the curriculum*.)				
[a] CHM 598: Topic – Mass Spectrometry	2015	Spring	3	15
CHM 501: Seminar – Analytical Chemistry	2014	Fall	1	15
CHM 325: Analytical Chemistry	2014	Fall	3	149 (w/ 12 Honors Contracts)
CHM 326: Advanced Analytical Chemistry Lab	2013	Fall	1	60

[a] New courses developed at ASU; [b] Cross-listed for the Masters in Medicinal Chemistry program.

Guest Lectures Given

Class / Lecture Title	Year(s)
BCH 494: Bioanalytical Techniques *Analysis of Glycans*	2018, 2019
CHM 325: Analytical Chemistry *Mass Spectrometry*	2018
MCB 556: Advanced Molecular and Cellular Biology II *Mass Spectrometry & Proteomics*	Given Every Year: 2015-2023
BCH 462: General Biochemistry *Protein Posttranslational Modifications: Markers of In Vivo Biology and Ex Vivo Chemistry*	2017
CHM 191: Chemistry Topics *Life as an Academic Chemist*	2015

B. Graduate Student Mentoring

Current	***Year Enrolled (Program)***	***Research Topic***
Aaron Uy	2021 (Ph.D.)	Aliquot-level visual indicators of biospecimen exposure to thawed conditions
Agbor Tanyi	2022 (M.S)	Evaluation of urine for glycan biosignatures of COVID-19
Schuyler Kremer	2023 (Ph.D.)	Assessment of ΔS-Cys-Albumin as a marker of pediatric plasma/serum exposure to thawed conditions
Ishmael Quansah	2023 (Ph.D.)	Plate reader assays to forensically assess exposure of plasma and serum to thawed conditions

PhDs Awarded	***Year of Graduation***	***Dissertation***
Shadi Ferdosi	2018	Diagnostic and Prognostic Capacity of Serum Glycan Nodes in Different Types of Cancer
Joshua W. Jeffs	2018	*Ex Vivo* Protein Posttranslational Modifications in Poorly Stored Blood Plasma and Serum and their Use as Markers of Biospecimen Integrity
Yueming Hu	2019	Methods for Bottom-Up Glycomics and Assessment of Blood Plasma/Serum Integrity
Jesús Aguilar Díaz de león	2021	Characterization of Glycan Features in Whole Biospecimens using Glycan Node Analysis and the Role of Low-Density Lipoprotein Sialylation in Cancer Immunity
Stephanie Thibert	2021	Evaluation of the Vitamin K Dependence of Human Osteocalcin Metal Binding and Self-Assembly Properties
Erandi Kapuruge	2021	Impact of *Ex Vivo* Modifications on Protein Interactions and AssociatedBiomedical Assays
Nilojan Jehanathan	2022	Assays to Forensically Assess Exposure of Plasma and Serum to Thawed Conditions

Masters Awarded	***Year of Graduation***	***Thesis***
Amir Meraban	2019 (Med Chem MS)	Rate Law for the Oxidation of Cysteine to Cystine in the Plasma/Serum Environment

Non-Thesis

Masters Awarded	***Year of Graduation***	***Summary Paper***
Sally Jensen	2015	Development of an Oxidizable Peptide Probe as an Indicator of Plasma Sample Integrity

Member of Student Thesis Committee for the following graduate students (Total: 42)

Current (PhD and MS)
Mischa Ellison (Primary Advisor: Jia Guo)
Austin Blackmon (Primary Advisor: Douglas Lake, School of Life Sciences)
Janelle Gomez (Primary Advisor: Shirly Montero / Pierre Herckes)
Calvin Koebel (Primary Advisor: Douglas Lake, School of Life Sciences)
Manashi Sonowal (Primary Advisor: Petra Fromme)
Hoai Nguyen (Primary Advisor: Mark Hayes)
Andy Chieng (Primary Advisor: Shaopeng Wang, Engineering)
Yi Chen (Primary Advisor: Jia Guo)
Tianxiang Lui (Primary Advisor: Julian Chen)
Jesse Molar (Primary Advisor: Pierre Herckes)
Shulin Bu (Primary Advisor: Alexandra Ros)
AKM Fazlul Karim Rasel (Primary Advisor: Mark Hayes)
Mohammad Rahman (Primary Advisor: Giovanna Ghirlanda)

