M. Shahid Mukhtar

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https://www.uab.edu/cas/biology/smukhtar
https://scholar.google.com/citations?user=eCi_q_8AAAAJ&hl=en

EDUCATION
Ph.D. in Genetics (12/2005). Plant-Microbe Interactions/Genetics, Max-Planck Institute for Plant Breeding Research / University of Cologne, Germany
MS Hons. (Gold medalist) in Genetics (2000). University of Agriculture, Faisalabad, Pakistan. GPA. 3.93/4.00
BS Hons. (Distinction) in Genetics (1997). University of Agriculture, Faisalabad, Pakistan. GPA 3.75/4.00

PROFESSIONAL POSITIONS
Co-Director, 2020, Genetics and Genomics Sciences Undergraduate Program
Senior Faculty, 2019, (secondary appointment), UAB, Department of Surgery
Associate Professor, tenured, 2019 – present, UAB, Department of Biology
Assistant Professor, tenure-earning, 2013-2019, UAB, Department of Biology
Research Assistant Professor, non-tenure track, 2010-2013, UAB, Department of Biology
Postdoctoral Researcher, 2006-2010, University of North Carolina at Chapel Hill, Department of Biology
Postdoctoral Fellow (short-term), 2006-2006 Max-Planck Institute for Plant Breeding Research, Department of Plant Microbe Interactions, Cologne, Germany
Research Fellow/Scientific Officer, 2000-2002, Biotechnology Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan.

CURRENT RESEARCH GRANTS
1. NSF-IOS   Mukhtar (PI)   **($1,027,270)**
   2021-2025   "Machine Learning and Multi-omics Network Approaches to Predict Protein Functions in Arabidopsis"
2. NSF-IOS   Mukhtar (PI)   **($800,000)**
   2016-2021, A systems biology investigation of pathogen-mediated manipulation of sugar metabolism in Arabidopsis.
3. (NIH/NIEHS) 5U54ES030246 (PI, Athar)   Mukhtar (Co-I)   **($182,250)**
   2018-2023,   UAB Research Center of Excellence in Arsenicals
4. NETRF Accelerator award   Mukhtar (Co-I)   **($89,000)**
   2022-2026,   PanNET Modeling, Mechanism, and Experimental Treatments
5. (NIH/NIMH) 1R01MH113948-01A1 (PI, Powell)   Mukhtar (Co-I)   **($41,530)**
   2020-2025,   Molecular and cellular basis of neurodevelopmental disorders
6. NIH 1U01AR078544 (PI, Athar)   Mukhtar (Co-I)   **($50,000)**
7. (NIH/NIEHS), R01-ES-026219 (PI, Athar)   Mukhtar (Co-I)   **($20,000)**

COMPLETED RESEARCH SUPPORT

1. Role: PI, (P&F NORC at UAB   Mukhtar (PI).   2016-2018
   Elucidating the molecular mechanisms of DBP, a component of circadian clock, in obesity using Zebrafish model. PI, **$25,000**
2. UAB Faculty Development Funds.   Mukhtar (PI)   2015-2016
   Generation of large-scale regulatory network in innate immune systems **($10,000**)
3. Immunology, Autoimmunity and Transplantation Strategic Planning Pilot Program Mukhtar (PI) 2011-2012, Generation of Fc γ receptor interactome map. **$5,000** , Role: PI
4. UAB Gulf Oil Spill pilot grant   Mukhtar (PI)   2011-2012
   Investigation of the detrimental effects of oil spill on phytoplanktons using a range of physiological and molecular methods (PI). **$21,950**.
5. UAB Gulf Oil Spill pilot grant   Mukhtar (Co-PI)   2011-2012
   Evaluating the Toxic Effect of Gulf Spill Oil on Turtlegrass. (Co-PI) **$20,000**.
6. Red Mountain Sustainability in Course Development 2018-2019. Starting date September 15, 2018, (PI, Mukhtar), **$1,000**. (100% funds to the PI)
7. 2017-2018 UAB Faculty Fellows in Engaged Scholarship program, sponsored by the Office of Service Learning and Undergraduate Research. Starting date September 15, 2017 (PI, Mukhtar) **$1,500**. (100% funds to the PI)

HONORS AND PROFESSIONAL POSITIONS

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2021	President's Award for Excellence in Teaching
2021	Dean's Award for Excellence in Teaching
2021 - 2024	Director, The Multinational Arabidopsis Steering Committee
2020-2022	Executive member of SS-ASPB
2019	Nominated for Best Graduate Mentor
2018	Nominated for Best Graduate Mentor
2018 – 2019	Chair of the Southern Section of ASPB
2018 – present	Editorial board member for Communications Biology (Nature Publishing Journal)
2018	Travel award to present our lab's findings at ASPB meeting in Montreal, Canada.
2017	Travel award to present our lab's findings at ASPB meeting in Honolulu, HI.
2017	Travel award (keynote speaker) to present at the International Workshop on Applications of Computational Biology in Biotechnology at National Institute for Biotechnology and Genetic Engineering (NIBGE).
2017 – present	Editorial board member for Scientific Reports (Nature Publishing Journal)
2017 – 2018	Vice Chair of the Southern Section of ASPB
2016- present	Appointed full faculty member for F1000 (Genetics and Gene Expression)
2016- 2017	Secretary/Treasurer of the Southern Section of ASPB
2014-2016	Appointed associate faculty member for F1000
2002 - 2005	International Max-Planck Research (IMPRS) PhD fellowship
2000	Ranked 1st Position in M.S. (honors; medalist)
1997	Ranked 2nd position in B.S. (honors)
1993 - 1997	University Merit Scholarship during the entire B.S. (Hons.)
1997 - 2000	University Merit Scholarship during the entire M.S. (Hons.)

HONORS AND AWARDS BY MEMBERS OF S. MUKHTAR LAB

1- **2020-** Jessica Lopez won Rising Star Award from UAB National Alumni Society.
2- **2018**- TC Howton received NSF Graduate Research Scholar Program fellowship for 2017-18

3- **2018**- TC Howton received first prize on SS-ASPB oral presentation

4- **2017-** TC Howton received Ireland Research Travel Scholarship.

5- **2017-** TC Howton received The Harold Martin Outstanding Student Development Award

6- **2017-** TC Howton received NSF Graduate Research Scholar Program fellowship for 2017-18

7- **2016-** Alex Dawson won Dean's award for poster competition in the 6th Annual Undergraduate Research Symposium in March 2017.

8- **2016 -** MS student Jessica Lopez received the Dean's Award for MS graduate student category.

