

RESEARCH INTEREST

PhD Candidate in Biology with research experience in integrated analysis of plant development, physiological responses, and hormone-stress interactions. Interested in pursuing postdoctoral research.

EDUCATION

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| PhD in Biology - Auburn University, AL, USA | 2022 - present |
| Master of Science in Botany - Jamia Hamdard, India | 2018 - 20 |
| Bachelor of Science (Honors) Botany - Zakir Husain Delhi College, University of Delhi, India | 2015 - 18 |

RESEARCH

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|---|----------------|
| Graduate Research Assistant - Department of Biological Sciences, AU, AL, USA Cytokinin in delaying salt-induced leaf senescence and regulation of chloroplast function in <i>Arabidopsis thaliana</i> | 2022 - present |
| Master's Research - Department of Botany, Jamia Hamdard, India <u>Dissertation Title:</u> Exogenously-sourced GABA modulates wheat growth and physiological responses under salt stress | 2018-20 |
| Undergraduate Summer Internship – Division of Agricultural Chemicals, Indian Agricultural Research Institute, India <u>Project Title:</u> Study and extraction of curcumin from turmeric (<i>Curcuma longa</i>) and observing change under various pH conditions | May - Aug 2016 |

PUBLICATIONS (Google Scholar | Citations: 387)

*mentored undergraduates

Khanna RR, Hasannin O, Thennakoon M, Buchheit A*, Petřík I, Strnad M, Novák O, Černý M, & Rashotte AM (2025). *trans*-Zeatin N-glucosides Can Delay Salt Accelerated Leaf Senescence in *Arabidopsis thaliana*. *Plant Physiology and Biochemistry*, 110101. DOI: <https://doi.org/10.1016/j.plaphy.2025.110101>

Kumari S, Kaur P, Mahajan M, Nayak SR, **Khanna RR**, Rehman MT, AlAjmi MF, Khan MIR (2025). γ -aminobutyric acid (GABA) supplementation modulates phosphorus retention, production of carbon metabolites and defense metabolism under arsenic toxicity in wheat. *Plant Science*, 356, 112504. DOI: <https://doi.org/10.1016/j.plantsci.2025.112504>

Yocca AE, Akinyuwa M, Bailey N, ..., **Khanna RR**, ... & Harkess AE (2024). A chromosome-scale assembly for dAnjou pear. *G3 Genes|Genomes|Genetics*. DOI: <https://doi.org/10.1093/g3journal/jkae003>. #Cover image featured on this issue

Khan MIR, Kumari S, Nazir F, **Khanna RR**, Gupta R, & Chhillar H (2023). Defensive Role of Plant Hormones in Advancing Abiotic Stress-Resistant Rice Plants. *Rice Science*, 30(1), 15-35. DOI: <https://doi.org/10.1016/j.rsci.2022.08.002>

Kumari S, **Khanna RR**, Nazir F, Albaqami M, Chhillar H, Wahid I, & Khan MIR (2022). Bio-synthesized nanoparticles in developing plant abiotic stress resilience: a new boon for sustainable approach. *International Journal of Molecular Sciences*, 23(8), 4452. DOI: <https://doi.org/10.3390/ijms23084452>

Kumari S, Chhillar H, Chopra P, **Khanna RR**, Khan MIR (2021). Potassium: A track to develop salinity tolerant plants. *Plant Physiology and Biochemistry*, 167, 1011-1023. DOI: <https://doi.org/10.1016/j.plaphy.2021.09.031>

Khanna RR, Jahan B, Iqbal N, Khan NA, AlAjmi MF, Rehman MT, & Khan MIR (2021). GABA reverses salt-inhibited photosynthetic and growth responses through its influence on NO-mediated nitrogen-sulfur assimilation and antioxidant system in wheat. *Journal of Biotechnology*, 325, 73-82. DOI: <https://doi.org/10.1016/j.jbiotec.2020.11.015>

Submitted

Johnston G¹, Hasannin O¹, **Khanna RR**¹, Rashotte AM, & Argueso C (Accepted). Cytokinin root growth and leaf senescence assays for physiological observations in *Arabidopsis thaliana*. *Methods in Molecular Biology*. ¹equally contributed authors

Thennakoon M, **Khanna RR**, & Rashotte AM (under review). The cytokinin cis-Zeatin delays leaf senescence in tomato under salt stress. *Journal of Plant Growth Regulation*.

