SWATI TYAGI

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Links

- https://www.researchgate.net/profile/Swati-Tyagi-2
- https://scholar.google.com/citations?user=bEB7qXQAAAAJ&hl=en&oi=ao

Professional Summary

- Enthusiastic plant researcher who is eager to contribute to team success through smart work, attention to detail and excellent organizational skills. Have clear understanding of plant biology as well as various genomics, transcriptomics and molecular biology techniques and training in big data analysis, using R and Unix platform.
- Motivated to learn, grow and excel in plant agriculture sector by seeking and maintaining a full-time position that offers professional challenges utilizing interpersonal skills, excellent time management and problem-solving skills. Offering excellent communication and good judgment.
- Organized and dependable candidate successful at managing multiple priorities with a positive attitude. Willingness to take on added responsibilities to meet team goals.

Skills

- Project implementation processes
- Project planning
- Managing multiple projects
- Budget projections
- Project reporting
- Project development and life cycle
- On time project delivery
- Experience in R, Unix, Big data analysis
- Molecular biology approaches PCR, DNA RNA extraction
- MiniOn (Oxforf Nanopore Sequencing)
- Whole genome analysis, Transcriptomcs, Metagenomics, QTL analysis, GWAS, Haplotype analysis etc

Work History

1. **Scientist, 10/2024- till date**

CSIR-Central Institute for Medicinal and Aromatic Plants (CIMAP), Lucknow, India

- Collaborating within cross-functional team of researchers, academic staff, doctoral students, research assistant and technical assistants to achieve center goals
- MAP Genomics and Physiology analysis

2. **Project Scientist I**, 07/2020 to 10/2024

IRRI-South Asia Regional Centre (ISARC) – VARANASI, India

Research and Development

- Collaborating within cross-functional team of researchers, academic staff, doctoral students,

research assistant and technical assistants to achieve center goals
- Responsible for haplotype diversity, GWAS, QTL mapping, trait mapping etc.
- Assisted in "Establishment of high-end cloud computation facility" at ISARC. India/
- Associated with whole genome re-sequencing of 300 rice genomes
- Research data analysis using SPSS and R based tools
- Developing professional but user friendly learning opportunities for breeders in plants genomics, genomic selection and molecular trait mapping

Project life-cycle management

- Supervising junior staff, technical staff in assigned projects and other field related activities.
- Leading workshop and trainings with team leveraging expertise in genomics, especially QTL mapping, GWAS, Haplotype analysis
- Preparing critical and key decision making reports for project performance monitoring, technical report preparation and peer review.

2. **Editorial Consultant**, 03/2020 to 06/2020

ICMR-National Institute of Research for Tribal Health – Jabalpur, India

- Created detailed roadmaps of action to fulfill the project goal, budgeting and planning.
- Took detailed notes and kept records of journal issues, article received, review report etc.,
- Coordinated journal content and topics with editor of chief.
- Proofread, edited, and evaluated final copy of research manuscripts, verified content aligned with established guidelines.
- Worked with graphic artists, post-production team members and other specialists to produce captivating and successful content.

3. **Postdoctoral Research Fellow**, 02/2019 to 02/2020

National Institute of Agriculture Science, Research Development Administration – Jeonju-si, Republic of Korea

- Collaborated with multidisciplinary team (bioinformaticians, breeders) members to accomplish the analysis of Chrysanthemum, Aster and Broccoli genome.
- Actively participated and coordinated in research conception, design and execution to address the molecular phylogeny of Chrysanthemum and Aster plants.
- Conducted research guided by faculty supervisor in accordance with institutional and federal guidelines.
- Wrote and published peer-reviewed articles concerning findings and highlighted possible applications for findings.
- Attended research seminars and collegiate meetings to discover and discuss new technologies and research.
- Maintained accurate records of research findings and provided statistical analysis of data results.

4. **Doctoral Research Fellow**, 08/2015 to 08/2018

Department of Biotechnology, Jeonbuk National University – Iksan-si, Republic of Korea

- Followed best practices and scientific protocol to reach defensible conclusions based on solid evidence.
- Conducted experiment, collected data and observed trends while conducting the microbial volatile compound analysis and their impact on plant, bacteria and fungi
- Recorded data from research to allow for accurate analysis.
- Wrote papers, cohesively tying together studies conducted by department and professor.

