

Dr. Karolina M. Mukhtar

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EDUCATION

- 1996-2001 B.S./M.S. (accelerated) - Biology and Environmental Science; Minor: Secondary Education (with distinction), University of Stettin, Poland
- 2002-2005 *Dr. rer. nat.*, Plant Genetics, Max-Planck Institute for Plant Breeding Research /University of Cologne, Institute for Genetics, Cologne, Germany
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PROFESSIONAL & ADMINISTRATIVE POSITIONS

- 2023 – present Department Chair, UAB Department of Biology
- 2022 – present Professor (with tenure), UAB Department of Biology
- 2019 – present Undergraduate Program Director, UAB Department of Biology
- 2022 – 2023 Interim Department Chair, UAB Department of Biology
- 2018 – 2022 Associate Department Chair, UAB Department of Biology
- 2018 – 2020 Chair of UAB Graduate Curriculum Committee
- 2017 – 2018 Vice-Chair of UAB Graduate Curriculum Committee
- 2017 – 2018 Associate Director of Biology Graduate Programs
- 2016 – 2022 Associate Professor (with tenure), UAB Department of Biology
- 2010 – 2016 Assistant Professor (tenure-track), UAB Department of Biology
- 2006 – 2010 Postdoctoral Fellow, Duke University, Department of Biology
- 2005 – 2006 Postdoctoral Fellow (short-term), Max-Planck Institute for Plant Breeding Research, Dept. of Plant Breeding and Genetics, Cologne, Germany
- 2002 – 2005 IMPRS doctoral student, Max-Planck Institute for Plant Breeding Research, Cologne, Germany
- 2002 Trainee Fellow, Polish Academy of Sciences, Institute of Bioorganic Chemistry, Poznań, Poland
- 2001 – 2002 Graduate Teaching & Research Assistant, Dept. of Cell Biology, University of Szczecin, Poland
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OTHER POSITIONS HELD

- 2023 – present Member of Alabama's Articulation and General Studies Committee - Natural & Mathematical Sciences

2020 – present	Member of the Multinational Arabidopsis Steering Committee (MASC), “Plant Immunity” subcommittee
2021 – 2022	Member of UAB College of Arts&Sciences Academic Integrity Hearing Board
2018 – 2020	Member of UAB Faculty Senate Executive Committee
2018 – 2019	Member of the UAB Commission on the Status of Women
2016 – 2018	Chair of CAS Faculty Senate Caucus
2012 – present	Member of the UAB Center for Free Radicals Biology

DEPARTMENT SERVICE

2022	Organized the first Biology dept. Open House with teaching lab demonstrations for prospective students & parents (Green and Gold Day)
2021	Top Scholars Day Academic Fair, representing Department for recruitment
2021	Search Cmte for Teaching Assistant Professor in Genetics, Chair
2020-present	Biology Dept. Curriculum Cmte, Chair
2017-present	Graduate Fair and Early Acceptance recruitment events
2016-2018	UAB Biology Microscopy Facility Coordinator
2016-present	Faculty mentor for Dr. Melissa Harris, UAB Biology Assistant Professor
2016	Biology Freshman Welcome Reception - Organizing Committee
2015-2016	Search Committee for Ecologist and Evolutionary Biologist, member
2013-2018	Biology’s Graduate Affairs Committee, member
2012-2013	Biology’s Workload Committee, member
2011-2013	Biology’s Curriculum Committee, member
2010-2013	Biology’s Facilities Committee, member

SCHOOL SERVICE

2022	College of Arts & Sciences Personnel Generalist II Search Cmte, member
2021-2022	College of Arts & Sciences Academic Integrity Hearing Board, member
2021-2022	College of Arts & Sciences Faculty Affairs Committee, member
2020-2021	College of Arts & Sciences Scholarship Committee, member
2016-2018	College of Arts & Sciences Faculty Senate Caucus, chair
2015-2018	Organized/co-organized the NSF-CAREER informational workshops for junior faculty

UNIVERSITY SERVICE

2023	Member, Search Committee for UAB Senior Vice President of Academic Affairs & Provost
2022-present	Educational Programs and Innovation Consortia Committee (EPIC), member

2021-2022	UAB Blazer (formerly Signature) Core Curriculum Committee, member
2021-2022	Member, Search Committee for Dean of UAB School of Nursing
2020-2021	Career Planning and Management (UASC 150) – guest speaker
2020	UAB COVID-19 Childcare Response Taskforce, member
2020	UAB COVID-19 Transition Back Taskforce, member
2020	UAB COVID-19 R2Ops Taskforce, member
2020	Creed Week / Getting Connected the Blazer Way - Panelist
2019	Search Cmte/Interviews for Associate Vice-Provost for Assessment, Accreditation & Academic Planning
2018-2019	Commission on the Status of Women, Compensation & Representation subcmte
2018-2019	Search Cmte/Interviews for Associate Vice President & Chief Facilities Officer
2018	UAB Facilities & Administrative Cost Reimbursement Taskforce, member
2018-present	Women in STEM, member
2017-2021	Senator, UAB Faculty Senate
2016-2017	Faculty mentor for Dr. Archana Sharma, Assistant Professor of Biology, Tuskegee University, through UAB Minority Health & Health Disparities Research Center (MHRC)
2016-2018	UAB Childcare Development Center Task Force, member
2016-2017	Faculty Senate Policies & Procedures Committee, member
2016	Guest speaker at Partnership Research Student Training Program (PRSTP) – “Development of a basic-science research project”
2015-2021	Member, Faculty Senate Curriculum Committee
2015-2017	Alternate Senator, UAB Faculty Senate
2015-2016	Guest speaker at the Engaged Scholarship / Service Learning Workshop
2015	Invited speaker to UAB Girls In Science and Engineering Day

Scientific Service and Service to the Profession:

PROFESSIONAL SOCIETIES:

- American Phytopathological Society
- American Society of Plant Biologists
- Southern Section of the American Society of Plant Biologists
- International Society of Molecular Plant-Microbe Interactions
- Council for Undergraduate Research
- Alabama Wildflower Society - honorary member
- Scientist Opinion Panel Survey (SciOPS) – panelist (science communication)

GRANT REVIEW COMMITTEES/PANELS:

Panelist for NSF-IOS (6x), NSF-MCB (2x), NSF-GRFP (2x), *ad hoc* reviewer for NSF-MCB and NSF-IOS (pre-proposals, regular proposals, CAREER proposals, total: 48 ad-hoc items since 2013), and BBSRC (UK) (*NSF prohibits listing specific dates of panel service to ensure confidentiality*).