FELLOWSHIPS/GRANTS

Alabama Agricultural Experiment Station, Professional Enhancement for Emerging Researchers (PEER). Project Title: *An integrative approach towards improving tomato development by utilizing cytokinin as a tool for sugar reallocation*. (Awarded \$5000 to pursue independent research project) Nov 2025

Joint CSIR-UGC NET-Junior research fellowship - Life Sciences. Awarded \$24,705 Feb 2021 to pursue PhD research in research institutes/universities in India (award not availed)

Narendra Singh Graduate Student Research Award (Department of Biological Sciences, AU). (Awarded \$500 to pursue independent research project) Sept 2023

AWARDS

Henry Daniell International Scholar Award - Graduate Student at *Southern Section* – Mar 2023
American Society of Plant Biologists

Graduate Student Oral Presentation Award – 1st Place at *Southern Section* – Mar 2024
American Society of Plant Biologists

Annual COSAM 3 Minute Thesis Competition (3MT) – 1st Place Mar 2025

University-wide M.Sc. Botany rank 1 holder Oct 2020

Silver-Elite Certification in “Bio-Informatics: Algorithms and Applications” from Indian Institute of Technology Madras Apr 2019

Travel Awards

COSAM Graduate Student Travel Award June 2025

International Conference on Arabidopsis Research, San Diego, CA – Travel Award July 2024

PRESENTATIONS

*mentored undergraduates

Regional and University

Khanna RR, Rashotte AM (2025) Plant Hormone Cytokinin Regulates Chloroplast Function and Leaf Senescence in *Arabidopsis thaliana*. *AU Research Symposium*. (Oral presentation)

Giglio B*, Buchheit A*, **Khanna RR**, & Rashotte AM (2025) Regulation of SWEET Sugar Transporters by Cytokinin and the Role in Source-Sink Dynamics. *AU Research Symposium*. (Poster)

Khanna RR (2025) Hormonal Mechanisms for Improving Plant Productivity. *Annual COSAM 3 Minute Thesis Competition (3MT)*

Khanna RR, Hasannin O, Thennakoon M, Černý M, Rashotte AM (2024) Salt-Stress Accelerated Leaf Senescence is Delayed by modified *trans*-Zeatin type Cytokinin forms in *Arabidopsis thaliana*. *Annual Meeting of the Southern Section-American Society of Plant Biologists*, Dauphin Island, AL. (Oral presentation)

Khanna, RR, Rashotte, AM (2023) *trans*-Zeatin N-Glucosides regulate salt-induced leaf senescence in *Arabidopsis thaliana*. *Annual Meeting of the Southern Section-American Society of Plant Biologists*, Fayetteville, AR. (Oral presentation)

Thennakoon M, **Khanna RR**, Hasannin O, Rashotte AM (2023) Effect of Cytokinin in tomato stress response and delay in leaf senescence. *Annual Meeting of the American Society of Plant Biologists – Southern Section*, Fayetteville, AR. (Poster)

Khanna, R.R., & Rashotte, A.M. (2022) Cytokinin N-Glucosides reverse salt-mediated photosynthetic repression in *Arabidopsis thaliana*. *Annual Meeting of the Southern Section-American Society of Plant Biologists*, Birmingham, AL. (Poster)

National and International

Khanna RR, Buchheit A*, Giglio B*, Rashotte AM (2025) Cytokinin Antisenescence is Mediated by CHLOROPLAST IMPORT APPARATUS2 in *Arabidopsis thaliana*. *25th International Plant Growth Substances Association*, Fort Collins, CO. (Poster)

Thennakoon M, **Khanna RR**, Rashotte AM (2025) Weighted Gene Co-expression Network Analysis reveals the cis-Zeatin regulation in leaf senescence under salt stress. *25th International Plant Growth Substances Association Meeting*, Fort Collins, CO. (Poster)