9- **2015 -** PhD student Yali Sun received the CAS Dean's PhD Scholarship;

10- **2014 –** co-mentored PhD student Hadia Ahmed (UAB-CIS) received a NSF-TCPP travel grant to attend IPDPS'14 conference;

11- **2014 –** undergraduate research student Jessica Lopez received the UAB Department of Biology Student Leader Award;

12- **2014 -** undergraduate research student Shan Gulamani obtained a grant from the UAB Department of Biology to conduct research ($422.11);

13- **2013** - undergraduate research student Alex Chang attended National Bioethics Conference at the Loyola University in Chicago;

2012 - undergraduate research student Ms. Cassandra Garbutt has been awarded 1st place in the EXPO2012 oral competition (category: Health Sciences)

PUBLICATIONS

	All	Since 2016
Citations	5161	3363
h-index	26	25
i10-index	37	34

In preparation Submitted and Under Revision: **05**
Published: **62**
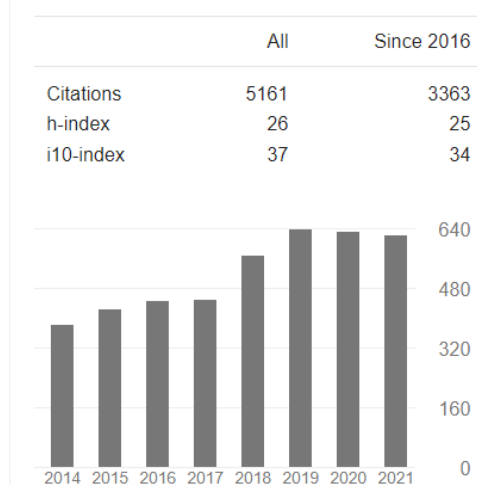
PUBLISHED:(1-62)

1. Y. Yoshino, B. Roy, N. Kumar, M. S. Mukhtar, Y. Dwivedi, Molecular pathology associated with altered synaptic transcriptome in the dorsolateral prefrontal cortex of depressed subjects. *Translational psychiatry* **11**, 1-16 (2021).

2. R. K. Srivastava *et al.*, 5′-Cap–Dependent Translation as a Potent Therapeutic Target for Lethal Human Squamous Cell Carcinoma. *Journal of Investigative Dermatology* **141**, 742-753. e710 (2021).

3. B. Mishra, N. Kumar, M. S. Mukhtar, Network biology to uncover functional and structural properties of the plant immune system. *Curr Opin Plant Biol* **62**, 102057 (2021).

4. B. Mishra, M. Athar, M. S. Mukhtar, Transcriptional circuitry atlas of genetic diverse unstimulated murine and human macrophages define disparity in population-wide innate immunity. *Scientific reports* **11**, 1-19 (2021).

5. N. Kumar, B. Mishra, M. Athar, S. Mukhtar, Inference of Gene Regulatory Network from Single-Cell Transcriptomic Data Using pySCENIC. *Methods Mol Biol* **2328**, 171-182 (2021).

6. A. Chakraborti *et al.*, High Fructose Corn Syrup-Moderate Fat Diet Potentiates Anxio-Depressive Behavior and Alters Ventral Striatal Neuronal Signaling. *Front Neurosci* **15**, 669410 (2021).

7.   S. S. e. A. Zaidi *et al.*, Molecular insight into cotton leaf curl geminivirus disease resistance in cultivated cotton (Gossypium hirsutum). *Plant biotechnology journal* **18**, 691-706 (2020).

8.   G. Parry *et al.*, Current status of the multinational Arabidopsis community. *Plant direct* **4**, e00248 (2020).

9.   N. Kumar, B. Mishra, A. Mehmood, M. Athar, M. S. Mukhtar, Integrative network biology framework elucidates molecular mechanisms of SARS-CoV-2 pathogenesis. *Iscience* **23**, 101526 (2020).

10.   M. P. Kashyap, R. Sinha, M. S. Mukhtar, M. Athar (2020) Epigenetic Regulation in the Pathogenesis of Non-melanoma Skin Cancer. in *Seminars in Cancer Biology* (Academic Press).

11.   A. Hussain *et al.*, Genome-wide identification and classification of resistance genes predicted several decoy domains in Gossypium sp. *Plant Gene* **24**, 100250 (2020).

12.   M. González-Fuente *et al.*, EffectorK, a comprehensive resource to mine for Ralstonia, Xanthomonas, and other published effector interactors in the Arabidopsis proteome. *Molecular Plant Pathology* **21**, 1257-1270 (2020).

13.   A. M. Carter *et al.*, Phosphoprotein-based biomarkers as predictors for cancer therapy. *Proceedings of the National Academy of Sciences* **117**, 18401-18411 (2020).

14.   B. J. Spears *et al.*, Direct regulation of the EFR-dependent immune response by Arabidopsis TCP transcription factors. *Molecular Plant-Microbe Interactions* **32**, 540-549 (2019).

15.   R. Z. Naqvi *et al.*, Transcriptomic analysis of cultivated cotton Gossypium hirsutum provides insights into host responses upon whitefly-mediated transmission of cotton leaf curl disease. *PloS one* **14**, e0210011 (2019).

16.   G. A. Mott *et al.*, Map of physical interactions between extracellular domains of Arabidopsis leucine-rich repeat receptor kinases. *Scientific data* **6**, 1-6 (2019).

17.   B. Mishra, N. Kumar, M. S. Mukhtar, Systems biology and machine learning in plant–pathogen interactions. *Molecular Plant-Microbe Interactions* **32**, 45-55 (2019).

18.   C. Li *et al.*, Patched1 haploinsufficiency severely impacts intermediary metabolism in the skin of Ptch1+/–/ODC transgenic mice. *Scientific reports* **9**, 1-12 (2019).

19.   S. S.-e.-A. Zaidi, M. S. Mukhtar, S. Mansoor, Genome editing: targeting susceptibility genes for plant disease resistance. *Trends in biotechnology* **36**, 898-906 (2018).

20.   Y. Sun, T. W. Detchemendy, K. M. Pajerowska-Mukhtar, M. S. Mukhtar, NPR1 in JazzSet with pathogen effectors. *Trends in plant science* **23**, 469-472 (2018).

21.   E. Smakowska-Luzan *et al.*, An extracellular network of Arabidopsis leucine-rich repeat receptor kinases. *Nature* **553**, 342-346 (2018).

22.   M. S. Mukhtar, X. Liu, I. E. Somssich, Elucidating the role of WRKY27 in male sterility in Arabidopsis. *Plant signaling & behavior* **13**, e1363945 (2018).

23.   B. Mishra, Y. Sun, T. Howton, N. Kumar, M. S. Mukhtar, Dynamic modeling of transcriptional gene regulatory network uncovers distinct pathways during the onset of Arabidopsis leaf senescence. *NPJ systems biology and applications* **4**, 1-4 (2018).

24.   H. Ahmed *et al.*, Network biology discovers pathogen contact points in host protein-protein interactomes. *Nature communications* **9**, 1-13 (2018).