EDITORIAL BOARDS AND JOURNAL PEER REVIEW:

Journal peer review: Genetics, Theoretical and Applied Genetics, Journal of Biological Chemistry, PLoS ONE, The Plant Cell, The Plant Journal, Plant Physiology, New Phytologist, Plant Molecular Biology, Molecular Plant Pathology, Plant Signaling and Behavior, Scientific Reports, Molecular Plant-Microbe Interactions, Molecular Plant, Plant Methods, BMC Genomics, PLoS Genetics, Journal of Experimental Botany, Theoretical and Experimental Plant Physiology, INQUIRO @ UAB.
Editorial Service: Frontiers in Plant Science, Plant Abiotic Stress section, Review Editor; Frontiers in Plant Science and Frontiers in Microbiology, Plant-Pathogen Interactions section, Associate Editor; Scientific Reports (Editor), PLoS Genetics (Guest Editor), F1000 (Associate Member).

AWARDS/HONORS

2022 Graduate Dean's Award for Excellence in Mentorship
2021-2022 Blaze Leadership Academy
2019 Presidential Early Career Award for Scientists and Engineers (PECASE)
2019 UAB President's Award for Excellence in Teaching
2019 CAS Dean's Award for Excellence in Teaching
2019 Academic Mace Carrier, UAB Fall Graduate Commencement
2018 American Society of Plant Biologists Faculty Travel Award
2015 Disability Support Services (DSS) Outstanding Faculty Award
2015 UAB Red Mountain Sustainability Award
2014 NSF-CAREER Award
2013 UAB Fellowship in Service Learning / Engaged Scholarship
2012 The North American Arabidopsis Steering Committee Early Career Scientist Award
2012 American Society of Plant Biologists Women Young Investigator Award
2011 UAB Faculty Development Grant Award
2006-2007 The Hargitt Postdoctoral Fellowship, Duke University
2006 Nomination for the Otto-Hahn-Medaille (Max Planck Society, Germany)
2002-2005 International Max-Planck Research School (IMPRS) Ph.D. fellowship
2002 The Nencki Foundation of Molecular and Cell Biology UNESCO/Polish Academy of Sciences scholarship

RESEARCH INTERESTS

The research in my laboratory is focused on molecular mechanisms of cellular stress including Unfolded Protein Response (UPR) in the model plant *Arabidopsis thaliana*. UPR is an evolutionarily conserved cellular stress response in all eukaryotes including humans, yeast, and plants that activates upon the accumulation of unfolded or misfolded proteins in the endoplasmic reticulum (ER) resulting from biotic/abiotic stresses. Initially, UPR transduces signals to reinstate ER homeostasis. However, prolonged or acute ER stress may lead to a transition that initiates programmed cell death.

While the actions of UPR in plants are almost unknown, for the past 17+ years I have taken a leading and pioneering role to understand the underlying molecular mechanisms of plant UPR in responses to diverse abiotic (heat, drought) and biotic (bacteria, viruses) stress factors. My laboratory is discovering the differences between the animal and plant UPR responses that make it a unique adaptive process in plant stress biology. Our primary objective is to identify how the **key ER stress sensor IRE1 kinase/endonuclease** is mechanistically involved during plant UPR. We are working on the identification of additional regulatory factors required for both the activation and the attenuation of the ER stress response, and studying the molecular signal transduction pathways that enable cells to activate the stress-adaptive (pro-survival) or apoptotic (pro-death) signaling pathways under mild or acute ER stress conditions, respectively. This work has been supported by the **NSF-CAREER** and a subsequent **NSF-ROA** award since 2014 and was the basis of my **2019 PECASE** award.

Another recent expansion of my research program focuses on the area of artificial intelligence and machine learning as tools to **predict the novel stress and immune functions of previously unknown proteins**. This new scientific endeavor has resulted in a **2021 NSF award** as a Co-Principal Investigator. The new undertaking employs my expertise in the wet lab characterization of various plant stress responses as we discover the next frontier in the –omics of global regulation of stress responses in plants with a special emphasis on the biological roles of Sulphur and nutritional immunity. Collectively, plant stress biology research has a profound impact on our future ability to solve real-life problems as we face ongoing changes in the climate, ecological imbalances, and the ever-growing human population.

GRANT SUPPORT

Active Grants:

2021-2025 NSF IOS-2038872 “Machine Learning and Multi-omics Network Approaches to Predict Protein Functions in Arabidopsis” (PI: S. Mukhtar, Co-PI: K. Mukhtar), total \$1,027,270 (\$513,635 to KM), *current* ([NSF link](#)).

Pending Grants:

2024-2028 NSF-DBI “RaMP: A4SciAlabama – Strengthening and diversifying the regional STEM workforce through engaging research tackling a changing biological world in a social context” (PI: Biga, Co-PI: K. Mukhtar), total \$2,999,281

Recent Completed Grants:

2022-2023 PEER-BUDS Summer Bridge Program – Enhancing Academic Achievement and Plant Science Awareness Among Incoming Biology Freshmen (Alabama Commission on Higher Education, \$90,182, PI: K. Mukhtar), *completed*

2019-2021 NSF ROA-1928769 “Investigating the Roles of Cajal Bodies in Plant Immunity, Sumoylation and ER Stress-induced Apoptosis in Arabidopsis” (PI: K. Mukhtar), \$84,307, *completed* (listed jointly with NSF IOS-1350244 – [NSF link](#)).

2014-2021 NSF IOS-1350244 “CAREER: Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis: Taking Plant Molecular Biology to the Urban Garden” (PI: K. Mukhtar), \$1,102,307, *completed* ([NSF link](#)).

Funded Graduate Student & Postdoc Fellowships:

1. 2019-2022 Alabama EPSCoR NSF GSRP fellowship to Taiaba Afrin (Year 1, \$13,970; Year 2, \$25,000; Year 3, \$25,000), completed.
2. 2017-2018 Blazer Graduate Fellowship to Taiaba Afrin (\$29,000), completed.
3. 2015-2016 USAID/Cairo Initiative Mentor Research Grant, (PI: K. Mukhtar, post-doc trainee: Dr. Ahmed Amer), \$12,000, completed.

PUBLICATIONS and BOOK CHAPTERS

Summary: Total: 44 published + 8 *under review* + 3 *in prep*
Citations: Total: 3,947
Impact Factor: Total: 269.5