Rashotte AM, Hasannin O, **Khanna RR**, Thennakoon M, Petřík I, Strnad M, Novák O, Černý M (2025) A Multi-omics Approach to Determining the Role of Cytokinin in Delaying Leaf Senescence. *25th International Plant Growth Substances Association Meeting*, Fort Collins, CO. (Poster)

Khanna RR, Buchheit A*, Hasannin O, Thennakoon M, Černý M, Rashotte AM (2024) *trans*-Zeatin and *trans*-Zeatin N-Glucosides Regulate Cytokinin Signaling and Delay Salt-Stress Accelerated Leaf Senescence. *34th International Conference on Arabidopsis Research*, San Diego, CA. (Poster)

Hasannin O, **Khanna RR**, Černý M, Rashotte AM (2024) Identification of Dual Phase molecular regulation of leaf senescence by cytokinin isoforms. *34th International Conference on Arabidopsis Research*, San Diego, CA. (Poster)

Thennakoon M, **Khanna RR**, Hasannin O, Rashotte AM (2024) Physiological and transcriptomic effects of cytokinin in delaying salt stressed leaf senescence in *Arabidopsis* and tomato. *34th International Conference on Arabidopsis Research*, San Diego, CA (Poster)

Khanna RR, Hasannin O, Thennakoon M, Rashotte AM (2023) *trans*-Zeatin N-Glucosides bring unique changes to transcriptome profile of senescing leaves of *Arabidopsis thaliana* under salt-exposure. *Annual Meeting of the American Society of Plant Biologists*, Savannah, GA. (Poster)

Hasannin O, **Khanna RR**, Rashotte AM (2023) Time-Dependent Dynamics of Cytokinin Isoforms in Leaf Senescence: A Comparative Study between Base and Conjugated Forms. *Annual Meeting of the American Society of Plant Biologists*, Savannah, GA. (Poster)

Thennakoon M, **Khanna RR**, Hasannin O, Rashotte AM (2023) Response of Cytokinin Response Factors on heat stress in *Arabidopsis thaliana* and the role of cytokinin in delaying senescence. *Annual Meeting of the American Society of Plant Biologists*, Savannah, GA. (Poster)

Rashotte AM, **Khanna RR**, Hasannin O (2023) Multiple N-conjugated forms of Cytokinins are Involved in Delaying Natural and Abiotic Stress Senescence. *33rd International Conference on Arabidopsis Research*, Chiba, Japan. (Poster)

Rashotte AM, **Khanna RR**, Hasannin O (2022) Multiple N-conjugated forms of cytokinins are involved in delaying dark-induced and abiotic-stress senescence. *Annual Meeting of the American Society of Plant Biologists*, Portland, OR. (Poster)

Khanna RR, Nayak SR (2019) Positives of plant-microbe interaction: Promoting plant growth and response to abiotic stress. *Annual Meeting of the Indian Science Congress Association*, Phagwara, India. (Poster)

TEACHING

Graduate Teaching Assistant

Plant Biology (BIOL 3101)

Fall 2023 - present

- Sole Lab Instructor - Leading two weekly laboratory sections focused on cell processes, genetics, anatomy, diversity, and development based experiments
- Lab report assessment testing ~40 students on weekly progress

Genetics (BIOL 3001)

Spring 2025

- Leading two weekly laboratory sections focused on mendelian genetics, principles of inheritance, and electronic fruit fly experiments

Guest Lecture

Plant Biology (BIOL 3100)

Fall 2024

“Ethnobotany: Interaction of humans with plants” (Invited lecture)

- Leading a discussion based lecture on historical perspective of crop domestication, economic and medicinal crops, and centers of crop origin.

MENTORING

Undergraduate researchers

Shelby Crowell

Fall 2025 - present

Project: Characterizing etiolation responses in chloroplast-import mutants

Peyton Hass

Fall 2025 - present

Project: Characterizing temporal and spatial variability of cytokinin signaling in altered chloroplast-import mutants

Brianne Giglio

Fall 2024 – Spring 25

Project: Identifying effects of cytokinin treatment towards source-sink dynamics and sugar transport in *Arabidopsis thaliana*

Hannah Wurzbach

Spring 2024 – Fall 24

Project: Characterising chloroplast-related gene expression under altered cytokinin accumulation in *Arabidopsis thaliana*