25.   M. Nemesio-Gorriz *et al.*, Identification of Norway spruce MYB-bHLH-WDR transcription factor complex members linked to regulation of the flavonoid pathway. *Frontiers in plant science* **8**, 305 (2017).

26.   R. Z. Naqvi *et al.*, Transcriptomics reveals multiple resistance mechanisms against cotton leaf curl disease in a naturally immune cotton species, Gossypium arboreum. *Scientific reports* **7**, 1-15 (2017).

27.   B. Mishra, Y. Sun, H. Ahmed, X. Liu, M. S. Mukhtar, Global temporal dynamic landscape of pathogen-mediated subversion of Arabidopsis innate immunity. *Scientific reports* **7**, 1-13 (2017).

28. J. Lopez, M. S. Mukhtar, "Mapping protein-protein interaction using high-throughput yeast 2-hybrid" in Plant Genomics. (Humana Press, New York, NY, 2017), pp. 217-230.

29. P. J. Zwack *et al.*, Cytokinin response factor 6 represses cytokinin-associated genes during oxidative stress. *Plant Physiology* **172**, 1249-1258 (2016).

30. E. J. Washington *et al.*, Pseudomonas syringae type III effector HopAF1 suppresses plant immunity by targeting methionine recycling to block ethylene induction. *Proceedings of the National Academy of Sciences* **113**, E3577-E3586 (2016).

31. M. S. Mukhtar, M. E. McCormack, C. T. Argueso, K. M. Pajerowska-Mukhtar, Pathogen tactics to manipulate plant cell death. *Current Biology* **26**, R608-R619 (2016).

32. M. E. McCormack, J. A. Lopez, T. H. Crocker, M. S. Mukhtar, Making the right connections: network biology and plant immune system dynamics. *Current Plant Biology* **5**, 2-12 (2016).

33. Z. Afzal, T. Howton, Y. Sun, M. S. Mukhtar, The roles of aquaporins in plant stress responses. *Journal of developmental biology* **4**, 9 (2016).

34. J. A. Lopez, Y. Sun, P. B. Blair, M. S. Mukhtar, TCP three-way handshake: linking developmental processes with plant immunity. *Trends in plant science* **20**, 238-245 (2015).

35. S. Kamoun *et al.*, The Top 10 oomycete pathogens in molecular plant pathology. *Molecular plant pathology* **16**, 413-434 (2015).

36. T. Howton, Y. A. Zhan, Y. Sun, M. S. Mukhtar, Intrinsically disordered proteins: controlled chaos or random walk. *International Journal of Plant Biology* **6** (2015).

37. S. de Vries *et al.*, Heterotrimeric G–proteins in Picea abies and their regulation in response to Heterobasidion annosum sl infection. *BMC plant biology* **15**, 1-15 (2015).

38. R. Weßling *et al.*, Convergent targeting of a common host protein-network by pathogen effectors from three kingdoms of life. *Cell host & microbe* **16**, 364-375 (2014).

39. J. P. Tully *et al.*, Expression-based network biology identifies immune-related functional modules involved in plant defense. *BMC genomics* **15**, 1-14 (2014).

40. C. C. Garbutt, P. V. Bangalore, P. Kannar, M. Mukhtar, Getting to the edge: protein dynamical networks as a new frontier in plant–microbe interactions. *Frontiers in plant science* **5**, 312 (2014).

41. K. M. Pajerowska-Mukhtar, D. K. Emerine, M. S. Mukhtar, Tell me more: roles of NPRs in plant immunity. *Trends in plant science* **18**, 402-411 (2013).

42. M. S. Mukhtar, Engineering NLR immune receptors for broad-spectrum disease resistance. *Trends in plant science* **18**, 469-472 (2013).

43. A. A. Moreno *et al.*, IRE1/bZIP60-mediated unfolded protein response plays distinct roles in plant immunity and abiotic stress responses. *PLoS One* **7**, e31944 (2012).

44. L. E. Duffee *et al.*, Eukaryotic endoplasmic reticulum stress sensing mechanisms. *Advances in Life Sciences* **2**, 148-155 (2012).

45. D. A. Baltrus *et al.*, The molecular basis of host specialization in bean pathovars of Pseudomonas syringae. *Molecular plant-microbe interactions* **25**, 877-888 (2012).

46. M. S. Mukhtar *et al.*, Independently evolved virulence effectors converge onto hubs in a plant immune system network. *science* **333**, 596-601 (2011).

47. K. Klopffleisch *et al.*, Arabidopsis G-protein interactome reveals connections to cell wall carbohydrates and morphogenesis. *Molecular systems biology* **7**, 532 (2011).

48. A. I. M. Consortium, Evidence for network evolution in an Arabidopsis interactome map. *Science* **333**, 601-607 (2011).

49. D. A. Baltrus *et al.*, Dynamic evolution of pathogenicity revealed by sequencing and comparative genomics of 19 Pseudomonas syringae isolates. *PLoS pathog* **7**, e1002132 (2011).

50. D. Baltrus, M. Nishimura, A. Romanchuk, J. Chang, M. Mukhtar, Dynamic Evolution of Pathogenicity Revealed by Sequencing and. (2011).

51. M. S. Mukhtar, M. T. Nishimura, J. Dangl, NPR1 in plant defense: it's not over'til it's turned over. *Cell* **137**, 804-806 (2009).

52. K. M. Pajerowska-Mukhtar *et al.*, Natural variation of potato allene oxide synthase 2 causes differential levels of jasmonates and pathogen resistance in Arabidopsis. *Planta* **228**, 293-306 (2008).

53. M. S. Mukhtar, L. Deslandes, M. C. Auriac, Y. Marco, I. E. Somssich, The Arabidopsis transcription factor WRKY27 influences wilt disease symptom development caused by Ralstonia solanacearum. *The Plant Journal* **56**, 935-947 (2008).

54. B. Ülker, M. S. Mukhtar, I. E. Somssich, The WRKY70 transcription factor of Arabidopsis influences both the plant senescence and defense signaling pathways. *Planta* **226**, 125-137 (2007).

55. M. S. Mukhtar, M.-u. Rahmanw, Y. Zafar, Assessment of genetic diversity among wheat (Triticum aestivum L.) cultivars from a range of localities across Pakistan using random amplified polymorphic DNA (RAPD) analysis. *Euphytica* **128**, 417-425 (2002).

56. T. Khan, M. Saeed, M. Mukhtar, A. Khan, Assesment of variation for salinity tolerance in some hybrids of cotton (Gossypium hirsutum L.). *Int J Agric Biol* **3**, 167-170 (2001).

57. T. Khan, M. Saeed, M. Mukhtar, A. Khan, Salt tolerance of some cotton hybrids at seedling stage. *Int. J. Agri. Biol* **3**, 188-191 (2001).

