

# POOJA SINGH

Research Fellow,  
School of Science  
Monash University,  
Bandar Sunway, Subang Jaya, Selangor  
MALAYSIA

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## Professional Overview

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Plant Biologist with a research background focused on plant-microbe interaction. Accomplished in generating novel concepts and assay development, seeking a Scientist position that offers an immediate challenge, career opportunity and advancement.

## Research Skills

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- Applied Microbiological Techniques
- Plant Pathology: Microbial inoculation studies on plants, morphophysiological and biochemical analysis of plants
- Molecular Biology: Cloning, RT-PCR
- Biochemistry: Protein purification, SDS PAGE and 2D analysis, western blotting and enzyme assays
- Plant Tissue Culture
- Scientific writing and data analysis: SOPs, manuscript preparations, grant proposal (National and International), proficient with data analysis using common software SPSS, PRISM, MEGA.

## Appointments/Research Experience

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<b>Research Fellow</b> Jun 2021-present	School of Science, Monash University, Malaysia
<b>Research Fellow</b> Jan 2020-May 2021	Centre for Research in Biotechnology for Agriculture (CEBAR), University of Malaya, Kuala Lumpur, Malaysia
<b>Post-Doctoral Research Fellow</b> Dec 2015- Jun 2017	Centre for Research in Biotechnology for Agriculture (CEBAR), University of Malaya, Kuala Lumpur, Malaysia
Apr 2018-Oct 2019	Centre for Research in Biotechnology for Agriculture (CEBAR), University of Malaya, Kuala Lumpur, Malaysia
<b>Research Assistant</b> Jun 2015- Dec 2015	Centre for Research in Biotechnology for Agriculture (CEBAR), University of Malaya, Kuala Lumpur, Malaysia
<b>Junior Research Fellow</b> Sep 2012-May 2014	Department of Science and Technology, Govt. of India, in VIT University, Vellore, Tamil Nadu, India
<b>Research Associate</b> Mar 2011- Sep 2012	VIT University, Vellore, Tamil Nadu, India

## Research Projects

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- *Principal Investigator* - Novel microplastic degrading bioformulations using bacteria from Malaysian mangroves, Monash University Internal Grant (2021-2024)
- *Co-researcher* - Transcriptome Analysis and Gene Functional Studies of Banana and Fingerroot Ginger, Others MOHE-Top 100 (Funded by Ministry of Higher Education, Malaysia). (2018-2020)
- *Co-researcher* - Analysis of banana abiotic stress-related genes ZPF15, ARF6 and CRK1, RU2020 Geran (National)
- *Co-researcher* - Ultraviolet (UV-B and UV-C) Mediated Protection in Tomato Against Fungal Pathogen *Sclerotinia sclerotiorum* as a Green Alternative to Toxic Pesticides. FRGS

## Accomplishments

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- 2020: Isolated novel halotolerant rhizobacteria and endophytic bacterial strains from Malaysian mangrove roots (manuscript under preparation).
- 2018: Introduced the concept of feedback inhibition loop of miRNA-Transcription Factor in response to salt stress in *Musa acuminata* cv. Berangan (manuscript published).
- 2013: First report on the concept of homotypic clusters in rice, publication catalogued in IRRI, Philippines (manuscript published; best poster award).

## Education

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- 2011 - 2015: **Doctor of Philosophy, Biotechnology**  
Vellore Institute of Technology, Vellore, India  
*Supervisor: Prof. Subramanian Babu, Dean, VAIAL, Vellore, India*  
*Thesis:* Evaluation of the role of Osmyb4 transcription factor in rice sheath blight disease resistance  
*Ph.D. Fellowship:* Department of Science and Technology, Govt. of India
- 2009 - 2010: **Masters of Philosophy, Biotechnology**  
Bharathiar University, Coimbatore, India
- 2007 - 2009: **Masters of Science (Biotechnology)**  
R.T.M Nagpur University, Maharashtra, India
- 2004 - 2007: **Bachelors of Science (Microbiology)**  
Guru Ghasidas University, Chhatisgarh, India

## Publications

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### Summary (as on 10.06.2021 google scholar):

Journal papers	: 21
Total citations	: 193
h-index	: 7
i-10 index	: 7

### Papers Published (as corresponding author)

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1. **Singh, P., Mazumdar, P., Harikrishna, J. A., & Babu, S.** (2019). Sheath blight of rice: a review and identification of priorities for future research. *Planta*, 1-21.

