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Professional Positions

- Assistant Professor of Research, Comparative Pathobiology, Purdue University 2019-present
- Director of the Purdue Proteomics Facility 2015-present

Other Purdue Academic Affiliations

- Faculty Associate, Center on Aging and the Life Course, Purdue University 2022-present
- Interdisciplinary Life Science- PULSe 2022-present
- Purdue Institute of Inflammation, Immunology, and Infectious Disease 2021-present
- Purdue Institute of Integrative Neuroscience 2020-present

Previous positions

- Staff Scientist, Biochemistry, Purdue University 2012-2015
- Postdoc, Pacific Northwest National Laboratory, WA 2009-2012
- Postdoc, National Research Council of Canada 2006-2009

Select Honors and Awards

- Bravo award from Purdue University (2021, 2014)
- Ralph W. and Grace Showalter Trust Award (2020)
- ABRF Waters best poster award (2018)
- Natural Science & Engineering Research Council of Canada visiting fellowship (2006-2009)
- Fellowship by the Government of Japan (2005)
- Rotary Yoneyama Scholar, Japan (2002)

Collaborative Research Projects

Showalter Foundation Award 41000747 (2020-2022)

Proteomic analysis of endogenous protein complexes and phosphorylation in the liver of diet induced obese mice

Purdue EVPRP COVID Disruption Funding (2021-2022)

Proteomic analysis of endogenous protein complexes and phosphorylation in the liver of diet-induced obese mice

Purdue PIIN/CEREBBRAL Grant (2022-2023)

Quantification of ubiquitination levels in response to aging using mice model

CTSI Purdue Project Development Team (PDT) grant (2022-2024)

Identification of a host targets of a bacterial effector with a novel deDAP-ribosylase activity

IADRC, Indiana University School of Medicine (2021-2022)

A functional systems biology approach to study key models of Alzheimer's pathology

National Institute of Food and Agriculture (2021-2024)

Protein flux analysis for determining colostrum programming of postnatal gilt development

National Science Foundation NSF DBI-2003635 (2020-2023)

Development of multimodal approaches for protein function prediction

National Science Foundation CHE-2004102 (2020-2023)

Signaling axes modulated by cyclic dinucleotides

US Department of Veteran Affairs (VA) Merit 11322 (2020-2024)

Endogenous mitochondrial resistance to ischemia

NASA 18-BM2-Ph2-0016 (2020-2023)

Proteomic analysis of mouse plasma after space flight with the Bion-M2 Mission

Michael J. Fox Foundation Award 40003622 (2021-2023)

Measuring the diversity of C-terminal modifications of aSyn using single-molecule protein sequencing technology

National Institute of Health - R01AI158220 (2021-2025)

Computational and biophysical analysis of the filovirus matrix protein system

Purdue AgSeed (2021-2022)

Mechanism of bioflavonoid acceleration of intestinal epithelial cell development

Peer reviewed publications (since 2016)