58. M. S. Mukhtar, T. M. Khan, Estimation of heterosis for yield and yield components in cotton (Gossypium hirsutum L.). *Pakistan Journal of Biological Sciences (Pakistan)* (2000).

59. M. Mukhtar, T. Khan, A. Khan, Genetic analysis of yield and yield components in various crosses of cotton (Gossypium hirsutum L.). *Int. J. Agric. Biol* **2**, 258-260 (2000).

60. M. Mukhtar, T. Khan, A. Khan, Gene action study in some fibre traits in cotton (Gossypium hirsutum L.). *Pak. J. Bio. Sci* **3**, 1609-1611 (2000).

61. T. MSMukhtar, M. ASKhan, K. MKRiaz, Diallel Analysis of some Important Fibre Characteristics of Gossypium hirsutum L. (2000).

62. S. Mansoor *et al.*, Widespread occurrence of cotton leaf curl virus on radish in Pakistan. *Plant Disease* **84**, 809-809 (2000).

CONFERENCE PAPERS AND INVITED ORAL PRESENTATIONS (UPDATED IN JAN 2020)

1. **Mukhtar MS.** Organized and chaired the workshop at Plant and Animal Genome meeting, San Diego, Jan 2020

2. **Mukhtar MS.** Invited speaker (oral presentation) at Plant and Animal Genome Meeting, San Diego, Jan 2020

3. **Mukhtar MS.** Invited speaker (oral presentation) at Texas A&M, October 2019

4. **Mukhtar MS.** Invited speaker (oral presentation) at Mississippi State University (Plant pathology department), October 2019

5. **Mukhtar MS.** Invited speaker at Texas State University, October 2018

6. **Mukhtar MS.** Invited speaker (oral presentation) at Mississippi State University (Biochemistry department), October 2019

7. **Mukhtar MS.** Invited speaker (oral presentation) at the International Society of Plant Microbe Interactions, Glasgow, UK, July 2019

8. **Mukhtar MS.** Invited speaker (oral presentation) at the Univ. of Toronto at Scarborough, June 2019

9. **Mukhtar MS.** Invited speaker (oral presentation) at Finding Your Inner Modeler-3 sponsored by NSF, June 2019

10. **Mukhtar MS.** Invited speaker (oral presentation) and chair for SS-ASPB meeting at Clemson, March 2019

11. **Mukhtar MS.** Invited speaker (oral presentation) at the Plant-pathology symposium at UNC, September 2019
12. **Mukhtar MS.** Invited speaker at the 1st international Plant Systems Biology meeting, Roscoff, France, September 2018
13. **Mukhtar MS.** Invited speaker at the University of Toronto, Cell and Systems Biology department, July 2018
14. **Mukhtar MS** Organized a symposium on "Big Data; next frontiers in plant sciences" at the southern section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018.
15. **Mukhtar MS** Invited speaker at the southern section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018.
16. **Mukhtar MS.** Invited speaker at the Biochemistry and Molecular Genetics Department at UAB, September 2017
17. **Mukhtar MS.** Invited speaker and travel grant awardee at the American Society of Plant Biologists (ASPB) meeting, Honolulu, HI, July 2017.
18. **Mukhtar MS.** Keynote speaker and travel awardee for International Workshop on Applications of Computational Biology in Biotechnology at National Institute for Biotechnology and Genetic Engineering (NIBGE), July 2017.
19. **Mukhtar MS.** Organizer; Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, Orlando FL, April 2017.
20. **Mukhtar MS.** Invited speaker at the Plant and Animal Genome Meeting, San Diego (PAG) January 2017.
21. **Mukhtar MS.** Invited speaker at the University of West Alabama, Biology departmental seminar (Fall 2016).
22. **Mukhtar MS.** Invited speaker, American Society of Plant Biologists Southern Section, Denton, Texas (March-April 2016)
23. **Mukhtar MS.** Invited speaker, 11th US-Japan workshop on Plant-Pathogen Interactions, Takamatsu, Japan (October 2015). *Conference held every five years*
24. **Mukhtar MS.** Invited speaker and chair of Bioinformatics session, American Society of Plant Biologists, Minneapolis MN (July 2015)
25. **Mukhtar MS.** Infrastructure and Training to Bring Next-generation Sequence (NGS) Analysis Into Undergraduate Education, Maryland (July 2015)
26. **Mukhtar MS.** Invited speaker, American Society of Plant Biologists Southern Section, Mobile AL (March 2015)
27. **Mukhtar MS.** Speaker at the 112th Annual Meeting of The Southern Association of Agricultural Scientists Biochemistry and Biotechnology Division, Atlanta, GA (Feb 2015)
28. **Mukhtar MS** Speaker at the 111th Annual Meeting of The Southern Association of Agricultural Scientists Biochemistry and Biotechnology Division, Dallas, TX. (Feb 2014)
29. **Mukhtar MS.** JCVI Plant Bioinformatics workshop, Maryland (June 2014)
30. **Mukhtar MS.** Invited speaker at the Auburn University Biology departmental seminar (Fall 2014).
31. **Mukhtar MS.** Speaker at the Creativity workshop held by School of Public Health and the UAB Nutrition and Obesity Research Center (NORC) (Jan 2013).
32. **Mukhtar MS.** Making the right connections; How to get the edge in network biology. University of Alabama, Tuscaloosa (February 15-16, 2013) (job talk)
33. **Mukhtar MS.** Systems biology of plant-microbe interactions. University of North Dakota (February 27-28, 2013) (job talk)

34. **Mukhtar MS.** Bioinformatics approaches to understand host-pathogen interactions. Kansas State University (February 06-08, 2013) (job talk)
35. **Mukhtar MS.** Cutting to the edge in network biology. Iowa State University (January 08-09, 2013) (job talk)
36. **Mukhtar MS.** Future of Genomics and Bioinformatics. Stillman College, Tuscaloosa, AL (November 01, 2012).
37. **Mukhtar MS.** Making the right connections: Systems Biology of Arabidopsis Innate Immunity. University of Texas at Tyler (October 11-12, 2012) (job talk)
38. **Mukhtar MS.** Innate Immune Systems of Arabidopsis and Grapes. University of California at Davis (February 22-23, 2012) (job talk)
39. **Mukhtar MS.** Systems Biology of Arabidopsis Innate Immunity. Host-Microbe Interactions Workshop for the Plant and Animal Genome XX Conference (January 14-18, 2012).
40. **Mukhtar MS.** Understanding the Complexity of Complex Immune Systems. Phi Sigma Seminar series, University of Alabama at Birmingham (2011).
41. **Mukhtar MS.** Systems Biology of Plant Innate Immunity. Genomics and Genetics Seminar series, University of Alabama at Birmingham (2011).
42. **Mukhtar MS.** Independently evolved virulence effectors converge onto cellular hubs in a plant immune system network. University of Arizona at Tucson (2010).
43. **Mukhtar MS**, Chang J, Nishimura M, Boxem M, Dreze M, Hill D, Ecker J, Vidal M, and Dangl JL. Towards a bacterial effector-Arabidopsis target protein-protein interaction network. 19th International Conference on Arabidopsis Research, Montreal, Canada (2008).
44. **Mukhtar MS** and Dangl JL. Generating the first plant immune interactome map. Duke University, Durham, NC, USA (2008).
45. **Mukhtar MS** and Dangl JL. Towards a bacterial effector-Arabidopsis target protein-protein interaction network. Dana Farber Cancer Institute, Boston, MA, USA (2008).
46. **Mukhtar MS** and Somssich IE. Role of AtWRKY27 in disease resistance: MPIZ Annual Conference (2005).
47. **Mukhtar MS** and Somssich IE. Dissecting the functions of WRKY transcription factors in disease resistance. MPIZ Annual Conference (2004).