Past (PhD and MS)
Emily Higgins, PhD (2023; Primary Advisor: Heather Bean, School of Life Sciences)
Jennifer Hesterman, PhD (2022; Primary Advisor: Joshua LaBaer)
Jorvani Cruz-Villarreal, PhD (2022; Primary Advisor: Alexandra Ros)
Kirstie Swingle, PhD (2022; Primary Advisor: Neal Woodbury)
Sangeet Adhikari, PhD (2022; Primary Advisor: Rolf Halden, Engineering)
Tara MacCulloch, PhD (2021; Primary Advisor: Nicholas Stephanopoulos)
Mahasish Shome, PhD (2021; Primary Advisor: Joshua LaBaer)
Ricardo Ortiz, MS (2021; Primary Advisor: Alexandra Ros)
Symon Levenberg, PhD (2021; Primary Advisor: Neal Woodbury)
Amber Fifield, PhD (2020; Primary Advisor: Douglas Lake, School of Life Sciences)
Yameng Liu, PhD (2020; Primary Advisor: Mark Hayes)
Daihyun Kim, PhD (2020; Primary Advisor: Alexandra Ros)
Manni Mo, PhD (2020; Primary Advisor: NJ Tao, School of Engineering)
Lu Xiao, PhD (2019; Primary Advisor: Jia Guo)
Dhenugen Logeswaran, PhD (2019; Primary Advisor: Julien Chen)
Chenwen Liu, PhD (2019; Primary Advisor: NJ Tao, School of Engineering)
Renjie Liao, PhD (2019; Primary Advisor: Jia Guo)

Shannon Huey, PhD (2019; Primary Advisor: Mark Hayes)
Fan Hong, PhD (2019; Primary Advisor: Hao Yan)
Jonathan Hurtado, PhD (2019; Primary Advisor: Qiang Chen of the School of Life Sciences)
Ashley Hunt, MS (2018; Primary Advisor: NJ Tao, School of Engineering)
Fenni Zhang, PhD (2018; Primary Advisor: NJ Tao, School of Engineering)
Jing Chen, PhD (2018; Primary Advisor: Rolf Halden, School of Engineering)
Shay Roshdiferdosi, PhD (2017; Primary Advisor: Karen Anderson, School of Life Sciences)
Feng Xiao, MS (2017; Primary Advisor: NJ Tao, School of Engineering)
Sovan Biswas, PhD (2016; Primary Advisor: Stuart Lindsay)
Suman Sen, PhD (2016; Primary Advisor: Stuart Lindsay)
Paul Hanavan, PhD (2016; Primary Advisor: Douglas Lake, School of Life Sciences)
Jinghui Luo, PhD (2015; Primary Advisor: Alexandra Ros)

Member of Barrett Honors Thesis Committee for the following students (Total: 15)

Keegan Kow (Primary Advisor: Alexandra Ros; 2022-)
Garrett Story (Primary Advisor: Pierre Herckes; 2022-)
Zachary Nikkel (Primary Advisor: Kevin Redding; Passed 2022)
Brooke Hall (Primary Advisor: Kevin Redding; Passed 2021)
Collin Ganser (Primary Advisor: Shelley Haydel, School of Life Sciences); Passed 2020)
Heather Azcarate (Primary Advisor: Carolyn Compton, School of Life Sciences; Passed 2018)
Capria Renaldi (Primary Advisor: Joshua LaBaer; Passed 2017)
Paul Sion (Primary Advisor: Richard Herman; Passed 2017)
Eric Wilson (Primary Advisor: Karen Anderson, School of Life Sciences; Passed 2016)
Celine de Jesus (Primary Advisor: Tom Taylor, Mathematics; Passed 2016)
Bianca Varda (Primary Advisor: Karen Anderson, School of Life Sciences; Passed 2016)
Katelyn Hayes (Primary Advisor: Mark Hayes; Passed 2016)
Paige Davis (Primary Advisor: Mark Hayes; Passed 2015)
Noor Raad (Primary Advisor: Karen Sweazea, School of Nutrition and Health Promotion; Passed 2015)
Ben Ober-Reynolds (Primary Advisor: Joshua LaBaer; Passed 2014)

C. Undergraduate Student Mentoring

The following undergraduate students have performed research in my group as part of their plan of studies (at least 3 credit hours, or 9 lab hours).