- Graded and supported professor in assessing undergraduate coursework.
- Used genomics and transcriptomic approaches to investigate the effect of microbial volatile compound on bacteria and fungi in depth.
- Computed complex statistical analyses and interpreted data using SPSS and Prism.
- Supported and supervised undergraduate and master students in Molecular biology, theory and practical class
- Analyzed data to determine which theory to select for further research.

5. **Researcher** , 03/2015 to 08/2015

Department of Biotechnology, Jeonbuk National University – Iksan -si, Republic of Korea

- Streamlined research processes to meet tight deadlines for multiple projects.
- Collaborated with leadership team to identify relevant questions and determine best methods of Polymyxa graminis culture in pure form.
- Performed research into study topics to increase knowledge and to provide valuable contributions.

6. **Senior Research Fellow**, 10/2014 to 02/2015

Department of plant pathology, Sardar Vallabhbhai Patel University of Agriculture and Technology – Meerut, India

- Maintained high levels of confidentiality to protect data quality and project research.
- Isolated the biocontrol agents and investigated the effect of them on chickpea
- Presented talks at national / international conferences, speaking about research topics of interest and related subjects.

7. **Research Assistant**, 12/2012 to 10/2014

Department of Biotechnology, Sardar Vallabhbhai Patel University of Agriculture and Technology – Meerut, India

- Gathered, arranged and corrected research data to create representative graphs and charts highlighting results for presentations.
- Validated incoming data to check information accuracy and integrity while independently locating and correcting concerns.
- Performed statistical, qualitative and quantitative analysis.
- Organized participant-informed consent waivers and research scope documentation.
- Developed fact sheets, graphs and tables to analyze and summarize survey data.

Education

Ph.D.: Biotechnology, 08/2018
Jeonbuk National University - Iksan -si, Republic Of Korea

- Received BK21 plus scholarship for doctoral studies

Master of Science: Microbiology, 06/2012
Kurukshetra University - Kurukshetra

Bachelor of Science: Biotechnology, 06/2010
Kurukshetra University - Kurukshetra, India

Languages

Hindi, English, Korean (Hangul): Native language

English: C2

Proficient

Hindi: C2

Proficient

Korean: A1

Beginner

Awards and accolades

- Participated in ''IRRI Rice Science Hackathon 2020'' and emerged as "**2nd runner up**", held and organized by International Rice Research Institute, Manilla, Philippines, 17 August 2020.
- Participated in National conference on ''Identification, convergence, implementation, & extension of researchable issues for sustainable development (ICIESSD)'' and presented oral and poster presentation entitled ''Dimethyl Disulfide adversely affects the physiology and transcriptomic response of Pseudomonas syringae pv. tomato DC3000'' and awarded "**International Fellow Award**", held at Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut India, organized by New age mobilization Society, New Delhi in collaboration with SVPU&T, Meerut, 20-21 June 2019.
- Participated in International Congress on "Agriculture, Food Engineering and Environmental Sciences- Sustainable Approaches" and presented poster and oral presentation entitled "Enzymatic saccharification of bagasse pith for production of bioethanol by using strain of *Saccharomyces cereviase*" awarded Best Poster award and secured **3rd rank in oral presentation** held on 29- 30th March 2014 organized by "Krishi Sanskriti" Venue: JNU, New Delhi