44. Fakhar AZ, Liu J, Pajerowska-Mukhtar KM and Mukhtar MS (2023) The ORFans' Tale: New Insights in Plant Biology. **Trends in Plant Science**, doi: 10.1016/j.tplants.2023.06.011.
43. Fakhar AZ, Liu J, Pajerowska-Mukhtar KM, Mukhtar MS (2023) The Lost and Found: Unraveling the Functions of Orphan Genes. **Journal of Developmental Biology**, 11(2):27, doi: 10.3390/jdb11020027.
42. Fakhar AZ, Liu J, Pajerowska-Mukhtar KM (2023) Dynamic Enrichment for Evaluation of Protein Networks (DEEPN): A High Throughput Yeast Two-Hybrid (Y2H) Protocol to Evaluate Networks (book chapter). **Protein-Protein Interactions: Methods and Protocols**, Springer Methods in Molecular Biology, vol. 2690, pp. 179-192
41. Diwan D, Pajerowska-Mukhtar KM (2023) Preparation and Utilization of a Versatile GFP-Protein Trap-Like System for Protein Complex Immunoprecipitation in Plants (book chapter). **Protein-Protein Interactions: Methods and Protocols**, Springer Methods in Molecular Biology, vol. 2690, pp. 59-68
40. Mohan B, Thingujam D, Pajerowska-Mukhtar KM (2023) Cytotrap: An Innovative Approach for Protein-Protein Interaction Studies for Cytoplasmic Proteins (book chapter). **Protein-Protein Interactions: Methods and Protocols**, Springer Methods in Molecular Biology, vol. 2690, pp. 9-22
39. Kumar N, Mishra B, Liu J, Mohan B, Pajerowska-Mukhtar KM, Mukhtar SM (2023) Network Biology Analyses and Dynamic Modeling of Gene Regulatory Networks Under Drought Stress Reveal Major Transcriptional Regulators in Arabidopsis. **International Journal of Molecular Sciences**, doi: 10.3390/ijms24087349.
38. Stewart JA, Pajerowska-Mukhtar KM, Bulger A, Kambiranda D, Nyochembeng L and Mentreddy SR (2023) A Review: Muscadine, Resveratrol (RSV) and the Stilbene Synthase (STS) Genes that Control their Stress Responses. **ACS Food Science & Technology**, 3(1):3-14, doi: 10.1021/acsfoodscitech.2c00176
37. Hussain A, Liu J, Mohan B, Burhan A, Nasim Z, Bano R, Ameen A, Zaynab M, Mukhtar MS and Pajerowska-Mukhtar KM (2022) A genome-wide comparative evolutionary analysis of zinc finger-BED transcription factor genes in land plants. **Scientific Reports**, 12:12328, doi: 10.1038/s41598-022-16602-8.

36. Ilyas N, Akhtar N, Naseem A, Qureshi R, Majeed A, Al-Ansari MM, Al-Humaid L, Sayyed RZ, Pajeroska-Mukhtar KM (2022) The Potential of *Bacillus subtilis* and Phosphorus in Improving the Growth of Wheat under Chromium Stress. **Journal of Applied Microbiology**, 133:3307–3321, doi: 10.1111/jam.15676.
35. Liu J, Fakhar AZ, Pajeroska-Mukhtar KM and Mukhtar MS (2022) A TIREless battle: TIR domains in plant-pathogen interactions. **Trends in Plant Science**, 27(5):426-429, doi: 10.1016/j.tplants.2022.01.011.
34. Afrin T, Costello CN, Monella AN, Kørner CJ and Pajeroska-Mukhtar KM (2022) The interplay of GTP-binding protein AGB1 with ER stress sensors IRE1a and IRE1b modulates Arabidopsis unfolded protein response and bacterial immunity. **Plant Signaling and Behavior**, 17:1, 2018857, doi: 10.1080/15592324.2021.2018857.
33. Mishra B, Kumar N, Liu J, Pajeroska-Mukhtar KM (2021) Dynamic regulatory event mining by iDREM in large scale multi-omics datasets during biotic and abiotic stress in plants (book chapter). **Modeling Transcriptional Regulation: Methods and Protocols**, Springer Methods in Molecular Biology, 2328:191-202, doi: 10.1007/978-1-0716-1534-8_12
32. Diwan D, Liu X, Andrews CF and Pajeroska-Mukhtar KM (2021) A Quantitative Arabidopsis IRE1a Ribonuclease-dependent *in vitro* mRNA Cleavage Assay for Functional Studies of Substrate Splicing and Decay Activities. **Frontiers in Plant Science – Plant Cell Biology**, 12:1510.
31. Davis JE*, Kolozsvary MB*†, Pajeroska-Mukhtar KM*†, Zhang B*† (2021) Towards a universal theoretical framework to understand robustness and resilience: from cells to systems. **Frontiers in Ecology and Evolution – Models in Ecology and Evolution**, 8:495. *Authors contributed equally and are listed in alphabetical order; †co-corresponding authors.
30. Verchot J and Pajeroska-Mukhtar KM (2021) Endoplasmic Reticulum Stress Signaling at the Nexus of Plant Viral, Bacterial, and Fungal Defenses. **Curr Opin in Virology**, 47:9-17.
28. Afrin T, Seok M, Terry B, Pajeroska-Mukhtar KM (2020) Probing natural variation of IRE1 expression and endoplasmic reticulum stress responses in Arabidopsis accessions. **Scientific Reports**, 10:19154
28. Parry G, Provart JN, Brady SM, Uzilday B, The Multinational Arabidopsis Steering Committee (2020) Current status of the multinational Arabidopsis community. **Plant Direct** 00:1–9.
27. Afrin T, Diwan D, Sahawneh K, Pajeroska-Mukhtar KM (2020) Multilevel Regulation of Endoplasmic Reticulum Stress Responses in Plants: Where Old Roads and New Paths Meet. **Journal of Experimental Botany**, 71(5):1659-1667.
26. Liu X, Afrin T, Pajeroska-Mukhtar KM (2019) Arabidopsis GCN2 kinase contributes to ABA homeostasis and stomatal immunity. **Communications Biology** 2:302
25. Sun Y, Detchemendy TW, Pajeroska-Mukhtar KM, Mukhtar MS (2018) NPR1 in JazzSet with pathogen effectors. **Trends in Plant Science**, TRPLSC 1680 1-4
24. Mukhtar MS, McCormack ME, Argueso C, Pajeroska-Mukhtar KM (2016) Pathogen Tactics to Manipulate Plant Cell Death. **Current Biology**, 26(13):R608-619