Year 2022

1. Kim, S.Q., Mohallem, R., Franco, J., Buhman, K.E., Kim, K.-H. and **Aryal, U.K.** (2022). Global landscape of protein complexes in postprandial-state livers from diet-induced obese and lean mice. *Biochemical and Biophysical Research Communication*, 629, 40-46.
2. Karanja, C., **Aryal, U.K.**, Onyedibe, K.I., Dayal, N., Seleem, M., Atutaleb, N., Naganna, N., Sintim, H.O. (2022). Isoquinoline antimicrobial agents with activities against intracellular bacteria. *Molecules*, 27 (16), 5085.
3. Olek, A.T., Rushton, P.S., Kihara, D., Ciesielski, P., **Aryal, U.K.**, Stauffacher, C.V., McCann, M.C. and Carpita, N.C. (2022). Amino acids in the plant-conserved and class-specific regions of cellulose synthases essential for assembly and function. *Plant Physiology*, 191(1), 142-160.
4. Sun, X., Li, K. **Aryal, U.K.**, Li, B.-Y. and Yokota, H. (2022). PI3K-activated MSC proteomes inhibit mammary tumors via Hsp90ab1 and Myh9. *Molecular Therapy-Oncolytics*, 26, 360-371.
5. Barabas, A.J., **Aryal, U.K.** and Gaskill, B.N. (2022). Protein profiles from used nesting material, saliva and urine correspond with social behavior in group housed male mice, *Mus musculus*. *Journal of Proteomics*, 266, 104685.
6. Rahman, N., Sun, Jiazeng, Li, Z., Pattnaik, A., Mohallem, R., Wang, M., Kazemian, M., **Aryal, U.K.** and Andrisani, O. (2022). The cytoplasmic LSm1-7 and nuclear LSm2-8 complexes exert opposite effects on hepatitis B virus biosynthesis and interferon response. *Frontiers in Immunology*, 13, 970130.
7. Kim, S.Q., Mohallem, R., Franco, J., Buhman, K.K., Kim, K.-H. and **Aryal, U.K.** (2022). Multi-omics approach reveals dysregulation of protein phosphorylation correlated with lipid metabolism in mouse non-alcoholic fatty liver. *Cells*, 11(7), 1172.
8. Xia, L., Alqahtani, S., Ferreira, C.R., **Aryal, U.K.**, Biggs, K. and Shannahan, J.H. (2022). Modulation of pulmonary toxicity in metabolic syndrome due to variations in iron oxide nanoparticles-biocorona composition. *Nanomaterials*, 12 (12).
9. Li, K., Sun, X., Zha, R., Liu, S., Feng, Y., Sano, T., **Aryal, U.K.**, Sudo, A., Li, B.-Y. and Yokota, H. (2022). Counterintuitive production of tumor-suppressive secretomes from Oct4 and c-Myc-overexpressing tumor cells and MSCs. *Theranostics*, 12 (7), 3084-3103.
10. Rodrigues, A., **Aryal, U.K.**, Scharf, M.E., Bennett, G., Gondhakar, A. (2022). Expression profiles of an inactive aspartic protease (Bla g 2 allergen) in different tissues and developmental stages of the German cockroach *Blattella germanica*. *Archives of Insect Biochemistry and Physiology*, e21918.
11. Naclerio, G., N., Onyedibe, K., Karanja, C., **Aryal, U.K.**, and Sintim, H. (2022). Comparative studies to uncover further mechanisms of action of N-(1,3,4-oxadiazol-5-yl)benzamide containing antibacterial agents. *ACS Infectious Diseases*, 8(4), 865-877.

12. Naclerio, G.A., Abutaleb, N.S., Onyedibe, K.I., Karanja, C.W., Eldesouky, H.E., Liang, H.-W., Dieterly, A.M., **Aryal, U.K.**, Tiffany Lyle, L., Seleem, N.M., and Sintim, H.O. (2022). Mechanistic studies and *in-vivo* efficacy of an oxadiazole-containing antibiotic. *Journal of Medicinal Chemistry*, 65(9), 6612-6630.
13. Harvery, K.E., LaVinge, E.K., Dar, M.S., Salyer, A.E., Pratt, E.P.S., Sample, P.A., **Aryal, U.K.**, Gowher, H., Hockerman, G.H. (2022). RyR2/IRBIT regulates insulin gene transcription, insulin content, and secretion in the insulinoma cell line INS-1. *Scientific Reports*, 12(1), 1-18.
14. Ibrahim, I.M., McKenzie, S.D., Chung, J., **Aryal, U.K.**, León-Salas, W.D. and Puthiyaveetil, S. (2022). Photosystem stoichiometry adjustment is a photoreceptor-mediated process in Arabidopsis. *Scientific Reports*, 12 (1), 1-10.
15. Cannes do Nascimento, N., dos Santos, A.P., Mohallem, R., **Aryal, U.K.**, Cox, A., Sivasankar, P. (2021). Furosemide-induced systemic dehydration alters the proteome of rabbit vocal folds. *Journal of Proteomics*, 252 (10), 104431.
16. Onyedibe, K., Gursoy, U., Elmanfi, S., Kononen, E., **Aryal, U.K.** and Sintim, H. (2022). Global proteomics of fibroblast cells treated with bacterial cyclic dinucleotides, c-di-GMP and c-di-AMP. *Journal of Oral Microbiology*, 14 (1), 2003617.

