

Faculty Details

Faculty Details

Name: Prof. Appa Rao Podile

Mail: podileraogmail.com

Contact: 040-2313-4503

Area Of Research: Molecular Plant-Microbe Interactions

Notice Board

Title Details

Science Day Lecture at NIAB, Hyderabad

Soil, plants and livestock – 'metaecosystem'

Advertisement for SRF position in IoE project [Last Date to Apply: 21-Jan-2022]

University of Hyderabad

Dept of Plant Sciences

School of Life Sciences

No. UH/LS/PS/ARP/IoE/RC3-21-065/SRF/01

07/01/2022

Date:

1. Applications are invited from eligible candidates (Indian Nationals only) in the attached format (Form B) for the following position to work with Prof. Appa Rao Podile, Dept. of Plant Sciences, UoH in a UoH-IoE sponsored research project on plant microbiome.

1

Name of the Post

Senior Research Fellow

2

Number of positions

One

3

Fellowship/ Honorarium/Stipend in Rs.

Rs. 35,000/- per month

4

HRA, if applicable

Rs. 8,400/- per month (@24%)

5

Tenure of the Post for

6 (Six) months [Likely to be extended till the end of the project based on performance]

6

Essential Qualifications

M.Sc. in Biotechnology/Microbiology/Plant Sciences from a recognized university (First Division) with research experience in relevant field for at least 2 years supported by publications in peer-reviewed international journals.

7

Desirable Qualifications

Research experience in molecular plant-microbe interactions

8

Experience

Minimum 2 years of experience in working with plant microbiomes and metagenomics with relevant publications (preferably first author) is required.

9

Age Limit

Open

2. Applicants should note that the appointments to be made are purely temporary and they have no right for claiming for any regular appointment in the University.
3. No TA/DA will be paid for attending the written test / skill test or at the time of joining.
4. Copies of all certificates and other relevant documents in support of the information furnished in the application should be attached.
5. Last date for receipt of applications by email is: 5:00 PM on 21st January 2022 (21/01/2022).
6. Duly filled in applications (Form-B; attached) along with relevant documents should be sent by email to podilerao@uohyd.ac.in with subject "Application for SRF position in IOE project" (Note: Only eligible candidates will be informed by email at a later date for an online interview)

Prof. Appa Rao Podile (Principal Investigator)

[View detailed advertisement on the UoH Website](#)

Students And Project Trainees

Students/Projects Trainees

Name	Joined As	Mail	Contact
PVSRN Sarma	Ph.D. Scholar	pvsrnsarma@gmail.com	---
Rajesh Rao Maddu	Ph.D. Scholar	rajeshrao494@gmail.com	---
Anirban Basu	Ph.D. Scholar	anirbanbasu99@gmail.com	---
Chalasani Danteswari	Ph.D. Scholar	chdantubt@gmail.com	---
Roli Kushwaha	Ph.D. Scholar	kushwaharoli1995@gmail.com	---

Publications

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hypertransglycosylating chitinase-D from *Serratia proteamaculans* , *Bioresource technology*, Elsevier,198,,503-509.

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Patents

Patent No/Application No	Patent Title	Authors	Applied Year	Granting Year
IN201741034005.	BIOPESTICIDE COMPOSITIONS COMPRISING STABLE HARPINPSS LOADED CHITOSAN NANOPARTICLES AND METHODS THEREOF	A.R. Podile and Sandhya Rani N	2017	2022
321056	A PROCESS FOR SYNTHESIZING HIGHER CHAIN CHITOOOLIGOSACCHARIDES (CHOS),	A.R. Podile and P.Purushotham	2011	2019
IN202041016938	CHITOSAN BASED MULTIFUNCTIONAL LIQUID BIOFERTILIZERS AND METHODS OF PREPARATION THEREOF	A.R. Podile, A. Sravani, and E.V.V. Ramprasad	2020	IN-PROCESS