23. Kørner CJ, Du X, Vollmer M, Pajeroska-Mukhtar KM (2015) ER stress signaling in plant immunity – at the crossroad of life and death. **International Journal of Molecular Sciences**, 16(11), 26582-26598.
22. Liu X, Kørner CK, Hajdu D, Guo T, Ramonell K, Argueso C, Pajeroska-Mukhtar KM (2015) *Arabidopsis thaliana* AtGCN2 Kinase is Involved in Disease Resistance Against Pathogens with Diverse Life Styles. **International Journal of Phytopathology**, 04 (02): 93-104
21. McCormack ME, Liu X, Jordan MR, Pajeroska-Mukhtar KM (2015) A High Throughput Method for Quantifying Endoplasmic Reticulum Stress in *Arabidopsis* Seedlings. **Frontiers in Plant Science**, 6:663
20. Liu X, Sun Y, Kørner CJ, Du X, Vollmer ME, Pajeroska-Mukhtar KM (2015) Bacterial Leaf Infiltration Assay for Fine Characterization of Plant Defense Responses using the *Arabidopsis thaliana-Pseudomonas syringae* Pathosystem. **Journal of Visualized Experiments (JoVE)**, e53364.
19. Liu X, Rockett KS, Kørner CJ, Pajeroska-Mukhtar KM (2015) Salicylic acid signaling: new insights and prospects at a quarter century milestone (book chapter). **Essays in Biochemistry**, 5:101–113
18. Liu X, Merchant A, Rockett KS, McCormack ME, Pajeroska-Mukhtar KM (2015) Characterization of *Arabidopsis thaliana* GCN2 kinase roles in seed germination and plant development. **Plant Signalling and Behavior**, 3;10(4):e992264.
17. Merchant A, Pajeroska-Mukhtar KM (2015) *Arabidopsis thaliana* Dynamic Phenotypic Plasticity in Response to Environmental Conditions. **International Journal of Modern Botany**, 5(2): 23-28
16. Terry BC, Liu X, Murphy A, Pajeroska-Mukhtar KM (2015) *Arabidopsis thaliana* GCN2 is Involved in Responses to Osmotic and Heat Stresses. **International Journal of Plant Research**, 5(4): 87-95
15. McCormack ME and Pajeroska-Mukhtar KM (2015) Roles of the Plant Immune Response in Root Nodule Symbiosis. **International Journal of Plant & Soil Science**, 7: 228-237
14. Pajeroska-Mukhtar KM, Emerine DE, Mukhtar MS (2013) Tell me more: roles of NPRs in plant immunity. **Trends in Plant Science**, 18:402-411.
13. Boatwright JL, Pajeroska-Mukhtar KM (2013) Salicylic acid: an old hormone up to new tricks. **Molecular Plant Pathology**, 14:623-634.
12. Waters SS and Pajeroska-Mukhtar KM (2012) Genetic Engineering: Agriculture for the 21st Century. **International Journal of Modern Botany** 2(4): 108-114
11. Duffee LE, Boatwright JL, Shockley JM, Pajeroska-Mukhtar KM, Mukhtar MS (2012) Eukaryotic Endoplasmic Reticulum Stress-Sensing Mechanisms. **Advances in Life Sciences** 2(6):pp. 148-155
10. Moreno A*, Mukhtar MS*, Blanco F, Boatwright JL, Moreno I, Jordan MR, Chen Y, Brandizzi F, Dong X, Orellana A*, Pajeroska-Mukhtar KM* (2012) IRE1/bZIP60-Mediated Unfolded Protein Response Plays Distinct Roles in Plant Immunity and Abiotic Stress Responses. **PLoS ONE**, 7(2): e31944. * These authors contributed equally.

9. Pajerowska-Mukhtar KM, Wang W, Tada Y, Oka N, Tucker CL, Fonseca JP, Dong X (2012) The HSF-like Transcription Factor TBF1 Is a Major Molecular Switch for Plant Growth-to-Defense Transition. **Current Biology**, 22:1-10.
8. Pajerowska-Mukhtar KM, Dong X (2009) A Kiss of Death – Proteasome-Mediated Membrane Fusion and Programmed Cell Death in Plant Defense Against Bacterial Infection. **Genes & Development**, 23: 2449-2454.
7. Saijo Y, Lu X*, Tintor N*, Rauf P*, Pajerowska-Mukhtar KM*, Häweker H, Dong X, Robatzek S, Schulze-Lefert P (2009) Receptor quality control in the endoplasmic reticulum for plant innate immunity. **EMBO J.** *- co-second author
6. Pajerowska-Mukhtar KM*, Stich B*, Achenbach U*, Ballvora A, Lübeck J, Strahwald J, Tacke E, Hofferbert H-R, Ilarionova E, Bellin D, Walkemeier B, Basekow R, Kersten B, Gebhardt C (2009) Single nucleotide polymorphisms in the allene oxide synthase 2 gene of potato (*Solanum tuberosum*) are associated with maturity-corrected resistance to late blight in tetraploid breeding populations. **Genetics**, 181:1115-1127. *- co-first author
5. Tada Y, Spoel SH, Pajerowska-Mukhtar KM, Mou Z, Song J, Dong X (2008) S-nitrosylation and thioredoxins regulate conformational changes of NPR1 in establishing plant immunity. **Science**, 321:952-956
4. Pajerowska-Mukhtar KM, Mukhtar MS, Guex N, Halim VA, Rosahl S, Somssich IE, Gebhardt C (2008) Natural variation of potato allene oxide synthase 2 causes differential levels of jasmonates and pathogen resistance in Arabidopsis. **Planta**, 228:293–306.
3. Wang D*, Pajerowska-Mukhtar KM*, Culler AH, Dong X (2007) Salicylic acid inhibits pathogen growth in plants through repression of the auxin signaling pathway. **Current Biology** 17:1784-1790. *- co-first author
2. Gebhardt C, Li L, Pajerowska-Mukhtar KM, Achenbach U, Sattarzadeh A, Bormann C, Ilarionova E, Ballvora A (2007) Candidate Gene Approach to Identify Genes Underlying Quantitative Traits and Develop Diagnostic Markers in Potato. **Crop Science** 47:S-106-S-111.
1. Pajerowska KM, Parker JE, Gebhardt C (2005) Potato homologues of *Arabidopsis thaliana* genes functional in defence signalling – identification, genetic mapping and molecular cloning. **Molecular Plant Microbe Interactions** 18, 1107-19.

PUBLICATIONS (SUBMITTED & UNDER REVIEW)

1. Zhang B, Yuan Y, Pajerowska-Mukhtar KM, *et al.* Microbials effects on invasive grass' response to water and nutrient stress. *Under review.* <https://www.researchsquare.com/article/rs-117418/v1>
2. Diwan D, Liu X and Pajerowska-Mukhtar KM. Bax Inhibitor-1 associates with AtIRE1A to modulate cytoprotective signaling pathway in Arabidopsis immunity. *Under review.*
3. Stewart JA, Pajerowska-Mukhtar KM, Plain A, Kambiranda D, Anderson-Hodges L, and Nyochembeng L. Humic Matter: Subfraction analysis with a focus on the secondary metabolite resveratrol from the exudate and biomass of muscadine (*Vitis rotundifolia*). *Under review.*
4. Sun Y., Lee H.-S, Diwan D, Mohan B, Pajerowska-Mukhtar KM, Mukhtar MS. Network science discovers a central regulatory hub that controls sugar transport and targeted for bacterial virulence. *Under review.*

5. Adhikari B, Gayral M, Herath V, Bedsole O, Kumar S, Ball H, Atallah O, Shaw B, Pajeroska-Mukhtar KM, Verchot J. bZIP60 and Bax inhibitor 1 contribute IRE1-dependent and independent roles involved in PIAMV infection. *Under review*.

6. Bedgood RM, Almehti SE, Chandran KB, Wyss JM, Mukhtar MS, Pajeroska-Mukhtar KM. PlantGIFT: An effective teacher workshop model for translating experimental STEM research into hands-on classroom activities for middle and high school students. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4683990 *Under review*.