## Papers Published (as first author and co-author)

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1. Mazumdar, P., **Singh, P.**, Kethiravan, D., Ramathani, I. (2021). Late blight in Tomato: An insight into the pathogenesis of aggressive pathogen *Phytophthora infestans*. *Planta*, 253(6), 1-24.
2. Nair, I., Mazumdar, P., **Singh, P.** & Harikrishna, J.A. (2021). Increasing the ratio of blue to red light improves biomass, total antioxidant content and total phenol content of *Hydrocotyle bonariensis* (Largeleaf pennywort). *Russian Journal of Plant Physiology* 68 (2).
3. Mazumdar, P., Lau, S. E., **Singh, P.**, Takhtgahi, H. M., & Harikrishna, J. A. (2019). Impact of sea-salt on morpho-physiological and biochemical responses in banana (*Musa acuminata* cv. Berangan). *Physiology and Molecular Biology of Plants*, 25(3), 713-726.
4. Gudimella, R., **Singh, P.**, Mazumdar, P., Wong, G. R., Lau, S. E., & Harikrishna, J. A. (2018). Genome-wide regulatory network mapping of miRNA and transcription factors in banana roots. *Tropical Plant Biology*, 11(3-4), 141-153.
5. Karim, R., Tan, Y. S., **Singh, P.**, Khalid, N., & Harikrishna, J. A. (2018). Expression and DNA methylation of SERK, BBM, LEC2 and WUS genes in in vitro cultures of *Boesenbergia rotunda* (L.) Mansf. *Physiology and Molecular Biology of Plants*, 24(5), 741-751.
6. Karim, R., Tan, Y. S., **Singh, P.**, Nuruzzaman, M., Khalid, N., & Harikrishna, J. A. (2018). Expression and DNA methylation of MET1, CMT3 and DRM2 during in vitro culture of *Boesenbergia rotunda* (L.) Mansf. *Philippine Agricultural Scientist (Philippines)*.
7. Mazumdar, P., **Singh, P.**, Babu, S., Siva, R., & Harikrishna, J. A. (2018). An update on biological advancement of *Jatropha curcas* L.: new insight and challenges. *Renewable and Sustainable Energy Reviews*, 91, 903-917.
8. Sankari, M., Rao, P.R., Hemachandran, H., Pullela, P.K., Tayubi, I.A., Subramanian, B., Gothandam, K.M., **Singh, P.** and Ramamoorthy, S. (2018). Prospects and progress in the production of valuable carotenoids: Insights from metabolic engineering, synthetic biology, and computational approaches. *Journal of biotechnology*, 266, pp.89-101.
9. Mazumdar, P., Lau, S. E., Wee, W. Y., **Singh, P.**, & Harikrishna, J. A. (2017). Genome-wide analysis of the CCCH zinc-finger gene family in banana (*Musa acuminata*): An insight into motif and gene structure arrangement, evolution and salt stress responses. *Tropical Plant Biology*, 10(4), 177-193.
10. **Singh, P.**, & Subramanian, B. (2017). Responses of rice to *Rhizoctonia solani* and its toxic metabolite in relation to expression of Osmyb4 transcription factor. *Plant Protection Science*, 53(4), 208-215.
11. Priya, R., Sneha, P., Rivera Madrid, R., Doss, C. G. P., **Singh, P.**, & Siva, R. (2017). Molecular modeling and dynamic simulation of *Arabidopsis thaliana* carotenoid cleavage dioxygenase gene: a comparison with *Bixa orellana* and *Crocus sativus*. *Journal of cellular biochemistry*, 118(9), 2712-2721.
12. **Singh, P.**, Sweta, K., Mohanapriya, A., Sudandiradoss, C., Siva, R., Gothandam, K. M., & Babu, S. (2015). Homotypic clustering of OsMYB4 binding site motifs in promoters of the rice genome and cellular-level implications on sheath blight disease resistance. *Gene*, 561(2), 209-218.
13. Bawankar, R., **Singh, P.**, and S. Babu (2014) Bioactive compounds and medicinal properties of *Aloe vera* L.: An update. *Journal of Plant Sciences*. 2(3): 102-107.
14. **Singh, P.**, Siva, R., Gothandam, K. M., & Babu, S. (2013). Naturally existing levels of Osmyb4 gene expression in rice cultivars correlate with their reaction to fungal and bacterial pathogens. *Journal of Phytopathology*, 161(10), 730-734.
15. Bawankar, R., Deepthi, V.C., **Singh, P.**, Subashkumar, R., and S. Babu (2013) Evaluation of bioactive potential of an *Aloe vera* sterol extract. *Phytotherapy Research*. 27: 864-868.
16. Deepthi, V., Bawankar, R., **Singh, P.**, Subashkumar, R., Vivekanandhan, G., Siva, R. and S. Babu. 2013. Differential response of cultivated rice to pathogen challenge and abiotic stresses with reference to cationic peroxidase. *Archives of Phytopathology and Plant Protection*, 47: 1390-1399.
17. **Singh, P.**, Bawankar, R., Gothandam, K.M., Subashkumar, R., Vivekanandhan, G., Tha. Thayumanavan and S. Babu (2012). 'Master switch' genes for disease resistance in rice: lessons learnt and lessons to learn. *Research in Biotechnology*, 3(1): 70-75.
18. **Singh, P.**, Bawankar, R., and S. Babu (2012). Targeting the transcription factor *Osmyb4* for disease resistance in rice. *Journal of Biotechnology and Biomaterials* ISSN: 2155-952X JB TBM, an open access journal. Volume 2 Issue 6 – 244.