Publications

SCI(E) Research articles

1. **Tyagi, S.;** Chan, C. J.; Lee, K.-J. *Dimethyl disulfide adversely affects the physiology and transcriptomic response of Pseudomonas syringae pv. tomato DC3000*. *Int. J. Mol. Sci.* **2023**, *under revision*.
2. **Tyagi, S.;** Kabade, P. G.; Gnanapragasam, N.; Singh, U. M.; Gurjar, A. K. S.; Rai, A.; Sinha, P.; Kumar, A.; Singh, V. K. *Codon usage provide insights into the adaptation of rice genes under stress condition*. *Int. J. Mol. Sci.* **2023**, *24*, 1098, IF-6.2.
3. Saharan, B. S.; **Tyagi, S**.; Kumar, R.; Om, H.; Singh, B.; Duhan, J. S. *Application of Jeevamrit improves soil properties in Zero Budget Natural Farming fields*. *Agriculture* **2023**, *13*, 196, IF-3.4.
4. **Tyagi, S.;** Lee, H.; Kim, H.; Lee, K.-J.; Chae, J.-C. *Complete genome of Chryseobacterium pectinilyticum G2-70 isolated from effluent of a livestock manure treatment plant*. *Korean J. Microbiol.* **2020**, *56*(4), 401–403, DOI: 10.7845/kjm.2020.0090, IF-0.33.
5. **Tyagi, S.;** Jung, J.-A.; Kim, J. S.; Kwon, S.-J.; Won, S. Y. *Complete chloroplast genome of Chrysanthemum boreale and its comparison with related species*. *PeerJ* **2020**, *8*, e9448, IF-3.06.
6. **Tyagi, S.;** Jung, J.-A.; Kim, J. S.; Kwon, S.-J.; Won, S. Y. *Comparative analysis of the complete chloroplast genome of mainland Aster spathulifolius and other Aster species*. *Plants* **2020**, *9*, 568, DOI: 10.3390/plants9050568, IF-4.67.
7. **Tyagi, S.;** Lee, K.-J.; Chae, J.-C.; Shukla, P. *Dimethyl disulfide exerts antifungal activity against Sclerotinia minor by damaging its membrane and induces systemic resistance in host plants*. *Sci. Rep.* **2020**, *10*(1), 6547, DOI: 10.1038/s41598-020-63382-0, IF-4.99.

8. **Tyagi, S.;** Jung, J.-A.; Kim, J. S.; Kwon, S.-J.; Won, S. Y. *The complete chloroplast genome of an economic plant, Chrysanthemum morifolium 'Baekma'*. *Mitochondria Part B* **2019**, *4*, 3133–3134, IF-0.61.
9. **Tyagi, S.;** Kim, K.; Min, C.; Lee, K.-J. *Volatile dimethyl disulfide modulates root system architecture of Arabidopsis via canonical auxin signaling*. *Environ. Sustain.* **2019**, *2*, 211, DOI: 10.1007/s42398-019-00060-6.
10. **Tyagi, S.;** Sultana, R.; Ju, H.-J.; Lee, W.-H.; Kim, K.; Lee, B.; Lee, K.-J. *The development of simple methods for the maintenance and quantification of *Polymyxa graminis*. *Indian J. Microbiol.* **2016**, *56*(4), DOI: 10.1007/s12088-016-0608-2, IF-3.73.

Review articles

1. Chaudhary, A.; Saharan, B. S.; Tyagi, S.; Goyal, C.; Mandal, N. K.; Kumar, R.; Duhan, J. S.; Badoni, P. Probiotics as Potential Therapeutics for Managing COVID-19: Mechanisms and Implications. Microbiol. Res. J. Int. 2024, 34(9), 48-57.
2. Tyagi, S.; Dhiman, V. K.; Dhiman, V. K.; Pandey, H.; Singh, D.; Sharma, A.; Sharma, P.; Kumar, R.; Lee, K.-J.; Saharan, B. S. *Plant Defense Strategies and Biomarkers against Heavy Metal-Induced Stress: A Comprehensive Review*. *ACS Agric. Sci. Technol.* **2024**, *4*(2), 129–143.
3. Tyagi, S.; Dhiman, V. K.; Sharma, A.; Dhiman, V. K.; Pandey, H.; Singh, D.; Sharma, P.; Kumar, R.; Lee, K.-J.; Saharan, B. S. Plant Defense Strategies and Biomarkers against Heavy Metal-Induced Stress: A Comprehensive Review. J. Agric. Food Chem. 2023, 71, 6337–6353, DOI: 10.1021/acsagscitech.3c00271.
4. Saharan, B. S.; Kamal, N.; Badoni, P.; Kumar, R.; Saini, M.; Kumar, D.; Sharma, D.; Tyagi, S.; Ranga, P.; Parshad, J.; Goyal, C.; Kumar, R.; Nehra, M.; Seth, C. S.; Duhan, J. S.; Mandal, N. K. Biopolymer and Polymer Precursor Production by Microorganisms: Applications and Future Prospects. Microorganisms 2023, 11, 145, DOI: 10.3390/microorganisms11010145.
5. Kar, S.; Srivastava, A.; Tyagi, S.; Shukla, P. Protein Engineering in Cyanobacterial Biotechnology: Tools and Recent Updates. Curr. Protein Pept. Sci. 2023, 24(2), 204–216, DOI: 10.2174/1389203724666230822100104.
6. Goyal, C.; Dhyani, P.; Rai, D. C.; Tyagi, S.; Dhull, S. B.; Kumar, P.; Duhan, J. S.; Saharan, B. S. Emerging Trends and Advancements in the Processing of Dairy Whey for Sustainable Biorefining. J. Food Process. Preserv. 2023, 47, 1–24, DOI: 10.1111/jfpp.17190.
7. Golgeri, D. B.; Mulla, S. I.; Bagewadi, Z. K.; Tyagi, S.; Hu, A.; Sharma, S.; Bilal, M.; Bharagava, R. N.; Ferreira, L. F. R.; Gurumurthy, D. M.; Nadda, A. K. A systematic review on potential microbial carbohydrases: current and future perspectives. Crit. Rev. Food Sci. Nutr. 2022, doi: 10.1080/10408398.2022.2106545, IF-12.26.
8. Tyagi, S.; Kumar, R.; Kumar, V.; Won, S. Y.; Shukla, P. Developing plant disease resistance through genomic engineering. GM Crops Food 2020, 12(1), 125–144, DOI: 10.1080/21645698.2020.1831729, IF-3.44.
9. Tyagi, S.; Kumar, R.; Das, A.; Won, S. Y.; Shukla, P. CRISPR-Cas9 system: a genome-editing tool with endless possibilities. J. Biotechnol. 2020, 319, IF-3.5.
10. Tyagi, S.; Mulla, S. I.; Lee, K.-J.; Chae, J.-C.; Shukla, P. VOCs-mediated hormonal signaling and crosstalk with plant growth promoting microbes. Crit. Rev. Biotechnol. 2018, DOI: 10.1080/07388551.2018.1472551, IF-9.06.