7. Almehti SE, Bedgood RM, Chandran KB, Wyss JM, Pajeroska-Mukhtar KM, Mukhtar MS. PlantGIFT: An effective teacher workshop model for increasing plant-based laboratory experiences in secondary science classrooms. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4684152 *Under review*.

8. Liu J, Majeed A, Kumar N, Pajeroska-Mukhtar KM, Mukhtar MS. Single nuclei multiomics reveals the drought-driven gene regulatory atlas in Arabidopsis. <https://www.biorxiv.org/content/10.1101/2024.01.11.575118v1> *Under review*.

PUBLICATIONS (IN PREPARATION)

1. VanWinkle P, Parish F, Thomas H, Bedgood RM, Pajeroska-Mukhtar KM, Parant J and Sztul E. Characterizing the role of JAGN1 homologs in evolutionarily conserved stress responses across phyla. *In preparation for submission*.

2. Afrin T, Alexander MV, Pajeroska-Mukhtar KM. Elucidating the Role of Natural Antisense RNA Loci as Pro-survival to Pro-death Molecular Switch in the IRE1 Signaling Pathway in *Arabidopsis thaliana*. *In preparation for submission*.

3. Kumar N, Mishra B, Sun Y, et al. Integrative omics discovers roles of amino acid metabolism in Arabidopsis disease susceptibility. *In preparation for submission*.

PUBLICATIONS (NON-PEER-REVIEWED)

1. Mukhtar SM and Pajeroska-Mukhtar KM (2019) "Orchestration of Processing Body Dynamics and mRNA Decay in Arabidopsis Immunity." <https://www.f1000workspace.com/prime/736459921#eval793564808>

2. Mukhtar SM and KM Pajeroska-Mukhtar (2020) "The pan-genome effector-triggered immunity landscape of a host-pathogen interaction". <https://www.f1000workspace.com/prime/737367312#eval793571410>

3. Mukhtar SM and Pajeroska-Mukhtar KM (2020) "Hydrogen peroxide sensor HPCA1 is an LRR receptor kinase in Arabidopsis." <https://www.f1000workspace.com/prime/737397157#eval793571536>

4. Mukhtar SM and Pajeroska-Mukhtar KM (2021) "A phyto-bacterial TIR domain effector manipulates NAD⁺ to promote virulence." <https://facultyopinions.com/prime/741005573>

5. Mukhtar SM and Pajeroska-Mukhtar KM (2021) "TIR domains of plant immune receptors are 2',3'-cAMP/cGMP synthetases mediating cell death." <https://facultyopinions.com/prime/741142092>

PATENTS: Pajerowska-Mukhtar KM, Xu G and Dong X “*HSF-Like Transcription Factor, TBF1, Is a Major Molecular Switch for Growth-to-Defense Transition in Plants*”. US10017773B2, **July 10, 2018**
<https://patentimages.storage.googleapis.com/91/c8/2d/bcb11e6e312bd1/US10017773.pdf>

PRESENTATIONS AT NATIONAL & INTERNATIONAL MEETINGS

1. Pajerowska KM, Parker JE, Koornneef M, Gebhardt C. “Identification Of Candidate Genes For Resistance QTL In Potato Using The Arabidopsis Model”: Plant & Animal Genomes XIII Conference, January 2005, San Diego, CA
2. Pajerowska KM and Gebhardt C. “StAOS2 – a novel candidate gene for resistance QTL in potato”: 16th triennial conference of the European Association for Potato Research, July 2005, Bilbao, Spain
3. Gebhardt C, Li L, Pajerowska KM, Ilarionova E, Ballvora A, Paulo MJ. “Population Genetics and Candidate Genes: Approaches to unravel the molecular basis of complex traits in cultivated potato and to develop diagnostic markers for breeding”: Solanaceae Conference, July 2006, Madison, WI
4. Pajerowska-Mukhtar KM, Mukhtar MS, Guex N, Halim VA, Rosahl S, Somssich IE, Gebhardt C “Identification Of The Molecular Basis Of A Potato Quantitative Resistance Locus Using Arabidopsis As Functional Reporter”: PAG XVI Conference, January 2008, San Diego, CA
5. Pajerowska-Mukhtar KM, Wang D, Dong X “Salicylic acid inhibits pathogen growth in plants through repression of the auxin signaling pathway”: XIII International Congress on Molecular Plant-Microbe Interactions, July 2007, Sorrento, Italy
6. Pajerowska-Mukhtar KM, Tada Y, Spivey NW, Dong X “Salicylic acid-mediated transcriptional regulation of secretory pathway in Arabidopsis immunity”: XIV International Congress on Molecular Plant-Microbe Interactions, July 2009, Québec City, Canada
7. Pajerowska-Mukhtar KM “IRE1/bZIP60-Mediated Unfolded Protein Response Plays Distinct Roles in Plant Immunity and Abiotic Stress Response”. PAG XX Conference, January 2012, San Diego, CA.
8. Pajerowska-Mukhtar KM, Boatwright JL, Dong X “Novel Functions of Secretory Pathways and Endoplasmic Reticulum in Plant Immunity”. 23rd International Conference on Arabidopsis Research, July 2012, Vienna, Austria
9. Pajerowska-Mukhtar KM, Boatwright JL, Dong X “Novel Functions of Secretory Pathways and Endoplasmic Reticulum in Plant Immunity”. The Annual Meeting of the American Society of Plant Biologists, July 2012, Austin, TX
10. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. ASPB-Plant Biology 2015, Minneapolis.
11. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Gordon Conference on Stress Proteins in Development and Disease, July 2017, Sunday River, NH (by invitation only)
12. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. American Society of Plant Biologists annual meeting, June 2017 Honolulu HI
13. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. American Society of Plant Biologists annual meeting, oral presentation, June 2018 Montreal CA
14. Pajerowska-Mukhtar KM Translation Regulator GCN2 controls ABA Homeostasis and Stomatal Immunity in Arabidopsis. International Society of Plant-Microbe Interactions international conference, poster presentation, July 2019, Glasgow UK

15. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. IPG Symposium "Plant Signaling in Abiotic and Biotic Stress", oral presentation, May 2019, Columbia, MO.
16. Pajerowska-Mukhtar KM The "OUTPACE" Phytopathology Summer Institute: Taking Plant Molecular Biology to an Urban Garden. PAG XXVIII Conference, January 2020, San Diego, CA.
17. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. PAG XXVIII Conference, January 2020, San Diego, CA.
18. Pajerowska-Mukhtar KM The "OUTPACE" Phytopathology Summer Institute: Taking Plant Molecular Biology to an Urban Garden. International Conference on Arabidopsis Research (ICAR), Active Learning and CUREs in Undergraduate Plant Science Education Session, June 23, 2021, virtual/Zoom.
19. Pajerowska-Mukhtar KM The Interplay between ER Stress, RNA Splicing and Intracellular pH Control in Arabidopsis Immunity. 4th International Conference on SPLICING 2021, Caparica, Portugal, virtual/Zoom, July 28, 2021
20. Pajerowska-Mukhtar KM, Kumar N, Afrin T, Diwan D The ER Stress–pH Nexus in the Regulation of Cell Death in Arabidopsis. 32nd International Conference on Arabidopsis Research ICAR2022, Belfast, Ireland, June 23, 2022