Jaren Cantorna (2022 – present)
Alexander Wilson (SoLS; 2019)

<u>Other Not-for-Credit Undergraduate Volunteers</u>

Sierra Fleischhauer (2016)
James Geiger (2015)
Michael Alvarado (2013-2014)
Sean Rayle (2013-2014)

Current (Barrett Honors Thesis)

Past (Barrett Honors Thesis)
Emil Ljungberg (2022)
Zihan Zhang (2018)
Luc Tieu (2017)
*Sahba Zaare (Deans Medalist) (2016)
*Tyler Miyasaki (2015)

* indicates underrepresented groups

D. Postdoctoral Researcher Mentoring

Jorvani Cruz-Villarreal (2022-)

III. SERVICE (since becoming a Tenure-Track Faculty Member, August 2013)

A. Professional service:

Editorial Service:

2021-Present: Associate Editor for the *Journal of Mass Spectrometry & Advances in the Clinical Lab* (JMSACL), the official journal of MSACL.

Journal Article Peer Review Activities

Ad hoc reviewer for the following peer reviewed journals (**Average rate ~ 1 per month since 2013**): *ACS Sensors*, *Alzheimer's Research & Therapy, Analyst, Analytical Chemistry, Analytical Methods, Antioxidants & Redox Signaling, Analytical Biochemistry, Biochimica et Biophysica Acta, Biopreservation and Biobanking, Chemical Research in Toxicology, Clinical Chemistry and Laboratory Medicine, Clinical Proteomics, Diabetic Medicine, Diabetology and Metabolic Syndrome, Electrophoresis, Frontiers in Ecology and Evolution, Frontiers in Immunology, Journal of the American Chemical Society (JACS), Journal of the American Society for Mass Spectrometry (JASMS), Journal of Chromatography A, Journal of Functional Foods, Journal of Immunological Methods, Journal of Lipid Research, Journal of Mass Spectrometry and Advances in the Clinical Lab (JMSACL), Journal of Personalized Medicine, Journal of Proteome Research, Journal of Visualized Experiments, Molecular and Cellular Proteomics, Pathophysiology, Proteomics, PLoS One, Scientific Reports, Skin Pharmacology and Physiology, and Toxicology Letters*.

2014: Invited Lead Forum Editor for a 2014 issue of *Antioxidants & Redox Signaling* (Impact Factor 7.7) on the topic of Protein Folding. Published as Volume 21, Issue 3, 2014.

Invited Special Reviewer for a "Redox Pioneer" article in *Antioxidants & Redox Signaling* (Impact Factor 7.7) focused on Prof. Vadim N. Gladyshev, published July 2016. Per journal policy, reviewers of Redox Pioneer articles are recognized on the publication as Reviewing Editors.

Grant Proposal Peer Review Activities (NIH)

2022: NIH/NCI Peer Review Committee: ZCA1 RTRB-U (J1): Special Emphasis Panel (U01 proposals)

2022: NIH/NCI Peer Review Committee: ZCA1 TCRB-J(J1): Innovative Molecular and Cellular Analysis Technologies (IMAT) Program (R33 proposals)

2021: Invited to 2 NIH peer review panels (including NIH/NCI's CPTAC review panel), but did not serve on any due to time and/or other conflicts

Member, NIH/NCI Peer Review Committee 2020: ZCA1 SRB-2 (J2): R03, R21 and UH2/UH3 Special Emphasis Panel

Member, NIH/NCI Peer Review Committee 2019: SCA1 TCRB-D (O1) R: Innovative Molecular and Cellular Analysis Technologies (IMAT) Program (R33 and R21 proposals)

Member, NIH Peer Review Committee 2019: ZRG1 IMST-51 (51): Novel and Innovative Tools to Facilitate Identification, Tracking, Manipulation, and Analysis of Glycans and their Functions (U01 proposals)

Member, NIH Peer Review Committee 2018: ZRG1 IMST-B (51) R: Novel and Innovative Tools to Facilitate Identification, Tracking, Manipulation, and Analysis of Glycans and their Functions (U01 proposals)

Member, NIH Peer Review Committee 2018: ZRG1 IMST-B (52) R: Innovative Adaptations to Simplify Existing Technologies for Manipulation and Analysis of Glycans (U01 proposals)

Member, NIH Peer Review Committee 2017: ZCA1 TCRB-T (O1) R: Cancer Biomarkers and Biospecimens (UH2/UH3 and U01 proposals)

Member, NIH Peer Review Committee 2017: ZRG1 IMST-L 52: Innovative Adaptations to Simplify Existing Technologies for Manipulation and Analysis of Glycans (U01 proposals)