19. Bawankar, R., **Singh, P.**, Subashkumar, R., Vivekanandhan, G., Tha. Thayumanavan and S. Babu. (2012) Comparative analysis and partial functional annotation of phytosterol desaturase gene in plants of different botanical families. *Research in Plant Biology*, 2(1); 41-49.
20. Bawankar, R., **Singh, P.**, and S. Babu (2012) Stigma sterol: An important therapeutic product and its synthesis. *Journal of Biotechnology and Biomaterials* ISSN: 2155-952X JB TBM, an open access journal. Volume 2 Issue 6 – 252.

## Papers in preparation (as co-author)

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1. Kaleh, A. M., **Singh, P.**, Mazumdar, P. and Harikrishna, J.A. (2021). Identification and functional characterization of mangrove PGPR in response to salinity in *Musa acuminata* cv. Berangan. Target journal: Systematic and Applied Microbiology.
2. **Singh, P.**, Kaleh, A.M., Mazumdar, P., and Harikrishna, J.A. (2021). Validation of WRKY transcription factor in response to *Fusarium oxysporum* f. sp. cubense tropical race 4 infection in *Musa acuminata* cv. Berangan. Target journal: Plant and soil.

## Invited popular magazine article

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- 2020: **Pooja Singh**, Purabi Mazumdar, Jennifer Ann Harikrishna and C. B. Sruthi Laxmi. 02.01.21. Sheath blight of rice: Challenges and Management. Article in Atlas of Science.
- 2018: Purabi Mazumdar, Jennifer Ann Harikrishna and **Pooja Singh**. 19.07.2018. *Jatropha curcas*: A renewed promise to meet sustainable future energy needs. Article in Science Trends.

## Invited Book Chapters

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1. **Pooja Singh** and Purabi Mazumdar. Microbial Pesticides: Trends, Scope and Adoption for Plant and Soil Improvement. In *Advances in Bio-inoculants: Biopesticides Volume 2*. Elsevier, Cambridge, USA 2020 (Submitted)
2. Lau Su-Ee, Purabi Mazumdar, **Pooja Singh** and Jennifer Ann Harikrishna. Use of dsRNA in Crop Improvement. In *Crop Improvement 2017* (pp. 217-252). Springer, Cham.

## Invited Talks

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- 2020: Microbial Pesticides: Adoption, Scope and Market Trends, Webinar, 29-05-2020, VIT School of Agricultural Innovations and Advanced Learning (VAIAL), (International).
- 2018: Microplastic in Agriculture: A reason to worry? Current Topics in Genetics and Molecular Biology (Course: SHEN3174/SIL3015), 2018-10-19, CEBAR, UM, (University).