INVITED SEMINARS (NON-UAB)

1. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Auburn University, Dept. of Entomology and Plant Pathology, 2016
2. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. University of Toronto, Dept. of Cell and Systems Biology, July 12, 2018
3. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Texas State University, Department of Biology, November 16, 2018
4. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Univ. of Toronto at Scarborough, June 13, 2019
5. Pajerowska-Mukhtar KM Arabidopsis GCN2 kinase contributes to ABA homeostasis and stomatal immunity. Duke University, Department of Biology, September 16, 2019
6. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis, Univ. of West Georgia, Department of Biology, November 08, 2019
7. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Mississippi State Univ., Department of Biology, April 2020 (canceled due to Covid-19)
8. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Gregor Mendel Institute for Plant Molecular Biology, Vienna, Austria, July 2020 (canceled due to Covid-19)
9. Pajerowska-Mukhtar KM Cellular Stress Signaling in Plants: Coping with the Challenges of Environmental Stresses in the Era of Global Climate Change. Texas A&M University, Dept. of Plant Pathology and Microbiology, November 02, 2022
10. Pajerowska-Mukhtar KM Cellular Stress Signaling in Plants: Coping with the Challenges of Environmental Stresses in the Era of Global Climate Change. Case Western Reserve University, Dept. of Biology, November 07, 2022
11. Pajerowska-Mukhtar KM Cellular Stress Signaling in Plants: Coping with the Challenges of Environmental Stresses in the Era of Global Climate Change. Illinois Institute of Technology, Dept. of Biology, February 27, 2023

12. Pajerowska-Mukhtar KM Cellular Stress Signaling in Plants: Coping with the Challenges of Environmental Stresses in the Era of Global Climate Change. New Mexico State University, Dept. of Entomology, Plant Pathology and Weed Science, March 02, 2023

UAB SEMINARS

1. Pajerowska-Mukhtar KM TBF1 Transcription Factor of *Arabidopsis thaliana* plays a key role in growth-to-defense transition. UAB School of Public Health, July 2011
2. Pajerowska-Mukhtar KM Novel Functions of Secretory Pathways and Endoplasmic Reticulum Stress in Plant Immunity. UAB Center for Free Radicals Biology, January 2012
3. Pajerowska-Mukhtar KM Novel Functions of Secretory Pathways and Endoplasmic Reticulum Stress in Plant Immunity. UAB School of Medicine, Genetics and Genomics Seminar Series, April 20, 2012
4. Pajerowska-Mukhtar KM ER signaling in plants and its interplay with stress responses. UAB School of Medicine Dept. of Biochemistry and Molecular Genetics Seminar Series, February 2015
5. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. UAB Biology Dept. Seminar Series. October 2017
6. Pajerowska-Mukhtar KM Plants Get Sick, Too: Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Sigma Xi Seminar Series, September 2017
7. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. UAB School of Medicine Cell, Developmental and Integrative Biology Seminar Series, February 2018
8. Pajerowska-Mukhtar KM Panel Invited speaker, Creed Week / Getting Connected the Blazer Way. February 2020
9. Pajerowska-Mukhtar KM Invited speaker, UAB Marine & Field Biology Club Seminar Series. March 2020
10. Pajerowska-Mukhtar KM Career Panel Invited speaker, UAB Biology Dept. Seminar Series. March 2021
11. Pajerowska-Mukhtar KM Cellular Stress Signaling in Plants: Coping with the Challenges of Environmental Stresses in the Era of Global Climate Change. UAB Dept. of Biology, February 23, 2023
12. Pajerowska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. UAB Heersink School of Medicine Microbiology Department Seminar Series, December 2023

WORKSHOPS AND OTHER PRESENTATIONS

1. Pajerowska-Mukhtar KM, Tada Y, Spivey NW, Dong X. A dual role of TBF1 transcription factor in Systemic Acquired Resistance and MAMP induced immunity. XXIII Annual Plant Molecular Biology retreat, September 2009, Wrightsville Beach, NC
2. Pajerowska-Mukhtar KM. Novel Functions of Secretory Pathways and Endoplasmic Reticulum Stress in Plant Immunity. 109th Southern Association of Agricultural Scientists Annual Meeting, January 2012, Birmingham, AL
3. Boatwright JL, Robinson D, Liu X, Pajerowska-Mukhtar KM. Novel Functions of IRE1 in Plant Immunity and Cell Death Control, 110th Southern Association of Agricultural Scientists Annual Meeting, 2013, Orlando, FL
4. Pajerowska-Mukhtar KM. Fighting for their lives: Plants and their pests. Guest lecture, Alabama Wildflower Society, June 3rd, 2013, Birmingham, AL

5. Pajeroska-Mukhtar KM, Liu X, and Rockett KS. ER signaling in plants and its interplay with stress responses. 111th Southern Association of Agricultural Scientists Annual Meeting, 2014, Dallas, TX
6. Pajeroska-Mukhtar KM. Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis, Southern Section of American Society of Plant Biologists conference, March 2015, Dauphin Island, AL
7. Pajeroska-Mukhtar KM, Liu X, McCormack ME, Merchant A, Murphy A, Rockett KS, Terry BC. The Multifaceted Role of Arabidopsis thaliana GCN2 Kinase in Plant Hormone Signaling and Immune Responses. 112th Southern Association of Agricultural Scientists Annual Meeting, 2015, Atlanta, GA
8. Pajeroska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. UAB Department of Genetics Retreat, November 18, 2016, Birmingham, AL
9. Pajeroska-Mukhtar KM Regulatory Mechanisms of Pathogen-Mediated Cellular Stress Signaling in Arabidopsis. Southern Section of American Society of Plant Biologists conference, April 2017, Orlando, FL
10. Pajeroska-Mukhtar KM Translation Regulator GCN2 controls ABA Homeostasis and Stomatal Immunity in Arabidopsis. Southern Section of American Society of Plant Biologists conference, March 17, 2019, Clemson University, Clemson, SC
11. Jumpstart – Reintegrating Biology NSF workshop. December 4-6, 2019, Atlanta, GA
12. CRISPR in the Classroom - Virtual Workshop for Undergraduate Educators. July 20-29, 2020, Zoom
13. Career Planning and Management (UASC 150) – Guest speaker, March 02, 2021, Zoom
14. Advancement Resources Training for Faculty Leaders – Virtual training, April 15, 2021, Zoom
15. Career Planning and Management (UASC 150) – Guest speaker, Sept. 14, 2021, face-to-face
16. The 2022 International Colloquium "*Reimagining Social Justice in the International Community: Intersectionality Beyond Intersecting Identities*", The Commission for Global Dimensions of Student Development (CGDSD), April 2022, Zoom
17. "In Planta: Inclusive Practices Leveraging Arabidopsis as a Nexus for Training and Application". Workshop panelist at the 32nd International Conference on Arabidopsis Research ICAR2022, Belfast, Ireland, June 21, 2022.