Member, NIH Peer Review Committee 2017: ZRG1 IMST-L 51: Novel and Innovative Tools to Facilitate Identification, Tracking, Manipulation, and Analysis of Glycans and their Functions (U01 proposals)

Member, NIH Peer Review Committee 2016: 201610 ZCA1 TCRB-Q (O1) R, Clinical Proteomic Tumor Analysis Consortium (CPTAC) Proteogenomic Characterization Centers U24 proposals

Member, NIH Peer Review Committee 2016: 2016/05 ZCA1 TCRB-9 (M1) S, IMAT R33 proposals

Member, NIH Peer Review Committee 2015: 2016/01 ZCA1 TCRB-6 (J1) S, IMAT R21 proposals

Member, NIH Peer Review Committee 2015: 2015/05 ZRG1 OBT-L (50) R, Tools for characterizing glycans

Professional Society Engagement

Member, American Society for Mass Spectrometry, 2001-present

Member, American Chemical Society, 1996-1997; 2013-present

Member, Society for Glycobiology, 2013

B. Departmental service

2022-Present: Associate Director of Undergraduate Programs

2022-Present: Chair of Undergraduate Programs and Awards Committee

2022-Present: Chair of Undergraduate Student Research Committee

2022: Chair of SMS Instructor Search Committee (two-candidate search)

2022: Helped organize the 1st annual Inclusive Future Faculty Symposium (IFFS)

2022: School of Molecular Sciences DEI faculty search committee

2021-2022: School of Molecular Sciences JEDI Committee member

2020-2022: Secondary Faculty Mentor for Petr Sulc

2019-2021: School of Molecular Sciences Promotion & Budget Committee (elected)

2019-2020: School of Molecular Sciences Doctoral Student Qualifying Exam Committee

2019-2020: Biodesign Institute Faculty Chalk Talk Committee

2018: Biodesign Institute FUSION 2018 Poster Judge

2018-2019: Ad Hoc Seminar Committee

2018-2019: Ad Hoc Committee on Undergraduate Teaching Laboratories

2017-2019: School of Molecular Sciences Committee on Assessment and Accreditation

2016: School of Molecular Sciences Graduate Recruiting Committee

2014-2016: School of Molecular Sciences Committee on Departmental Instrumentation and Facilities

C. University service

2022-Present: Bruker Rapiflex Tissue Imaging MALDI Mass Spectrometer advisory board

2021-2022: BA-JEDI Trainee and Trainer (ADVANCEGeo program; multiple national online sessions throughout the year)

2020-Present: Faculty Mentor for Dhara Shah (School of Mathematical and Natural Sciences)

2019-Present: ASU Biosciences Core Facility's Mass Spectrometry Facility Local Advisor

2020: ASU Limited Submissions Reviewer for Pew Biomedical Scholars applications

2019: ASU-Mayo Seed Grant Reviewer (Qualifying Round Only)

2018-2021: ASU Biosciences Core Facility Governance Board (Member)

2018: ARCS Scholarship Faculty Review Panel Member

2018: ASU Office of Knowledge Enterprise Development (OKED) Workshop for new faculty on initiating and developing their research portfolio. Member of Faculty Expert Panel

2017: ASU Mass Spectrometry Facility: Consultant (compensated) and Scientific Advisory Board Member

2017: ASU Mass Spectrometry Facility: Request for Proposals Evaluation Committee

2016: Internal Grant Proposal Reviewer for ASU-Ben Gurion University "Projects in Health Sciences" (5 proposals reviewed; July 2016)

2014: ASU Limited Review Grant Proposal Review (1 proposal reviewed; July 2014)

2014: Employee Awards Selection Committee

D. Outreach activities

2022: Co-planner/lead for the Migratory Student Summer Academy

2020: Career Day presentation for Walla Walla Valley Academy (Online; Oct. 2020)

2017: ASU/Biodesign Night of the Open Door PI & Booth Attendant

2017: Career Day presentation on, “What is it like to be a chemistry professor?” Presented to a group of home-schooled students at Desert Hills Evangelical Free Church, Phoenix, AZ (Jan. 2017)

2015: ASU/Biodesign Night of the Open Door PI & Booth Attendant

2014: ASU/Biodesign Night of the Open Door PI & Booth Attendant

2014: Career Day presenter (via Webex) at Armona Union Academy (Armona, CA)