Conference proceedings (full article)

1. Tyagi, S.; Javeria, S.; Baliyan, N.; Thakur, V. V. *Enzymatic Saccharification of Bagasse Pith for Bioethanol Production by Using Strain of Saccharomyces cerevisiae*; *Int. J. Genet. Eng. Biotechnol.* Krishi Sanskriti: 2023.

Book Chapters

1. Tyagi, S.; Kumar, R.; Lee, K.-J. Microbial volatiles as new players for sustainable agriculture. In Microbial Bioprocesses; Shukla, P., Ed.; Elsevier: ISBN 9780323953320, 2023; pp 1–20.
2. Tyagi, S.; Kumar, R.; Nadda, A. K.; Saharan, B. Plant-microbe interaction for sustainable agriculture. In Plant-Microbial Interactions and Smart Agricultural Biotechnology: Introduction; Tyagi, S.; Kumar, R.; Nadda, A. K.; Saharan, B., Eds.; CRC Press, Taylor & Francis Group: Boca Raton, FL, 2021.
3. Khare, E.; Tyagi, S. Language of Plant-Microbe-Microbe Interactions in Rhizosphere Ecosystems. In Molecular Aspects of Plant Beneficial Microbes in Agriculture; Sharma, V.; Salwan, R.; Tawfeeq Al-Ani, L. K., Eds.; Elsevier: Cambridge, MA, 2020.
4. Tyagi, S.; Kumar, V.; Naresh, R. K. Nanotechnology. In Precision Farming: Geoinformatics and Nanotechnology; Setia, R. K.; Dhaliwal, S. S.; Naresh, R. K.; Vivek; Kumar, V.; Tyagi, S., Eds.; Jaya Publishing House: New Delhi, 2020; ISBN 978-93-88668.
5. Tyagi, S.; Kumar, V.; Naresh, R. K. Precision Farming: Geoinformatics and Nanotechnology; Setia, R. K.; Dhaliwal, S. S.; Naresh, R. K.; Vivek; Kumar, V.; Tyagi, S., Eds.; Jaya Publishing House: New Delhi, 2020; ISBN 978-93-88668.
6. Tyagi, S.; Mulla, S. I.; Lee, K.-J.; Chae, J.-C.; Garg, N. Production of bioethanol from sugarcane bagasse: Current Approaches and Perspectives. In Applied Microbiology and Bioengineering: An Interdisciplinary Approach; Shukla, P., Ed.; Elsevier: ISBN 9780128154076, 2019; pp 21–42.
7. Mulla, S. I.; Bharagava, R. N.; Belhaj, D.; Ameen, F.; Saratale, G. D.; Gupta, S. K.; Tyagi, S.; Patil, K. S.; Hu, A. A review on micropollutants removal by microalgae. In Application of Microalgae in Wastewater Treatment: Volume 1: Domestic and Industrial Wastewater Treatment; Gupta, S. K.; Bux, F., Eds.; Springer International: 2019.