STUDENTS/FELLOWS TRAINED

S – Spring, Su – Summer, F – Fall

High School Students (total: 3): 1) Azim Merchant, S15, Su15; 2) Sabirah Haque, Su16, Su17; 3) Eliza Maddox, S19, Su19 and F19

Undergraduate Students (total: 37): 1) Matthew Rombach, F10, S11, Su11; 2) Ashwin Barakam, F10; 3) Osaruyi Ismaghodor, F10, S11; 4) Melissa Jordan, S11, Su11, F11, S12; 5) Justin Foster, S11, Su11; 6) Rachel Brown, Su11, F11, S12; 7) Isaac Sung Lee, Su11, F11, S12; 8) Sammy Searcy, F11; 9) Christine McBride, Su12, F12; 10) Gaylen Patterson, S12; 11) Danielle Robinson, Su12, F12, S13, Su13; 12) Pooja Gajare, F12, S13; 13) Korina Nance, S13, Su13; 14) Tabitha Brown; S13, Su13, F13; 15) Maggie McCormack, Su13, F13, S14, Su14, F14, S15; 16) Brenna Terry, F13, S14, Su14, F14, S15 (Biology Honors student); 17) Audrey Murphy, F13, S14, Su14, F14, S15 (Biology Honors student); 18) Gail Hoffman, S15, F15; 19) Jamie Hill, S15, F15; 20) Keehn Wilkerson Strange, F15, S16, F16; 21) Ann Stepanova, S16, Su16 (Biology Honors student); 22) Carl Pruitt, Su16 (CORD-SSI student from Lawson State CC); 23) Hannah Ludy, F16; 24) Jun Hi Chang, F16, S17, Su17; 25) Matt Kuhl, S17, Su17; 26) Minye Seok, S18, Su18, F18,

S19, Su19, F19 (STP Honors student); **27)** Amber Somma, F19, S20 (Biology Honors student); **28)** Robert Bender, F19, S20; **29)** Regina Bedgood, S20; **30)** David Moccio, F19, S20; **31)** Madaleine Carraway, S20; **32)** Amber Monella, S19, Su19, F19, S20, F20 (Biology Honors student); **33)** Caroline Andrews, F19, S20, F20, S21; **34)** Mikayla Jackson, Su21 (CORD-SSI student); **35)** Isabella Davis, F21, S22, F22; **36)** Reece Dillon Long (UAB Presidential Honors Fellowship), S22, Su22, F22; S23, Su23, F23 **37)** Addie Knight, S22, F22, S23, Su23, F23.

Undergraduate internships in the K. Mukhtar lab typically last for at least two semesters. Activities range from practical training on the bench by the PI, assisting graduate students and postdocs, overseeing independent projects, and participating in lab meetings. Undergraduate students co-authored publications from the lab and won prizes at the annual UAB EXPO Undergraduate Research Conferences. Additionally, senior undergraduate students in the lab offer near-peer mentoring to younger colleagues, who are just beginning their research experience.

OUTPACE Summer Research Program students – (total: 49) (mentored for 2-3 hrs daily for 7 weeks in the summers 2014-2018).

Graduate Students (Primary Mentor) (total: 19): **1)** Paul “Bud” Sauer, MS 01/11-05/12 (current position: MD, Resident in Cosmetic and Reconstructive Surgery, Baylor Univ. Medical Center); **2)** J. Lucas Boatwright, MS 06/11-03/13 (current position: PhD Computational Biologist, Clemson University); **3)** Benjamin Marsella, MS 06/12-05/15 (current position: student, McWhorter School of Pharmacy, Samford University); **4)** Kristin Rockett, MS 08/12-12/15 (current position: self-employed); **5)** Brenna Terry, MS 06/15-04/16 (current position: investigator at Alabama Department of Environmental Management); **6)** Marie Vollmer Alexander, MS 08/14-08/16 (current position: Neurosurgery PA at Tulane); **7)** Xiaoyu Liu, PhD 08/12-12/17, winner of Biology Dept. and CAS Dean’s Outstanding Student Award (current position: Bioprocess RD Support Lead at Bayer Crop Science); **8)** Katrina Sahawneh, MS Biol. Education track 01/18-12/19 (current position: science teacher, Indianapolis Public Schools); **9)** Effie Nicke, PhD Biol. Education track, 08/17-current (also a full-time Instructor at Calhoun State CC); **10)** Taiaba Afrin, PhD 06/17-08/23, BLAZER Fellow, NSF-ALEPSCoR Fellow; **11)** Danish Diwan PhD 01/18-current; **12)** Caroline Andrews, ABM-MS 01/19-05/21 (current position: Medical Laboratory Technologist at Circulogene Theranostics); **13)** Jinbao Liu PhD 08/19-current; **14)** Regina Bedgood PhD 08/20-current; **15)** Caitlin Costello, PhD GBS rotation 01/21-03/21 (current position: PhD student, UAB School of Medicine); **16)** Sloan Almehti PhD Biol. Education track, 01/21-current; **17)** Cassidy Wright ABM-MS 06/21-04/22; **18)** Doni Devi Thingujam PhD 01/22-current, **19)** Nosheen Akhtar (visiting student, HEC-Pakistan) PhD 03/22-09/22.

Postdoctoral Fellows (total: 3): **1)** Camilla Kørner, Ph.D., 08/14-08/16 (current position: Method Development Researcher at Eurofins, Freiburg, Germany); **2)** Xinran Du, Ph.D., 01/15-01/17 (current position: Postdoctoral Researcher, University of Connecticut Health Center); **3)** Ahmed Amer, Ph.D., 06/15-12/15 (USAID fellow; current position: Lecturer, Cairo University, Egypt).