POSTER PRESENTATIONS (UPDATED IN 2019)

1. Mishra B and **Mukhtar MS**. Network Biology to identify pathogen targets in rice. MPMI meeting, Glasgow, UK, July 2019
2. Mishra B, M. Athar and **Mukhtar MS**. Dynamic Transcriptional Regulatory Network Modeling in skin upon treatment with diverse arsenicals. CounterACT meeting New York, June 2019
3. Howton TC and **Mukhtar MS**. The Exploitation of the Glyoxylate Cycle in Arabidopsis thaliana by *Pseudomonas syringae* for Glucose Procurement. The southern section of American Society of Plant Biologists (SS-ASPB) meeting, Clemson University, March 2019
4. Sun Y and **Mukhtar MS**. Unraveling the role of ATVI2 in the Establishment of Plant Disease Susceptibility. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, Clemson University, March 2019
   Detechemendy T and **Mukhtar MS**. Pathogen Effector and Receptor Kinase Interaction Screening Reveals Novel Innate Immune System Players. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, Clemson University, March 2019
5. Mishra B and **Mukhtar MS**. Dynamic Transcriptional Regulatory Network Modeling in Senescence. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, Clemson University, March 2019
6. Kumar N and **Mukhtar MS**. Multidimensional Data and Multiple Problems. The southern

section of American Society of Plant Biologists (SS-ASPB) meeting, Clemson University, March 2019

7. **Mukhtar MS**. Dynamic regulatory network in leaf senescence. American Society for plant Biologists, Montreal, Canada (July 2018).

8. Howton TC and **Mukhtar MS**. The Exploitation of the Glyoxylate Cycle in Arabidopsis thaliana by *Pseudomonas syringae* for Glucose Procurement. The southern section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018

9. Sun Y and **Mukhtar MS**. Unraveling the role of ATVI2 in the Establishment of Plant Disease Susceptibility. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018

10. Detechemendy T and **Mukhtar MS**. Pathogen Effector and Receptor Kinase Interaction Screening Reveals Novel Innate Immune System Players. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018

11. Mishra B and **Mukhtar MS**. Dynamic Transcriptional Regulatory Network Modeling in Senescence. The Southern Section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018

12. Kumar N and **Mukhtar MS**. Multidimensional Data and Multiple Problems. The southern section of American Society of Plant Biologists (SS-ASPB) meeting, New Orleans, March 2018

13. Howton TC and **Mukhtar MS**. Citrate synthase pathways in leaf senescence. Arabidopsis meeting (ICAR) at St. Louis, Missouri (June 19-23), 2017

14. Sun Y and **Mukhtar MS**. Vacuolar Invertase in plant susceptibility. Arabidopsis meeting (ICAR) at St. Louis, Missouri (June 19-23), 2017

15. Dawson A and **Mukhtar MS.** University of West Alabama's 6th Annual Undergraduate Research Symposium in March 2017.

16. Zwack P, Clercq ID, Howton TC, Hallmark HT, Hurny A, Benkova E, **Mukhtar MS,** Breusegem FV, Rashotte AM. Arabidopsis CYTOKININ RESPONSE FACTOR 6 Represses Cytokinin-Associated Genes during Oxidative Stress to Promote Tolerance. IPGSA (International Plant Growth Substances Association), Toronto, Canada.

17. **Mukhtar MS.** Pathogens target inner layers of the host network as a virulence strategy. Molecular Plant Microbe Interactions (held once in two years), Portland, OR. July 2016.

18. Howton T.C. and **Mukhtar MS. "Fosmid Clonal Library Used to Screen for A Novel Variant of FCGR2B".** 92th Annual Meeting of Alabama Academy of Science, Livingston, AL (2015)

19. Howton T.C. and **Mukhtar MS.** Manipulation of the Glyoxylate Cycle by Bacterial Pathogens to Acquire Nutrients" Poster presentation at the Southern Section- American Society of Plant Biologists (2015)

20. Blair PB and **Mukhtar MS.** Roles of TCP proteins in plant immunity. Poster presentation at the Southern Section- American Society of Plant Biologists (2015)

21. Sun Y and **Mukhtar MS.** Identification and characterization of bottleneck proteins in the plant immune system. Poster presentation at the Southern Section- American Society of Plant Biologists (2015)

22. Howton T.C. and **Mukhtar MS.**: "Fosmid Clonal Library Used to Screen for A Novel Variant of FCGR2B". CAMAC Research Day, 2014

23. Sun Y and **Mukhtar MS**. The roles of glucose in bacterial resistance. 111th annual meeting of Southern Association of Agricultural Scientists, Dallas, TX. 2014

24. Kannar P, Liu M and **Mukhtar MS.** Endoplasmic reticulum stress. Alabama Academy of Sciences annual meeting (2013)

 Garbutt C, **Mukhtar MS** and Kimberly R. Understanding the Regulatory Mechanisms of Fragment Crystallizable Gamma Receptor IIB in Rheumatoid Arthritis. 2nd Spring Immunology Symposium (June 22-23 2013)

25. Garbutt C and **Mukhtar MS.** Construction of the First Human Autoimmune Network. Alabama Academy of Sciences (2013)

26. Chang A and **Mukhtar MS.** National Bioethics Conference, Loyola University in Chicago, 2013

27. Ptacek T.S., **Mukhtar MS**., et. al. A novel variant of FCGR2B is a risk factor for SLE. 2nd Spring Immunology Symposium (June 22-23 2013)

28. Liu M and **Mukhtar MS.** Endoplasmic reticulum stress. 11th Annual University of Alabama System Honors research Conference (2012)

29. Garbutt C and **Mukhtar MS.** Revamping the Therapeutic Approach for Patients Diagnosed with Autoimmune Diseases. 11th Annual University of Alabama System Honors research Conference (2012)