Ashley Buchheit

Summer 2023 – Fall 24

Project: Genotyping and phenotypic characterization of sugar transport mutants in *Arabidopsis thaliana*

Lukas Dill

Spring 2023 - Summer

23

Project: Analysis of fluorescence based photosynthesis efficiency of Cytokinin-N-glucosides under stress induced leaf senescence

Lauren Weiner

Summer 2023 - Spring

24

Project: PCR based genotyping of cytokinin-signaling members as potential targets of cytokinin-N-glucosides

PEER REVIEWING

Plant Physiology and Biochemistry

4 research articles reviewed

2025

POSITIONS HELD/COMMITTEES

Graduate Student Experiences panel, Tribeta Biological Honor Society and Genetics Club, AU, AL, USA Oct 2025

Graduate Student Experiences panel, Department of Biological Sciences, AU, AL, USA Aug 2024

Graduate student represent in DEI graduate student recruitment committee, Department of Biological Sciences, AU, AL, USA Oct 2022 - Dec 24

Department of Biological Sciences Graduate Student Research Awards Committee May 2024

Senator - Department of Biological Sciences Graduate Students Association, AU, AL, USA Aug 2024 - July 25

Graduate Student Council Advocacy and Outreach Committee Aug 2024 - July 25

First Year Experience Mentor – Graduate Student Council, AU, AL, USA Aug 2023

Department of Botany Conference Organizing Committee - Undergraduate Student Member, Zakir Husain Delhi College, University of Delhi, India Apr 2016 - Jan 18

OUTREACH

Summer Science Institute: Detecting transgenic plants! Working with high school students to perform commonly used plant molecular biology techniques. AU, AL, USA

June 2022 - 25

Destination STEM: Fruit or Vegetable? Let's 'Scope' it Out!
Demonstrating microscopy and differentiating fruits from vegetables to 3-5th graders.
AU, AL, USA

Oct 2022 - 24

Getting Under The Surface: Fruit, Flowers, Fun event
Performing DNA isolation from fruits with 5-7th graders. AU, AL, USA

Oct 2022

ADDITIONAL CERTIFICATIONS

Distinguished Future Faculty, AU, AL, USA
(Preparing Future Faculty program)

May 2025

Qualified GATE- Life Sciences
National-level examination evaluating the subject-specific skills of candidates interested in nation-wide Master's and PhD programs, India

Mar 2020

Intellectual Property Rights: A Management Perspective (Online) - Indian Institute of Management, Bangalore, India

July - Oct 19

Bio-Informatics: Algorithms and Applications (Online) – Indian Institute of Technology, Madras, India

Jan - Apr 19

MEDIA COVERAGE

Southern Section – American Society of Plant Biologists Newsletter: Graduate Student Oral Presentation Award – 1st Place

Sept 2024

genestogenomes.org - Genetics Society of America: "Cracking the pear genome: how students helped unlock a new tool for the pear industry"

Mar 2024

Southern Section – American Society of Plant Biologists Newsletter: Henry Daniell International Scholar Award - Graduate Student

Oct 2023

SCIENTIFIC WORKSHOPS ORGANISED

National Conference on Challenges and Strategies to Improve Crop Productivity in Changing Environment: An Integrated Approach - Department of Botany, Zakir Husain Delhi College, University of Delhi, India. (member of organizing committee)

Jan 2018

National Conference on Pharmacognosy: Scope of Phytochemically Unexplored Medicinal Plants - Department of Botany, Zakir Husain Delhi College, University of Delhi, India. (member of organizing committee)

Jan 2017

April 2016

National Symposium on Biotechnology in Crop Improvement: Prospects and Challenges - Zakir Husain Delhi College, University of Delhi, India. (member of organizing committee)

SKILLS

Molecular and wet-lab techniques

DNA/RNA isolation, RT-PCR, agarose/polyacrylamide gel electrophoresis, image-based phenotyping, fluorescence microscopy, senescence assay, plasmid prep.

Bioinformatics

RNA-Seq analysis for DGE, WGCNA, transcriptome assembly.

R, bash, Adobe Illustrator.

REFERENCE

Aaron M. Rashotte

PhD Committee Chair

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Department of Biological Sciences

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Auburn, AL, USA

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