GRADUATE STUDENT THESIS COMMITTEE PARTICIPATION (total: 28): **1)** David Emerine, Department of Biology, Mentor: Dr. Shahid Mukhtar; **2)** Shara Legg (MS), Department of Biology, Mentor: Dr. Robert Angus; **3)** Paul “Bud” Sauer, Department of Biology, Mentor: Dr. Karolina Mukhtar; **4)** J. Lucas Boatwright, Department of Biology, Mentor: Dr. Karolina Mukhtar; **5)** Benjamin Marsella, Department of Biology, Mentor: Dr. Karolina Mukhtar; **6)** TC Howton, Department of Biology, Mentor: Dr. Shahid Mukhtar; **7)** Peter Blair, Department of Biology, Mentor: Dr. Shahid Mukhtar; **8)** Kristin Rockett, Department of Biology, Mentor: Dr. Karolina Mukhtar; **9)** Brenna Terry, Department of Biology, Mentor: Dr. Karolina Mukhtar; **10)** Yali Sun, Department of Biology, Mentor: Dr. Shahid Mukhtar; **11)** Xiaoyu Liu, Department of Biology, Mentor: Dr. Karolina

Mukhtar; **12**) Maggie McCormack, Department of Biology, Mentor: Dr. Karolina Mukhtar; **13**) Derek Moates, Department of Biology, Mentor: Dr. Shahid Mukhtar; **14**) Shara Legg (PhD), Department of Cell, Developmental, & Integrative Biology, Mentors: Dr. Michael Miller/Dr. Brad Yoder; **15**) Matthew Kuhl, Department of Biology, Mentor: Dr. Jeff Morris; **16**) Marie Vollmer Alexander, Department of Biology, Mentor: Dr. Karolina Mukhtar; **17**) Katrina Sahawneh, Department of Biology, Mentor: Dr. Karolina Mukhtar; **18**) Taiaba Afrin, Department of Biology, Mentor: Dr. Karolina Mukhtar; **19**) Danish Diwan, Department of Biology, Mentor: Dr. Karolina Mukhtar; **20**) Jinbao Liu, Department of Biology, Mentor: Dr. Karolina Mukhtar; **21**) Regina Bedgood, Department of Biology, Mentor: Dr. Karolina Mukhtar; **22**) Nilesh Kumar, Department of Biology, Mentor: Dr. Shahid Mukhtar; **23**) Sandra Cutts, UAB School of Engineering, Mentor: Dr. Robert Peters; **24**) Julia Ashlyn Manzella, UAB School of Engineering, Mentor: Dr. Robert Peters; **25**) Jeffery Stewart, Alabama A&M University, Mentors: Dr. Srinivasa Rao Mentreddy and Dr. Karolina Mukhtar; **26**) Effie Nicke, Calhoun State Community College/UAB Biology Dept., Mentors: Dr. Samiksha Raut and Dr. Karolina Mukhtar; **27**) Binoop Mohan, Department of Biology, Mentor: Dr. Shahid Mukhtar; **28**) Sloan Almehti, Department of Biology, Mentor: Dr. Karolina Mukhtar.

RECENT PhD STUDENTS' ACCOMPLISHMENTS

Regina Bedgood:

- i) People's Choice and 3rd Place award in the UAB 2021 3 Minute Thesis (3MT) competition
- ii) People's Choice and 3rd Place award in the UAB 2022 3 Minute Thesis (3MT) competition
- iii) Sigma Xi Grant in Aid of Research, \$1,000, 2022

Danish Diwan:

- i) Daniel Jones Award for Excellence in Graduate Studies, Dept. of Biology at UAB, 2022
- ii) Harold Martin Outstanding Student Development Award, Dept. of Biology at UAB, 2022

Taiaba Afrin, PhD:

- i) Harold Martin Outstanding Student Development Award, Dept. of Biology at UAB, 2021
- ii) UAB Graduate Student Government Travel Grant, 2021
- iii) UAB Department of Biology Travel Award, 2019
- iv) 1st place in the Artistic Category of the annual UAB Department of Biology Photo and Video Contest

Xiaoyu Liu, PhD:

- i) Biology Dept. Outstanding Student Award, 2017
- ii) CAS Dean Outstanding Student Award, 2017
- iii) Daniel Jones Award for Excellence in Graduate Studies, Dept. of Biology at UAB, 2017

GRADUATE PROGRAMMATIC DEVELOPMENT

- designed the course plans for a dual Master's program in Biology and Secondary Education in collaboration with Dr. Susan Spezzini (Professor, UAB School of Education);
<https://www.uab.edu/cas/biology/graduate/dual-masters-in-biology-and-education>
<https://www.uab.edu/education/home/graduate/secondary-education/ms-dual-biology-secondary-education>
- co-designed the Graduate Certificate in Science Policy (interdisciplinary collaboration with UAB Department of Political Science and Administration)
<https://www.uab.edu/cas/biology/graduate/graduate-certificate-in-science-policy>

TEACHING EXPERIENCE

- **BY210 Genetics (typical enrollment 175-225), 3 credit hours.** *Course highlights:* principles and mechanisms of inheritance; introduction to the structure, action and regulation of genes; bacterial and organellar genetics, introduction to molecular genetic technology and its applications to human health and agriculture. One guest lecture per semester (selection of speakers from UAB School of Medicine and Genetic Counseling Program). The course was extensively modified from its original form by removing outdated/overlapping material and adding 40% new content. The grading model includes points for four in-class exams, online homework quizzes, video projects and iClicker points.
 - **BY351/451/651/751 Plant Biology (typical enrollment 25-40), 3 credit hours.** *Course highlights:* introduction to the distinctive features of plants; understanding of how plants are constructed, photosynthesize and generate energy, regulate growth and development and fend off potential pathogens; comprehensive overview of the various ways plants live and reproduce, how they maintain or promote variation, and ways they are adapted to particular environments; how plants are used by people and how humans can be benefited by plants; sustainability in plant science. Two guest lectures per semester (Dr. Mike Flannery, Medicinal Plants of Alabama; Dr. Jamey Worrell, Woodworking), one field trip (UAB Community Gardens), one class debate (Genetically Modified Plants: Global Risk or Global Solution?). Mixed grading model (combination of portfolio, three in-class exams, two take-home projects and attendance).
 - **BY450/695/795 Plant Physiology (typical enrollment 12), 3 credit hours.** *Course highlights:* 1) convey and foster understanding of the major principles and concepts of plant physiology, 2) promote the understanding of the physical, biochemical, genetic and molecular basis of plant function, 3) foster the ability to think logically and creatively, 4) enhance the ability to critically evaluate scientific literature, 5) promote understanding of the process of scientific inquiry through the design and execution of scientific experiments, and analysis and interpretation of experimental data.
 - **BY495 Plant Pathology “OUTPACE” (Service Learning Class) (typical enrollment 10-16), 4 credit hours.** *Course highlights:* theoretical and practical knowledge and skills in plant-microbe interactions; knowledge about the molecular underpinnings of the plant immune system; skills to detect and identify pathogens in infected plant material; mastering laboratory-based microbiological techniques of pathogen isolation, propagation, preparation of infectious isolates, controlled plant infection and quantification of the plant resistance phenotype; UAB Plant Clinic: symptom- and ELISA-based identification of diseases in field-grown plant material; implementing service learning into plant-microbe interactions curriculum by connecting with growers of the UAB Community Gardens. One guest lecture per semester (Dr. Julie Price; Sustainability on UAB Campus), three field trips (UAB Community Gardens). Course sponsored by the NSF-CAREER award. <https://outpaceuab.wordpress.com/>
 - BY501 Genetics for Teachers (13 semesters) **3 credit hours**
 - BY689/789 Seminar in Genetics (1 semester) **1 credit hour**
 - BY394 Bio Lab Teach (multiple semesters) **1-6 credit hours**
 - GBS723 Model Organisms in Genetics (3 semesters, guest lectures)
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