30. Epple P, McDonald N, Wiley K, **Mukhtar MS**, Wessling R, Panstruga R, Braun P, Schulze-Lefert P, Dangl J. Effectors from diverse pathogens target a limited set of Arabidopsis proteins. 30th New Phytologist Symposium. Immunomodulation by plant-associated organisms (2012)

31. Garbutt C and **Mukhtar MS.** Revamping the Therapeutic Approach for Patients Diagnosed with Autoimmune Diseases. UAB EXPO (2012)

32. Garbutt C and **Mukhtar MS.** Understanding the regulatory mechanisms of FCGR2 in autoimmune diseases. National Collegiate Honors Conference (2012)

33. Liu M and **Mukhtar MS**. Endoplasmic reticulum stress. UAB EXPO (2012)

34. **Mukhtar MS.** Pathogens perturb host intercellular host networks to cause disease. 23rd International Conference on Arabidopsis Research, Vienna, Austria (July 2012)

35. Carvunis A, **MS Mukhtar**, et al. Understanding plant-microbe interactions: Plant immune system function and rhizosphere metagenomics. 22nd International Conference on Arabidopsis Research (2011)

36. Braun B, Carvunis A, **MS Mukhtar**, et al. Insights into Systems Organization, Network Evolution, and Pathogen Attack from a High-Quality Arabidopsis Interactome Network Map. 22nd International Conference on Arabidopsis Research (2011)

37. Carvunis A, **MS Mukhtar**, et al. Independently evolved virulence effectors converge onto cellular hubs in a plant immune system network. CSHL Network Biology Meeting (2011)

38. **Mukhtar MS**, et al. Towards a bacterial effector-Arabidopsis target protein-protein interaction network. 14th International Congress on Molecular Plant-Microbe Interactions, Quebec City, Canada (2009)

39. **Mukhtar MS**, Deslandes L, Auriac MC, Marco, Y and Somssich I. WRKY27-dependent communication between the phloem and xylem determines tolerance towards Ralstonia solanacearum. 19th International Conference on Arabidopsis Research, Montreal, Canada (2008)

40. **Mukhtar MS** and Dangl JL. Towards the first draft of host-pathogen interaction network. 7th Annual ORFeome Meeting: ORFeomes and Systems; The Conference Center at Harvard Medical School, Boston, MA, USA (2007)

41. Birkenbihl R, **Mukhtar MS** and Somssich I. The role of WRKY transcription factors in plant innate immunity. 18th International Conference on Arabidopsis Research, Beijing, China (2007)

42. **Mukhtar MS** and Dangl JL. 6th Annual ORFeome Meeting: ORFeomes and Systems. The Conference Center at Harvard Medical School, Boston, MA, USA (November 15 - 18, 2006)

43. **Mukhtar MS**, Deslandes L, Marco Y and Somssich IE. AtWRKY27; a gene involved in altered Ralstonia solanacearum disease response in Arabidopsis. 12th International Congress on Molecular Plant-Microbe Interactions, Merida, Mexico (2005)

TEACHING
Dr. S. Mukhtar firmly believes that teaching is an exciting and integral component of students' academic endeavors, and he is strongly committed to excellence in teaching at various levels.

A. FORMAL CLASSROOM INSTRUCTION
Existing courses modified: 1

BY210/501 Genetics/Genetics for Teachers (10 semesters), 3 credit hours, (Avg. regular class size: ~150; Avg. IDEA score: 4.23)
BY210 provides an introduction to: (a) molecular genetic technologies, (b) principles and mechanisms of inheritance, (c) structure, action and regulation of genes, (d) applications of modern molecular genetic technology to human health and agriculture and (e) necessary background for upper-level courses in molecular genetics, cell biology and evolution. Large enrollment class (150+).

New courses developed: 4

BY434/634/734 Functional Genomics & Systems Biology, (7 semesters), 3 credit hours, (Avg. class size: ~25; Avg. IDEA score 4.5)
I designed and developed BY434/734 to augment UAB's Department of Biology curriculum with a modern topic class that is targeted to advanced Bio-majors as well as an interdisciplinary audience. It covers state-of-the-art high throughput and novel, experimental and computational 3 with knowledge on experimental perturbation of genomes, gene regulatory networks, comparative genomics, and evolution, as well as basic bioinformatics. This course is a combination of text-based lectures, computer exercises, and discussions of the current literature relevant to Functional Genomics and Systems Biology.

BY211 Genetics for Honors (1 semester), 3 credit hours, (Avg. class size: ~27; Avg. IDEA score 4.7)
BY211 (Genetics for Honors) is designed to provide active learning and in-depth knowledge in genetics as well as and hands-on bioinformatics training in a dynamic online environment to Honors students.

1- Team-Based Learning (TBL) and flipped classroom:
Team-Based Learning (TBL) using small group exercises has been proven to be very effective in students' engagement in a fast-paced environment. Due to COVID-19 pandemics, it was difficult to work hand-in-hand as a team in a physical classroom. However, TBL was possible in the virtual environment. We employed a flipped classroom instructional strategy. Specifically, I used a 'flipped classroom' approach, where students completed pre-class introductory tasks to prepare them for in-class, problem-solving activities. The students were expected to grasp the lecture material at home while engaging in concepts in the classroom with the guidance of the professor. The in-class activities require students to collaborate and responsibly contribute to the learning process. Let me give you an example of how this might look like when we did this remotely. To learn complex scientific concepts of genetics, all the lectures were pre-recorded with audio-narration and captions ahead of time and uploaded to Canvas before the start of each lecture. Also, relevant graphics, animations, and videos were provided. In the synchronous class meetings, however, the instructor divided the class into five break-out room Zoom sessions (five students in each group) followed by group presentation to the class or doing worksheets pertinent to the

topics under study. The instructor supervised the Zoom sessions by switching from group to group, resolve any difficulties or issues, and monitor the progress of the completion of teamwork. This session was up to 45 to 60 minutes. The remaining time of the lecture was used to review/present the material covered for that lecture. Again, students participated in discussion and presentation sessions.

2- Design of special projects
To provide Honors students with a rich educational experience that is not typically covered in the standard BY210 curriculum, I have designed two additional, substantial projects for BY211. Students were asked to work in small groups as defined above in the virtual world to solve real-world genetics-related problems. In my expert view, the entire course contents can be provided if the students complete the following two projects.

I. **The genetic basis of cystic fibrosis (CF):** CF is a genetic disease that affects the lungs and digestive system, and thick and sticky mucus produced by the body produces can clog the lungs and obstruct the pancreas. Moreover, it also affects fertility in both men and women, and cause chronic infection. Given that CF is caused by a defective *CFTR* gene that can have can be caused by more than 1,700 different mutations in the CFTR gene, studying this gene can provide a wealth of genetics. It includes chromosomes, gene, DNA replication, mutations, and their types, gene structure, splice variants, transcription, translation, gene regulation, protein folding, protein structural biology, protein/transporter function, ion transport and their function in the body, pathophysiology including bacterial infection, recessive inheritance patterns in human in Mendelian fashion and other genetics-based inheritance, antibiotics, and drug targets, etc. Moreover, the students got familiarized with bioinformatics tools and databases including DNA alignment, Genome-Wide Association Study (GWAS), etc.