Year 2021

17. Hing, N.Y.K., **Aryal, U.K.**, and Morgan, J.A. (2021). Probing light-dependent regulation of the Calvin cycle using multi-omics approach. *Frontiers in Plant Science*, 2211.
18. Mohallem, R. and **Aryal, U.K.** (2021). Quantitative proteomics and phosphoproteomics reveal TNF-alpha mediated protein functions in hepatocytes. *Molecules*, 26 (18), 5472.
19. Liu, S., Sun, X., Li, K., Zha, R., Feng, Y., Sano, T., Dong, C., Liu, Y., **Aryal, U.K.**, Sodo, A, Li, B.-Y. and Yokota, H. (2021). Generation of the tumor-suppressive secretome from tumor cells. *Theranostics*, 11 (17), 8517.
20. Rossman, P., Zabka, T.S., Ruple, A., Tuerck, D., Ramos-Vara, J.A., Liu, L., Mohallem, R., Merchant, M., Franco, J., Fulkerson, C.M., Bhide, K.P., Breen, M., **Aryal, U.K.**, Murray, E., Dybdal, N., Utturkar, S.M., Fourez, L.M., Enstrom, A.W., Dhawan, D. and Knapp, D.W. (2021). Phase I / II trial of vemurafenib in dogs with naturally occurring BRAF-mutated urothelial carcinoma. *Molecular Cancer Therapeutics*, 20(11), 2177-2188.
21. Bradshaw, C.V., Suarez Trujillo, A., Luecke, S.M., Logan, L.D., Mohallem, R., **Aryal, U.K.**, Stewart, K.R., Casey, T.M. and Minor, R.C. (2021). Shotgun proteomics of homogenate milk reveals dynamic changes in protein abundances between colostrum, transitional and mature milk of swine. *Journal of Animal Sciences*, skab240.
22. McCabe, C.J., **Aryal, U.K.**, Casey, T. and Boerman, J. (2021). Impact of exposure to chronic light-dark phase shifting circadian rhythm disruption on muscle proteome in periparturient dairy cows. *Proteome*, 9(3), 35. **(IF 2.91, citations 2)**.
23. Koch, R.A., Yoon, G.M., **Aryal, U.K.**, Lail, K., Amirebrahimi, M., LaButti, K., Lipzen, A., Riley, R., Barry, K., Henrissat, B., Grigoriev, I.V., Herr, J.R., Aime, M.C. (2021). The novel adaptation in nitrogen fixation in a fungal sporocarp promotes termite dispersal. *Current Biology*, 31(17), 3905-3914.
24. Thulasidas, J.S., Varadarajan, G.S., Camarillo, I.G., **Aryal, U.K.**, Mittal, L. and Sundararajan, R. (2021). Proteomics study on the effect of combined treatment of electrical pulses and tomato lipophilic extract in the downregulation of proliferating cell nuclear antigen in triple-negative breast cancer cell. *Phytomedicine Plus*, 1(3), 100064.
25. Sun, X., Li, K., Zha, R., Liu, S., Fan, Y., Wu, D., Hase, M., **Aryal, U.K.**, Lin, C-C., Li B.-Y. and Yokota, H. (2021). Preventing tumor progression to the bone by induced tumor suppressing MSCs. *Theranostics*, 11(11), 5143-5159.
26. Zembroski, A.S., Buhman, K.K. and **Aryal, U.K.** (2021). Proteome and phosphoproteome characterization of liver from diet-induced obese mice in the postprandial response to dietary fat. *Journal of Proteomics*, 232, 104072.
27. Donovan, B., Suarez Trujillo, A., Casey, T., **Aryal, U.K.**, Conklin, D., Williams, L.L. and Minor, R.C. (2021). Inclusion of Oat and Yeast Culture in Sow Gestational and Lactational Diets Alter Certain Immune and Antimicrobial Associated Proteins in Milk. *Animals*, 11(2), 497.

28. Sano, T., Sun, X., Shengzhi, L., Feng, Y., Liu, S., Hase, M., Fan, Y., Zha, R., Wu, D., Li, B.-Y., **Aryal, U.K.**, Sudo, A., Yokota, H. (2021). Inhibition of the growth of breast cancer-associated brain tumors by the osteocyte-derived conditioned medium. *Cancers*, 13 (5), 1062.
29. Coleman, R.A., Sobreira, T.J.P., **Aryal, U.K.** and Trader, D.J. (2021) Protein degradation profile reveals dynamic nature of 20S CP small molecule stimulation. *RSC Chemical Biology*, 2(2), 636-644.
30. Narayanan, N., Lengemann, P., Kim, K.H., Kuang, L., Sobreira, T.J.P., Hedrick, H., **Aryal, U.K.**, Kuang, S. and Deng, M. (2021). Harnessing nerve-muscle cell interactions for biomaterials-based skeletal muscle regeneration. *Journal of Biomedical Materials Research Part A*. DOI: 10.1002/jbm.a.37022.