Books / Edited books:

1. Tyagi, S.; Kumar, R.; Nadda, A.; Saharan, B., Eds. Plant-Microbial Interactions and Smart Agricultural Biotechnology: Introduction; Proposal submitted and under review with CRC Press, Taylor & Francis Group: 2021.
2. Dwivedi, A.; Kumar, A.; Tyagi, S.; Yadav, R. S. The Soil Health: A Study of Agro-Horticulture Science and Environment Protection; Guru Prem, Ed.; Jaya Publishing House: New Delhi, 2019; ISBN 978-93-88668.
3. Setia, R. K.; Dhaliwal, S. S.; Naresh, R. K.; Kumar, V.; Tyagi, S., Eds. Precision Farming: Geoinformatics and Nanotechnology; Jaya Publishing House: New Delhi, 2020; ISBN 978-93-88668.

Conference Presentations (oral)

1. Tyagi, S.; Gurjar, A. K. S.; Rai, D.; Singh, A. K.; Sinha, P.; Singh, U. M.; Singh, V. K. Haplotype Diversity Analysis of Genes Controlling Economically Important Traits in Rice; *Int. Conf. "Exploring New Horizons in Biotechnology (ENB-2023) & Mini Symposium on "Recent Advances in Biotechnological Innovations (RABi-2023)"; School of Biotechnology, Institute of Science, Banaras Hindu University (BHU), Varanasi, UP, India, in collaboration with Institute of Eminence (IoE), BHU, Varanasi, India, 2023.
2. Tyagi, S.; Kim, J. S.; Jung, J. A.; Won, S. Y. Complete Chloroplast Genome Sequence of Chrysanthemum cinerariaefolium: Genome Features, Comparative Analysis, and Phylogenetic Relationships; KSBS & SABRAO International Conference on Plant Breeding for Sustainable Development, Gwangju, Korea, 2019.

3. Tyagi, S.; Lee, K. J.; Chae, J. C. Dimethyl Disulfide – A Microbial Volatile Compound Analogue Adversely Affects the Physiology and Ultra-Structure of Pseudomonas syringae and Induced Resistance in Tomato; KMB 2018: 45th Annual Meeting and International Symposium, Yeosu, Korea, June 27–29, 2018.
4. Tyagi, S.; Paudel, R. Effect of Different pH on the Growth and Sporulation of Fusarium oxysporum: The Causal Organism of Wilt Disease of Tomato; Int. Congr. "Agriculture, Forestry, Horticulture, Aquaculture, Animal Sciences, Food Technology, Biodiversity and Climate Change Sustainable Approaches" (AFHAFBC-2014), JNU, New Delhi, India, 2014.

Invited talks.

1. "Chloroplast genomics: Recent trends and applications" delivered a lecture at "Global Virtual Summit on Biotechnology and Bioengineering". Organized by Biotech Meetings on November 18th & 19th, 2020.
2. "Microbial volatile organic compounds: Invisible players for sustainable agriculture" Delivered a keynote lecture at "A Virtual International Conference on Environmental Sustainability and Smart Agriculture" Organized by Centre of Excellence in Sustainable Technologies for Rural Development (CESTRD), Department of Biotechnology and Bioinformatics, Jaypee University of Information, Technology, Waknaghat, Solan, INDIA on 18th and 19th September 2020.
3. "Recent trends in chloroplast genome research and its application" delivered a keynote lecture at Department of biochemistry, Acharya Narendradev University of Agriculture and Technology, Kumarganj Ayodhya on 25 January 2020, India
4. "Alternates to chemical pesticides for sustainable agriculture" presented at 3rd International conference on (GIASE-2019), organized by Agricultural technology development society, Ghaziabad, India in collaboration with Tribhuvan University, Kathmandu, Nepal on 16-18 June 2019, Nepal.
5. "Microbial Volatile compounds: new players in agriculture," presented at International conference on microbes for biotechnological innovations, organized by Department of Microbiology, MDU, Rohtak and Association of Microbiologist of India on December 7, 2018, India.

Declaration

I confirm that the information provided by me is true to the best of my knowledge and belief.

Place: Varanasi
Date: 04.12.24

(Dr. Swati Tyagi)