II. **Design of CRISPR-Cas based genetic engineering:** CRISPR-Cas (clustered regularly interspaced short palindromic repeats)-Cas protein-based gene editing can be applied to both agriculture and medicine. Specifically, in agriculture, it is applied to farming industries to engineer probiotic cultures and to immunize industrial cultures as well as crop improvement. In medicine, this technology has been used to target cancer-related genes. Moreover, students can learn viral-bacterial relationships, evolution, and co-evolution, acquired immunity, *in vitro* DNA replication, and DNA cloning and sequencing techniques. Students were asked to design individual CRISPR projects. They also got familiarized with side effects (off-targets) of genetic engineering as well as with bioethics using the recent cloning in humans.

BY689/789 Seminar in Genomics (1 semester), 1 credit hour (Avg. class size: ~20; Avg. IDEA score 4.4)
BY689/789 is designed to refine and extend students' fluency (both verbal and written) in genetic concepts and techniques. Through the dissection of research papers on diverse genetics/genomics aspects, students learn how to critically think about experimental designs. Students also learn how to devise and propose hypothetical experiments to address unanswered questions in genetics/genomics. They can also appreciate the peer review process through critiquing the peer-reviewed papers.

BY215 Introduction to Genomics (online format; the course is cataloged but to-be-scheduled)
This course will feature basic and introductory concepts in –omics, sequencing technologies, applications in prokaryotes and eukaryotes, particularly the human genome. Moreover, we will also discuss how the next generation sequencing information can apply to human health, agriculture and ecology. Key concepts of computing and data science will also be introduced. This will also include basic

bioinformatics and bioinformatics tools in handling and management of genomic data. The course will include the following topics:

- Genomics: an introduction to genomics
- Introduction to the development of omics technologies
- History of genome projects
- Prokaryotic and Eukaryotic Genome
- From Genes to Phenotypes
- Genome Sequencing and its applications
- The Human Genome Project
- Gene finding
- Promoter identification
- Prediction of protein structure and gene function
- Genome Variations
- Applications of Sequencing
- QTL and GWAS
- Comparative and evolutionary genomics
- Paralogous and orthologous genes
- Phylogenetic tree
- Synonymous and non-synonymous substitution
- RNA-seq
- Bioinformatics: Introduce to common techniques and algorithms used in genomic analysis, sequencing assembly, mining databases for genetic, transcriptional, and protein-based information, including an introduction to web-based tools

Other courses taught: 3
GBS723-Model Organisms in Genetics (Avg. class size: ~16; Avg. IDEA score: N/A)
BY397-Advanced Directed Readings (Avg. class size: ~2; Avg. IDEA score: N/A)
BY398/BY498-Undergraduate Research (detailed below)

B. LAB-BASED TEACHING, MENTORING AND STEM OUTREACH

K-12 Students and Undergraduate Researchers: At UAB, Dr. Mukhtar has supervised research projects of 46 undergraduates and K-12 students in the laboratory setting. Undergraduate internships in his lab typically last for at least two semesters. Activities range from practical training on the bench by the PI, assisting graduate students and overseeing independent projects, participation in lab meetings and biweekly Lunch&Learn sessions. 12 undergraduates/K12 students have contributed data to peer-reviewed publications (see below). Finally, they present their findings at various research meetings/conferences. **Alex Dawson won Dean's award** for poster competition in the 6th Annual Undergraduate Research Symposium in March 2017.

Graduate Researchers: At UAB, Dr. Mukhtar has mentored a total 18 graduate students (5 PhD students, 2 MS plan-I and 11 MS plan-II). Dr. Mukhtar practices an active mentoring style to prepare the next generation of intellectual leaders in biology and STEM. The students acquire a sense of scholarly citizenship by embracing their individual as well as collaborative roles in the research team. Below are selected examples of peer-reviewed publications co-authored by the graduate/undergraduate students (in bold).

1. **Kumar, N., B. Mishra, A. Mehmood,** M. Athar, and M.S. Mukhtar*, Integrative network biology framework elucidates molecular mechanisms of sars-cov-2 pathogenesis. 2020.iScience.
2. **Mishra, B., N. Kumar,** and **M.S. Mukhtar*,** Systems Biology and Machine Learning in Plant–Pathogen Interactions. Molecular Plant-Microbe Interactions, 2019. 32(1): p. 45-55.

3. **Mishra, B., Y. Sun, T. Howton, N. Kumar**, and M.S. Mukhtar*, Dynamic modeling of transcriptional gene regulatory network uncovers distinct pathways during the onset of Arabidopsis leaf senescence. NPJ systems biology and applications, 2018. 4(1): p. 1-4.

4. **Ahmed, H., T. Howton, Y. Sun, N. Weinberger**, Y. Belkhadir, and M.S. Mukhtar*, Network biology discovers pathogen contact points in host interactomes. Nature communications, 2018. 9(1): p. 1-13.

5. **Lopez, J.A., Y. Sun, P.B. Blair**, and **M.S.** Mukhtar*, TCP three-way handshake: linking developmental processes with plant immunity. Trends in plant science, 2015. 20(4): p. 238-245.

The graduate students are also successful in winning competitive awards and scholarships (selected awards).

- **2020-** Jessica Lopez won Rising Star Award from UAB National Alumni Society.
- **2018**- TC Howton received NSF Graduate Research Scholar Program fellowship for 2017-18
- **2018**- TC Howton received first prize on SS-ASPB oral presentation
- **2017-** TC Howton received Ireland Research Travel Scholarship.
- **2017-** TC Howton received The Harold Martin Outstanding Student Development Award
- **2017-** TC Howton received NSF Graduate Research Scholar Program fellowship for 2017-18
- **2016 -** Jessica Lopez received the Dean's Award for MS graduate student category.
- **2015 -** Yali Sun received the CAS Dean's PhD Scholarship;
- **2014 -** Hadia Ahmed received an NSF-TCPP travel grant to attend IPDPS'14 conference;

Green DNA Day: The laboratory of Dr. S. Mukhtar has been organizing an annual day-long NSF-sponsored workshop **(Green DNA Day)** in conjunction with UAB's Center for Community OutReach Development (CORD) since 2017. Through this workshop, Dr. Mukhtar and his graduate students teach basic techniques to the local community of high school teachers from under-represented backgrounds, mainly from the Birmingham City School System. The module features several plant biology techniques including DNA/RNA extraction, chlorophyll measurements, and genotyping procedures, which can be adapted into high school biology classrooms.