Year 2020

31. Mohallem, R. and **Aryal U.K.** (2020). Regulators of TNF- α mediated insulin resistance elucidated by quantitative proteomics. *Scientific Reports*, 10(1), 1-15.
32. Kesari, A.S., **Aryal, U.K.**, and LaCount, D.J. (2020). A Novel proximity biotinylation assay based on the self-associating split GFP1-10/11. *Proteomes*, 8(4), 37.
33. McKenzie, S.D., Ibrahim, I.M., **Aryal, U.K.** and Puthiyaveetil, S. (2020). Stoichiometry of protein complexes in plant photosynthetic membranes. *Biochemica et Biophysica Acta (BBA)-Bioenergetics*, 1861 (2), 148141.
34. Howe, E.N., Burnette, M.D., Justice, M.E., Schnepf, P.M., Hedrick, V., Clancy, J.E., Guldner, I.H., Lamere, A.T., Li, J., **Aryal, U.K.**, D'Souza-Schorey, C., Zartman, J.J. and Zhang, S. (2020). Rab11b-mediated integrin recycling promotes brain metastatic adaptation and outgrowth. *Nature Communication*, 11(1), 1-15.
35. Komanetsky, S.M., Hedrick, V., Sobreira, T.J.P, **Aryal, U.K.**, Kim, S.Q. and Kim, K.-H. (2020). Proteomic identification of aerobic glycolysis as a potential metabolic target for methylglyoxol in adipocytes. *Nutrition Research*, 80, 66-77.
36. Xu, D., Zhou, D., Bum-Erdene, K., Bailey, B.J., Sishtla, K., Liu, S., Wan, J., **Aryal, U.K.**, Lee, J.A., Wells, C.D., Fishel, M.L., Corson, T.W., Pollok, K. and Meroueh, S.O. (2020). Phenotypic screening of chemical libraries enriched by molecular docking to multiple targets selected from Glioblastoma genomic data. *ACS Chemical Biology*, 15(6), 1424-1444.
37. Okekeogbu, I.O., **Aryal, U.K.**, González Fernández-Niñ, S.M., Penning, B.W., Heazlewood, J.L., McCann, M.C. and Carpita, N.C. (2020). Differential distributions of trafficking and signaling proteins of the maize ER-Golgi apparatus. *Plant Signaling and Behavior*, 14 (12): 1672513.
38. Krabill, A.D., Chen, H., Hussain, S., Feng, C., Abdullah, A., Das, C., **Aryal, U.K.**, Post, C.B., Wendt, M.K., Galardy, P.J., Flaherty, D.P. (2019). Biochemical and cellular characterization of a cyanoptroidine covalent ubiquitin C-terminal hydrolase L1 inhibitor. *ChemBioChem*, 21, 712-722.
39. Mittal, L., **Aryal, U.K.***, Ferreira, R.M., Camarillo, I.G. and Sundararajan, R.* (2019). Quantitative proteomic analysis of enhanced cellular effects of electrochemotherapy with Cisplatin in triple-negative breast cancer cells. *Scientific Reports*, 9, 13916. (*corresponding authors).
40. **Aryal, U.K.***, Hedrick, V., Onyedibe, K.I., Sobreira, T.J.P., Soreshjani, M.A., Wang, M., Gursoy, U.K.* , Sintim, H.O.* (2020). Global Proteomic analyses of STING-positive and -negative macrophages reveal STING and non-STING differentially regulated cellular and molecular pathways. *Proteomics Clinical Applications*, 1900109. (*corresponding authors).
41. Mittal, L., **Aryal, U.K.**, Camarillo, I.G., Raman, V. and Sundararajan, R. (2020). Effect of electrochemotherapy with curcumin in MDA-MB-231-human, triple negative breast cancer cells. A global proteomics studies. *Bioelectrochemistry*, 131, 107350.
42. Mills, K.M., **Aryal, U.K.**, Sobreira, T., Minton, A., Casey, T. and Stewart, K.R. (2020). Shotgun proteomics reveal seminal plasma proteomes are reflective of boar reproductive performance. *Therigenology*, 157, 130-139.
43. Daba, S.D., Liu, X., **Aryal, U.K.** and Mohammadi, M. (2020). A proteomic analysis of grain yield-related traits in wheat. *AoB Plants*, 12 (5), plaa042.