## Presentations (Oral/Posters)

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- 2019: International Conference on Biochemistry, Molecular Biology and Biotechnology. Genome-Wide Regulatory Network Mapping of miRNA and Transcription Factors in Banana Roots (Poster)
- 2018: University Malaya Research Carnival Better Bananas: Decoding the Genome (Poster)
- 2016: International Conference on Molecular Biology and Biotechnology in conjunction with the 23rd MSMBB Scientific Meeting, Kuala Lumpur. Evaluation of the role of Osmyb4 transcription factor in rice sheath blight disease resistance (Oral)
- 2012: Indian Science Congress Association, Coimbatore Chapter. New biotechnological approach for developing sheath blight disease resistance rice (Oral)
- 2012: Indian Youth Science Congress. Towards developing multiple disease resistant Indica rice for sustainable agriculture, 4th Indian Youth Science Congress, Nagpur (**Best poster award**)

- 2012: 3rd World Congress on Biotechnology, Organized by OMICS Group. Hyderabad Targeting the transcription factor Osmyb4 for disease resistance in rice (Poster).
- 2012: 3rd World Congress on Biotechnology, Organized by OMICS Group. Hyderabad Stigma sterol: An important therapeutic product and its synthesis (Poster).
- 2012: 4th International Conference on Science, Engineering and Technology, VIT University, Vellore. Quantitative and antioxidant property analysis of resveratrol from *Arachis hypogaea* (Oral).
- 2011: 3rd International Conference on Science, Engineering and Technology, VIT University, Vellore. In silico analysis of rice Osmyb gene transcription factor (Oral).
- 2011: International Conference on Genomics and Proteomics, National Institute of Technology, Calicut. Genome and molecular analysis reveal oil degrading gene in agriculturally important bacteria (Oral).
- 2010: International conference on Bioscience and biotechnology, Nirmala College for women, Coimbatore. Quantitative and bioactive property analysis of resveratrol from *Arachis hypogaea* Linn. (Oral).

## Co-supervision And Co-Teaching

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- 2015-2020: Ph.D. Scholars – 4,  
M.Sc. – 1  
B.Sc. – 4  
Intern students – 2
- 2019: Microbial Genetics Lab Tutorials (SIL2003)
- 2016: Microbial Genetics Lab Tutorials (SHEN2141)

## Evaluation Activities (Reviewer)

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- 2021 : Scientific Reports (ISI)
- 2021 : CAB Reviews (Scopus indexed)
- 2020 : Plant Disease (ISI)
- 2020 : Journal of Biological Research (Scopus indexed)
- 2018: Asia Pacific Journal of Molecular Biology and Biotechnology (Scopus indexed)
- 2014: Romanian Biotechnological Letters (ISI)

## Administrative Duties

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- 2020-2021: CEBAR Molecular Biology Lab Liaison, University Malaya
- 2020-2021: CEBAR Biosafety Committee Member at Plant Biotech Facility
- 2019-2020: Coordinator for MoU for Academic – Industrial Collaboration between University of Malaya and Farmer's Bio-Fertilizer and Organics, Tamil Nadu, India
- 2019-2021: Coordinator for the Genetically Modified Organisms (GMO) Inventory
- 2018-2021: Member of Higher Institution Centre of Excellent (HICoE) Task Force of CEBAR

## Proposal submitted for National & International Fund (Co-researcher)

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- 2021: Fundamental Research Grant Scheme (University of Malaya) – *Result awaited*
- 2020: Innovate@UM (UMICE) – *Successful*
- 2020: Fundamental Research Grant Scheme (University of Malaya) – *Successful*
- 2020: RU2020 Geran (University of Malaya) – *Successful*
- 2020: Top Drawer (University of Malaya) – *Unsuccessful*
- 2019: Prototype Development Research Grant – *Unsuccessful*
- 2019: TU2018-MOHE Top 100 (University of Malaya) – *Successful*

- 2017: DAAD-RISE (International) – *Successful*  
2016: International Centre for Genetic Engineering and Biotechnology (International) –  
*Unsuccessful*  
2016: Fundamental Research Grant Scheme (University of Malaya) – *Successful*  
2016: Science Fund (Ministry of Higher Education, Malaysia) – *Successful*  
2016: High Impact Research Round 2 (University of Malaya) – *Successful*

## **Professional Organization Memberships**

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- 2004–2006: B Certificate of Excellence, National Service Scheme, India  
2011–2014: Member, Indian Science Congress, India