Establishment of PlantGIFT (Genomics Internship for Teachers) for High School Teachers: The PlantGIFT project will begin in 2021 and expand the Green DNA Day initiative to focus on the genomics of plant biology for high school teachers. Students and teachers who participate in the project will work as citizen scientists, collecting and analyzing real data that can contribute to a larger understanding of plant biology through authentic basic and applied genetics. This education program will elevate inquiry-based biology education in the high school pipeline to college STEM education and careers. Moreover, it will also help improve the Plant Awareness Disparity

"Green DNA Day" with high school teachers at Community OutReach Development (CORD).

Index (formerly known as "plant blindness") in the curriculum, *i.e.*, the bias that biology education should always revolve around animals.

C. CURRICULUM DEVELOPMENT AND ADVISING

Bioinformatics Major: Dr. Mukhtar participated in the preparation and submission of NISPs and a proposal for the Bioinformatics Undergraduate program in a collaborative effort among the departments of Biology (CAS), Computer Science (CAS), and Genetics (SOM). His responsibilities were to select the sequence of Biology course offerings and ensure that both breadth and depth of biological education will be provided to the new majors. The B.S. degree program in Bioinformatics, established in 2018, draws

on the academic resources and expertise of all three departments and is the first program of this type in the Southeastern US.

Faculty Fellowship in Undergraduate Research (2017-2018)
Dr. Mukhtar participated in the inaugural UAB Faculty Fellows in Engaged Scholarship program, which was sponsored by the Office of Service Learning and Undergraduate Research. Towards this, he was also awarded $1,500 towards his course development efforts. Through his participation in the faculty fellows in the undergraduate research program, he developed an Honors BY211 Genetics class that consists of a combination of lecture and inquiry-based research labs focusing on the core material of the course. The course was taught in fall 2020.

Co-Director of Genetics and Genomics Sciences Undergraduate Program (2020-to date)
Since 2020, Dr. Mukhtar has been working in the role of the Co-Director of Genetics and Genomics Sciences (GGS) Undergraduate Program, a joint initiative with the School of Medicine's Dept. of Genetics. His duties include curricular oversight and development, student advising, student placement with research mentors, catalog maintenance, preparation of program recruitment materials, attendance of recruitment events and collaboration with other undergraduate programs in biomedical science on campus.

SERVICE

Departmental service activities
1. Scholarship committee since 2020
2. Honors committee since 2020
3. Seminar Committee chair (Summer 2015-2020)
4. Served on Seminar Committee (Fall 2013 – 2020)
5. Served on a search committee for teaching faculty in Microbiology (2014-2015)
6. Management of departmental Facebook account (Fall 2015-to date)
7. Attending commencements
8. Attending inaugural Freshman Convocation
9. Attending Scholarship Student Reception
10. CIRTL seminar speaker summer
11. Meet with the high school biology students considering Biology major as a part of their UAB Campus recruitment visit

CAS-wide service activities
1. CAS P&T committee since 2020
2. Participated in 4th Annual UAB Expo: An Exposition of Undergraduate Scholarship as Judge, April 22, 2011
3. Participated in Science Bridge Program (August 2011)
4. Judge for Summer research intern poster session Day, July 2012
5. Judge for 9th Annual Postdoctoral Research Day, February 2012
6. Judge for Graduate Student Research Day, February 2014
7. Reviewer for the 2016 President's Summer Research Scholarships at UAB

University-wide service activities
1. Appointed Institutional Biosafety Committee member, November 2015-to date
2. Ad hoc reviewer of UAB's undergraduate research Inquiro journal 2010-

Professional service activities
1. **Serving as the Director of The Multinational Arabidopsis Steering Committee (2021-2024)**

Updated October 2021

2. **Serving as the executive member of the Southern Section of the American Society of Plant Biologists (2019-to date)**
3. **Served as Chair of the Southern Section of American Society of Plant Biologists (2018-2019)**
   -2018 duties include overseeing the activities of the entire organization.
4. **Served as Vice-Chair of the Southern Section of American Society of Plant Biologists (2017-2018)**
   - 2017 duties include organizing a symposium in the annual meeting that is going to be held in March 2018, New Orleans. Four respected plenary speakers will be selected. This will help further enhance my scientific networking.
5. **Served as Secretary/Treasurer of the Southern Section of American Society of Plant Biologists (2016-2017)**
   -2016 duties included help in the preparation of quarterly Newsletter and admin support for the upcoming SS-ASPB conference in Denton, TX (March 2016) – selection of speakers from abstracts, registration desk duties, managing the budget. 2017 duties include leading the efforts to organize the 2017 SS-ASPB conference in Orlando, FL.

6. *6.* **Grant peer reviewer**
   National Science Foundation (NSF) IOS grant review panelist
   Ad-hoc reviewer for NSF-MCB panel
   DOE Joint Genome Institute (CSP17 Review)
   Department of Energy grant review panel
   Natural Sciences and Engineering Research Council of Canada
   French National Research Agency (ANR) 2017
   Evaluator of Czech Academy of Sciences

5. **Peer reviewer for high impact journals**
   SCIENCE
   Nature Genetics
   Nature Communications
   Proceedings of the National Academy of Sciences
   Trends in Plant Science
   PLoS Genetics
   The Plant Journal
   Plant Physiology
   PLoS One
   Molecular Plant
   PLoS Pathogens
   Molecular Plant Pathology

6. **Editorial board member**
   Communications Biology (Nature Publishing Journal)
   Scientific Reports (Nature Publishing Journal)
   Frontiers in Oncology

7. **Membership**
   International Society of Plant Microbe Interactions
   American Society of Plant Biologists

Community service activities and addressing minority needs

1. I have lectured for the **UAB CORD-sponsored BioTeach program**. BioTeach is an intensive laboratory-based course in molecular genetics for high school science teachers (70% are African Americans and 100% are women) that is designed to offer instruction in basic molecular biology concepts and techniques.
2. I work with the UAB Biology Graduate Program to promote minority student recruitment efforts. I give **recruitment talks at HBCU institutions**, Miles College (Fairfield) and Stillman College (Tuscaloosa).
3. I am also committed to the **recruitment of minorities** into my laboratory and have sponsored to date two students of Hispanic descent and three African American trainees, as well as one student with a disability. Typically, at least 60-70% of the undergraduate students in the lab are female.
4. Invited speaker to **Phi Sigma** meeting - 2013
5. Invited speaker to **UAB Women in Science** interest meeting – May 06, 2015
6. Hosted a group of **30 elementary school students** (Odyssey Early School summer camp) for a "UAB Science Day" outreach event – June 2015
7. Judged graduate student oral presentations at SS-ASPB 2016
8. Organized SS-ASPB 2017 conference