Year 2019

44. Chan, H., Bhide, K.P., Vaidyam, A.[§], Hedrick, V., Sobreira, T.J.P., Sors, T.G., Grant, G.W., and **Aryal, U.K.*** (2019). Proteomic analysis of 3T3-L1 adipocytes treated with insulin and TNF- α . *Proteomes* 20, 7(4).

45. Foreman, D.J., Parsley, N.C., Lawler, J.T., **Aryal, U.K.**, Hicks, L.M., McLuckey, S.A. (2019). Gas-phase sequencing of cyclotides: Introduction of selective ring opening at dehydroalanine ion/ion reaction. *Analytical Chemistry*, 91(24), 15608-15616.
46. Barabas, A., **Aryal, U.K.** and Gaskill, B.N. (2019). Proteome characterization of used nesting material and potential protein sources from group housed male mice, *Mus musculus*. *Scientific Reports*, 9, 17524.
47. Harlow, K.L., Suarez-Trujillo, A., Hedrick, V., Sobreira, T., **Aryal, U.K.**, Stewart, K., and Casey, T. (2019). Temporal analysis of vaginal proteome reveals developmental changes in lower reproductive tract of gilts across the first two weeks postnatal. *Scientific Reports*, 9, 13241.
48. Kobos, L.M., Alqatani, S., Ferreira, C.R., **Aryal, U.K.**, Hedrick, V., Sobreira, T.J.P., Shannahan, J.H. (2019). An Integrative Proteomic/Lipidomic Analysis of the Gold Nanoparticle Biocorona in Healthy and Obese Conditions. *Applied In Vitro Toxicology*, 5(3), 150-166.
49. McBride, Z., Chen, D., Lee, Y., **Aryal, U.K.**, Xie, J. and Szymanski, D.B. (2019). A label-free mass spectrometry method to predict endogenous protein complex composition. *Molecular and Cellular Proteomics*, 18(8), 1588-1606.
50. Okekeogbu, I.O., Pattathil, S., Fernández-Niño, S.M.G., **Aryal, U.K.**, Penning, B.W., Lao, J., Heazlewood, J.L., Hahn, M.G., McCann, M.C., Carpita, N.C. (2019). Glycome and proteome components of Golgi membranes are common between two angiosperms with distinct cell wall structures. *Plant Cell*, 31, 1094-1112.
51. Suarez-Trujillo, A., Chen, Y., Aduwari, C., Cummings, S., Kuang, S., Buhman, K., Hedrick, V.E., Sobreira, T.J.P, **Aryal, U.K.**, Plaut, K., Casey, T. (2019). Maternal high fat diet during gestation and lactation significantly impacts neonate intestinal morphology and proteome varies by time of exposure. *Nutrition Research*, 66, 48-60.
52. Opoku-Temeng, C., **Aryal, U.K.** and Sintim, H. (2019). Proteomic analysis of bacterial response to a 4-hydroxybenzylidene indolinone compound, which re-sensitizes bacteria to traditional antibiotics. *Journal of Proteomics*, 30, 103368.

Year 2018

53. Soorshjani, M.A., Gursoy, U.K., Aryal, **U.K.**, and Sintim, H.O. (2018). Proteomic analysis of RAW macrophages treated with cGAMP or c-di-GMP reveals differentially activated cellular pathways. *RSC Advances* (2018), 8, 36840-36851.
54. **Aryal U.K.***, Ding Z, Hedrick V.E., Sobreira TJP, Kihara D, Sherman LA. (2018) Analysis of Protein Complexes in the Unicellular Cyanobacterium *Cyanothece* ATCC 51142. *Journal of Proteome Research*, 17(11): 3628-3643.
55. aman, V., **Aryal, U.K.**, Hedrick, V.E., Mohallem, R., Lorenzo, J.L.F., Stashenko, E.E., Levy, M., Levy, M.M., Camarillo, I.G. Proteomic analysis reveals that an extract of the plant *Lippia organoides* suppresses mitochondrial metabolism in triple-negative breast cancer cells. *Journal of Proteome Research*, 17(10) 3370-3383.
56. Harlow, K., Tylor, E., Casey, T., Victoria, H.E., Sobreira, T., **Aryal, U.K.**, Ronald, L., Bethany, F., and Stewart, K. (2018). Diet impacts preimplantation histotroph proteome in beef cattle. *Journal of Proteome Research*, 17(6), 2144-2155.
57. Connelly, K.E. Hedrick, V.E., Paschoal Sobreira, T.J., Dykhuizen, E.C. and **Aryal, U.K.** (2018). Analysis of nuclear protein complexes by quantitative mass spectrometry profiling. *Proteomics*, 11: e1700427.

