

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

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

RESEARCH

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

PUBLICATIONS ([Google Scholar](#) | Citations: 480)

Hasannin O, **Khanna RR**, Singh S, Petřík I, Strnad M, Novák O, Černý M, Rashotte AM (2026). Cytokinin senescence delay is shaped by receptor specificity and metabolic stability. *Plant Physiology*. DOI: <https://doi.org/10.1093/plphys/kiag392>

Thennakoon M, **Khanna RR**, Singh S, Rashotte AM (2026). *cis*-Zeatin is an Active Cytokinin that Mediates Gene Expression and Delays Leaf Senescence in Tomato Under Salt Stress. *Journal of Plant Growth Regulation*. DOI: <https://doi.org/10.1007/s00344-026-12102-5>

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>

*mentored undergraduate researcher

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>

BOOK CHAPTER

Johnston GA¹, Hasannin O¹, **Khanna RR**¹, Rashotte AM, Argueso CT (2026). Root Growth and Leaf Senescence Assays as Physiological Readouts of Cytokinin Response in *Arabidopsis thaliana*. In *Plant Hormones: Methods and Protocols* (pp. 247-260). New York, NY: Springer US. DOI: https://doi.org/10.1007/978-1-0716-5214-5_18

¹equally contributed first authors

FELLOWSHIPS/GRANTS

Alabama Agricultural Experiment Station, Professional Enhancement for Emerging Researchers (PEER)	Nov 2025
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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)

Narendra Singh Graduate Student Research Award, Department of Biological Sciences, AU	Sept 2023
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Project Title: *Understanding nutrient allocation and source-sink relationship in salt-stressed tomato*. (Awarded \$500 to pursue independent research project)

CSIR-UGC NET-Junior Research Fellowship - Life Sciences

Awarded \$24,705 to pursue PhD research in research institutes/universities in India (award not availed) *Feb 2021*

AWARDS

Biological Sciences' Outstanding Graduate Student Research Award (*Auburn, AL*) *Arp 2026*

Henry Daniell International Scholar Award (*Southern Section – American Society of Plant Biologists*) *Mar 2023*

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

3 Minute Thesis Competition (3MT) – 1st Place (College of Science and Mathematics, Auburn, AL) *Mar 2025*

University-wide M.Sc. Botany Rank 1 Holder (*Jamia Hamdard, India*) *Oct 2020*

Silver medal certification in “Bio-Informatics: Algorithms and Applications” (*Indian Institute of Technology Madras*) *Apr 2019*

TRAVEL AWARDS

Annual Meeting of the American Society of Plant Biologists, Ottawa, Canada *July 2026*

Graduate Student Council Travel Fellowship, Auburn University *July 2026*

Carolyn Bailey Endowed COSAM Graduate Award, Auburn University *June 2026*

COSAM Graduate Student Travel Award, Auburn University *June 2025*

International Conference on Arabidopsis Research, San Diego, CA *July 2024*

PRESENTATIONS

REGIONAL & 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)

*mentored undergraduate researchers

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 RR, 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 & INTERNATIONAL

Khanna RR, Singh S, Berka M, Crowell S*, Hass P*, Sanz-Saez A, Černý M, Rashotte AM (2026). Chloroplast-Import Factors Alter Leaf Senescence Progression and Mediate Cytokinin Action. *Annual Meeting of the American Society of Plant Biologists*, Ottawa, Canada. (Oral presentation and Poster)
*mentored undergraduate researchers

Rashotte AM, Hasannin O, **Khanna RR**, Thennakoon M, Petřík I, Strnad M, Novák O, Černý M (2026). Roles of Different Cytokinins in Delaying Leaf Senescence. *Annual Meeting of the American Society of Plant Biologists*, Ottawa, Canada. (Poster)

Khanna RR, Rashotte AM (2026) Cytokinin delays salt accelerated leaf senescence and maintains chloroplast function in *Arabidopsis thaliana*. *Salt and Water Stress in Plants Gordon Research Conference*, Les Diablerets, Switzerland. (Poster)

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)
*mentored undergraduate researchers

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)

*mentored undergraduate researchers

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 3100)

Fall 2023 -
present

Sole Lab Instructor - Leading two weekly laboratory sections focused on cell processes, genetics, anatomy, diversity, and development based experiments

Principles of Biology (BIOL 1021)

Summer 2026

Teaching online laboratory sections covering scientific data collection, biochemistry, physiology, and evolution

Spring 2026

Organismal Biology (BIOL 1031)

Teaching three weekly laboratory sections covering biological classification, bacteria, plant, and animal kingdom

Spring 2025

Genetics (BIOL 3001)

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

Guest Lecture

Plant Biology (BIOL 3100) - "Ethnobotany: Interaction of humans with plants" (invited lecture)

Fall 2024

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

MENTORING

Undergraduate researchers

Shelby Crowell

Fall 2025 - present

Project: Characterizing etiolation responses in chloroplast-import mutants

Awards: Biological Sciences' Outstanding Research Award (Undergraduate Student) *April 2026*

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*

Current position: MS (Non-Thesis, Biological Sciences Pre-Professional), AU

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*

Current position: Research Assistant I, Department of Entomology and Plant Pathology, AU

Lukas Dill

Spring 2023 - Summer 23

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

Current position: Administrative Support Associate, Department of Mathematics and Statistics, AU

Lauren Weiner

Project: PCR based genotyping of cytokinin-signaling members as potential targets of cytokinin-N-glucosides
Current position: Enrolled in Dental School

Summer 2023 - Spring 24

PEER REVIEWING

Scientific Reports

1 research article reviewed

2026

Frontiers in Plant Science

1 research article reviewed

2026

Plant Physiology and Biochemistry

6 research articles reviewed

2025-26

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

Spring into Science – AURORA: Flowers, Fruits, and Vegetables Apr 2026

Demonstrating flower, fruit, and vegetable differences amongst common household produce to 3rd graders or younger. AU, AL, USA

Summer Science Institute: Detecting transgenic plants!

June 2022 - 25

Working with high school students to perform commonly used plant molecular biology techniques. AU, AL, USA

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

Preparing Future Faculty Program, AU, AL, USA

May 2025

Graduate Aptitude Test in Engineering (GATE)- Life Sciences

Mar 2020

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

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

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

April 2016

SKILLS

Molecular and wet-lab techniques

RT-PCR, Gateway and Goldengate cloning, CRISPR, gel electrophoresis, image-based phenotyping, fluorescence microscopy.

Bioinformatics

RNA-Seq analysis for DGE, WGCNA, transcriptome assembly.
R, bash, Adobe Illustrator.

REFERENCES

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