Prior to 2018

58. **Aryal, U.K.***, McBride, Z., Chen, D., Xie, J. and Szymanski, D.B. (2017). Analysis of protein complexes in *Arabidopsis* leaves using size exclusion chromatography and label-free protein correlation profiling. *Journal of Proteomics*, 166, 8-18.
59. **Aryal, U.K.***, Ross, A.R.S. and Krochko, J.E. (2015) Enrichment and analysis of intact phosphoproteins in *Arabidopsis* seedlings. *PLoS One*, 10(7): e0134535.
60. Peng, M., **Aryal, U.K.**, Cooper, B. and Biswas, D.B. (2015). Metabolites produced during the growth of probiotics in cocoa supplemented media and their role in host-enteric bacterial pathogen interactions. *Food Control*, 53, 124-133.
61. **Aryal, U.K.**, Xiong, Y., Xie, J., Kihara, D., Hall, M.C., and Szymanski, D (2014). A proteomic strategy for global characterization of plant cytosolic protein complexes. *Plant Cell*, 26, 1-16.

62. Eletsky, A., Michalska, K., Houliston, S., Zhang, Q., Daily, M.D., Xu, X., Cui, H., Yee, A., Lemak, A., Wu, B., Garcia, M., Burnet, M.C., Meyer, K.M., **Aryal, U.K.**, Sanchez, O., Ansong, C., Xiao, R., Acton, T.B., Adkins, J.N., Montelione, G.T., Joachimiak, A., Arrowsmith, C.H., Savchenko, A., Szyperski, T., Cort, J.R. (2014). Structural and functional characterization of DUF1471 Domains of *Salmonella* proteins SrfN, YdgH/SssB, and YahO. *PLoS ONE*, 9(7), e101787.
63. **Aryal, U.K.**, Callister, S.J., Stöckel, J., McCue, L.A., Nicora, C.D., Shuttanandan, J.I., Angel, T.E., Brown, J., Koppenaar, D.W., Smith, R.D., Pakrasi, H.B., and Sherman, L.A. (2014). Proteomic profiles of five strains of oxygenic photosynthesis cyanobacteria of the genus *Cyanothece*. *Journal of Proteome Research*, 13, 3262-3276.
64. Dai, Z., **Aryal, U.K.**, Shukla, A., Qian, W.J., Magnuson, J.K., Adney, W.S., Beckham, G.T., Himmel, M.E., Decker, S.R. and Baker, S.E. (2013). Disruption of Dolichyl-P-Man:Man(5)GlcNAc(2)-PP- dolichyl mannosyltransferase (Alg3) expression alters the growth, development, pigment production and protein secretion in *Aspergillus niger*. *Fungal Genet and Biology*, 61:120-32.
65. Kim, J.S., Dai, Z., **Aryal, U.K.**, Moore, R.J., Camp, D.G., Baker, S.E., Smith, R.D. and Qian, W.J. (2013). Resin-assisted enrichment of N-terminal peptides for characterizing proteolytic processing. *Analytical Chemistry*, 85(14): 6826-6832.
66. **Aryal, U.K.**, Callister, S.J., Mishra, S., Zhang, X., Min, H., Shuttanandan, J.I., Koppenaar, D.W., Smith, R.D., Pakrasi, H.B. and Sherman, L.A. (2013) Proteome analyses of diazotrophic cyanobacteria *Cyanothece* ATCC51142 and PCC 7822 production in *Cyanothece* ATCC51142 and PCC7822 under culture conditions of enhanced H₂-production. *Applied and Environmental Microbiology*, 79(4): 1070-1077.
67. Su D, Shukla, A.K., Chen, B., Kim, J.S., Nakayasu, E, Qu, Y., **Aryal, U.K.**, Weitz, K., Clauss, T., Monroe, M.E., Camp, D.G. II, Bigelow, D.J., Smith, R.D., Kulkarni, R.N., Qian, W.J. (2013) Quantitative site-specific reactivity profiling of S-Nitrosylation in mouse skeletal muscle using cysteinyl peptide enrichment coupled with mass spectrometry. *Free Radical Biology and Medicine*, 57: 68-78.
68. **Aryal, U.K.**, Lin, C.T., Wang, L., Wang, J., Qian, W.J., and Lin, Y. (2012). Identification of butyrylcholinesterase in human plasma using immunoaffinity purification and mass spectrometry. *Analytica Chimica Acta*, 723:68-75.
69. **Aryal, U.K.***, Krochko, J.E. and Ross, A.R.S. (2012). Identification of phosphoproteins in *Arabidopsis thaliana* leaves using polyethylene glycol fractionation, immobilized metal-ion affinity chromatography, two-dimensional gel electrophoresis and mass spectrometry. *Journal of Proteome Research*, 11(1): 425-437.
70. **Aryal, U.K.** Stockel, J., Welsh, E.A., Gritsenko, M.A., Nicora, C.D., Koppenaar, D.W., Smith, R.D., Pakrasi, H.B., Jacobs, J.M. (2012). Dynamic proteome analysis of *Cyanothece* sp. ATCC 51142 under constant light conditions. *Journal of Proteome Research*, 11(2): 609-619.
71. Wang, L., **Aryal, U.K.**, Dai, Z., Mason, A.C., Tian, Z.X., Zhou, J.Y., Su, D., Weitz, K.K., Liu, T., Camp, D.G. II, Smith, R.D., Baker, S.E., and Qian, W.J. (2012). Mapping N-linked glycosylation sites in the secretome and whole cells of *Aspergillus niger* using hydrazide chemistry and mass spectrometry. *Journal of Proteome Research*, 11: 143-156.
72. **Aryal, U.K.**, Stöckel, J., Gritsenko, M.A., Krowvidi, R. Monroe, M.E., Koppenaar, D.W., Smith, R.D., Pakrasi, H.B., and Jacobs, J.M. (2011). Temporal and quantitative profiling of proteomics dynamics in a unicellular cyanobacterium *Cyanothece* ATCC51142. *BMC Systems Biology*, 5:194.
73. **Aryal, U.K.*** and Ross, A.R.S. (2010). Enrichment and analysis of phosphopeptides under different experimental conditions using titanium dioxide affinity chromatography and mass spectrometry. *Rapid Communication in Mass Spectrometry*, 24(2): 219-231.
74. **Aryal, U.K.***, Olson, D.J.H., and Ross, A.R.S. (2008). Optimization of immobilized gallium (III) ion affinity chromatography for selective binding and recovery of phosphopeptides from protein digests. *Journal of Biomolecular Techniques*, 19(5): 296-310.
75. **Aryal, U.K.**, Shah, S.K., Xu, H.L., and Fujita, M. (2006). Growth, nodulation and mycorrhizal colonization in bean plants improved by rhizobial inoculation with organic and chemical fertilization. *Journal of Sustainable Agriculture*, 29(2): 71-83.
76. Shah, S.K., Shah, R.P., Xu, H.L. and **Aryal, U.K.** (2006). Biofertilizers: An alternative source of nutrients for sustainable production of tree crops. *Journal of Sustainable Agriculture*, 29(2): 85-95.
77. **Aryal, U.K.** Xu, H.L. and Fujita, M. (2003). Rhizobia and AM fungal inoculation improves growth and nutrient uptake of bean plants under organic fertilization. (2003). *Journal of Sustainable Agriculture*, 21: 29-41.

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Review articles and book chapters

83. **Aryal, U.K.*** (2014). Mass-spectrometry based proteomics to study protein complexes in legume-*Rhizobium* symbiosis. *MOJ Proteomics Bioinform.* 1(5): 00030. DOI:10.15406/mojpb2014.01.00030.
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85. **Aryal, U.K.**, Shah, S.K., and Xu, H.L. (2007). Mycorrhizae and dryland agriculture: Drought resistance and water use efficiency of mycorrhizal plants. In H.L. Xu (ed.), *Dryland Crop Production - Technology Breakthrough and Study Cases*. Research Signpost, Kerala, India, pp. 259-275.
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87. **Aryal, U.K.*** and Sherman, L.A.* (2016). Transcriptomic and proteomic analysis to understand systems-level properties of diurnal cycles in nitrogen-fixing cyanobacteria. In: Dimitry A Los (Ed.) *Cyanobacteria: Omics and Manipulation*, 117-144, Caster Academic Press.

- Google Scholar Listing: <https://scholar.google.com/citations?user=zmYWin8AAAAJ&hl=en>
- PubMed Listing: <https://pubmed.ncbi.nlm.nih.gov/?term=Aryal%2C%20Uma%20K&page=3>

Course taught at Purdue University

CPB680: Mass Spectrometry and Functional Proteomics

Conferences and workshop

- Session chair on **protein-protein and protein-ligand interaction** at the 70th annual meeting of the American Society for Mass Spectrometry, Minneapolis, MN (2022).
- Organized concurrent **Proteomics** session at the 11th Annual Mid-West Association of Core Directors summit, Minneapolis, MN (2019).
- Organized proteomics workshops at Purdue University West Lafayette Campus in 2018 and 2019

Teaching

Instructor Mass Spectrometry and Functional Proteomics (CPB 68000, 2 credits)

Co-instructor

Spring 2014 Protein Mass Spectrometry and Proteomics (BCHM 69500, 2 credits)
 Spring 2016 Protein Mass Spectrometry and Proteomics (BCHM 69500, 2 credits)
 Spring 2018 Protein Mass Spectrometry and Proteomics (BCHM 69500, 2 credits)

Guest lectures

Spring 2018 **Mass Spectrometry-based Quantitative Proteomics** for Quantitative Genetics (AGRY 611), Botany and Plant Pathology (Instructor: Dr. Mohsen Mohammadi), two lectures
 Summer 2016 **Quantitative Mass Spectrometry** for Principles of Synthetic and Systems Biology graduate course (ABE 591), Department of Agriculture and Biological Engineering, Purdue University

Spring 2016 (Instructor Dr. Kevin Solomon), two lectures
Mass Spectrometry-based Proteomics for Rhizosphere Ecology graduate course (HORT 59000), Horticulture (course instructor Dr. Lori Hoagland), two lectures

Graduate students (Major professor)

Rodrigo Mohallem (CPB) and Punyatoya Panda (CPB)

Mentorship for other students at the core facility

Sora Kim (2020-2021, Food Science)
Alyssa Zembroski (2019-2020, Nutrition Science)
Naimur Rahman (2019 – present, BMS)
Kayla Mills (2018 – present, Animal Sciences)
Moloud Aflaki (2017–2021, Chemistry)
Caroline W Karanja (2017- 2020, Chemistry)
Amanda Barabas (2017 – 2022, Animal Science)
Aaron Rodrigues (2017 – 2021, Entomology)
Lakshya Mittal (2017 – 2020, Purdue Polytechnique)
Ikenna Okekeogbu (2016 – 2020, ABE)
Youngwoo Lee (2014 – present), Botany & Plant Pathology)
Zach McBride (2012-2018, Botany & Plant Pathology)
Katelyn Connelly (2017-2018, MCMP)

Undergraduate student training

Current

- Avery Michael Wilson (Biology)
- Scott Faith (Neurobiology)
- Morgan Albertson (Biology)

Past

- Alanna Hamilton (BCHM, 2019 - present)
- Lauren Anderson (Biology, 2020 - present)
- Siri Rohith Yeleti (Biology, 2020 - present)
- Sung Min Lee (BCHM, 2013-2015)
- Christy Reick (BCHM, 2013-2015)
- Hayley Chan (Computer, 2017-2018)
- Aditya Vaidyam (Computer, 2017-2018)
- Sylvia Robertson (BCHM, 2018)
- Rodrigo Mohallem (Biology, 2019-2020)

Visiting scholar hosted

- Narmer Fernando Galeano Vangas (2022), Universidad de Caldas, Manizales- Colombia
- Manuela Lopez Ceferino (2021), Universidad de Caldas, Manizales- Colombia
- Samina Ashraf (2019), University of Panjab, Pakistan
- Rodrigo da Silva Nunes Barreto (2019), University of Sao Paulo, Brazil
- Syeda Q. Batool (2018), University of Panjab, Pakistan
- Guillem Estruch Cucarella (2017), Universitat Politecnica de Valencia, Spain

Thesis Committee Members

Opeyemi Samuel Oduniyi, PhD student (Clase Lab, ABE)
Samrin Habbani, PhD student (Sulma Mohammed Lab, CPB)
Aaron Rodrigues, PhD, graduated (Gondhakar Lab, Entomology), graduated in 2021
Ikenna Okekeogbu, PhD, graduated in 2020 (Clase Lab, ABE)
Naimur Rahman, PhD candidate (Andrisani Lab, BMS)
Shabnam Jannatul, MS, graduated in 2022 (Dangoudoubiyam Lab, CPB)
Whitney Gible, MS, graduated (Sintim Lab, Chemistry)