Projects

DBT-Centre for Microbial Informatics (DBT-CMI)	2021	5	176	Prof. H.A.Nagarajaram (PI), Prof. Appa Rao Podile (Co-PI), Prof. Dayananda Siddavattam (Co-PI), Prof. Ch Venkataramana (Co-PI), Dr. Pankaj Singh (Co-PI), Dr. Vivek (Co-PI), Dr. Manjari Kiran (Co-PI)
DBT-Development of environmentally benign nano-formulations for improved bioactive metabolites in selected aromatic plants	2020	3	57.4	Prof. Appa Rao Podile (PI); Dr. V.V.S.S. Srikanth (Co-PI)
DST-SERB - The core root-associated microbiome of pigeon pea under the influence of host genotype, beneficial bacteria and abiotic stress	2018	3	31	Prof. Appa Rao Podile (PI)
DST- JC Bose Fellowship - Chitooligosaccharides and immunity in plants	2018	5	95	Prof. Appa Rao Podile (PI)

Honors and Conferred Distinctions

1. Nominated Member, CDFD Society, Centre for DNA Fingerprinting and Diagnostics, Hyderabad, 2021–2024
2. Member, Research Advisory Council, Institute of Life Sciences, Bhubaneswar, 2021 onwards
3. Member, Executive Council, National Academy of Agricultural Sciences, New Delhi, 2021 onwards
4. EC Member, Consortium of Academic and Research Ethics (CARE) Committee, University Grants Commission, New Delhi, 2019
5. Adjunct Chair Professor, Department of Biotechnology, Asia University, Taichung, Taiwan, 2019 onwards
6. Participant, Fulbright-US India Education Foundation sponsored “Fulbright Academic Administrators Seminar”, November 2019

7. President, Association of Microbiologists of India, 2018-2019
8. Fellow, Indian National Science Academy, New Delhi 2017
9. Millennium Plaques of Honour, Indian Science Congress Association, Jan 2017
(presented by Prime Minister of India)
10. Honoris Causa, D.Sc. by the Ram Manohar Lohia Avadh University, February 2017
1. Nominated Member, CDFD Society, Centre for DNA Fingerprinting and Diagnostics,
Hyderabad, 2021–2024
2. Member, Research Advisory Council, Institute of Life Sciences, Bhubaneswar,
2021 onwards
3. Member, Executive Council, National Academy of Agricultural Sciences, New Delhi,
2021 onwards
4. EC Member, Consortium of Academic and Research Ethics (CARE) Committee,
University Grants Commission, New Delhi, 2019
5. Adjunct Chair Professor, Department of Biotechnology, Asia University, Taichung,
Taiwan, 2019 onwards
6. Participant, Fulbright-US India Education Foundation sponsored “Fulbright
Academic Administrators Seminar”, November 2019
7. President, Association of Microbiologists of India, 2018-2019
8. Fellow, Indian National Science Academy, New Delhi 2017
9. Millennium Plaques of Honour, Indian Science Congress Association, Jan 2017
(presented by Prime Minister of India)
10. Honoris Causa, D.Sc. by the Ram Manohar Lohia Avadh University, February 2017
11. Foundation day lecture at Institute of Science and Technology, Guwahati, Nov 2016
12. Platinum Jubilee Lecture, Botany Section, Indian Science Congress Association, Jan
2016, Mysore University
13. Tata Innovation Fellowship, Department of Biotechnology, April 2014-2018
14. Elected Fellow, Indian Academy of Sciences, Jan 2014

15. Best Faculty Researcher Award, Indian Chitin and Chitosan Society, 2014
16. Co-Chair, DBT Taskforce on “Bioagents for Agriculture”, March 2013-March 2014
17. Elected Fellow, National Academy of Agricultural Sciences, 2012
18. Life Time Achievement Award in Biotechnology, Association of Biotechnology and Pharmacy, 2012
19. Member, Research Advisory Council, National Bureau of Agriculturally Important Microorganisms, Mau, U.P. 2011-2014
20. Associate Editor, Australasian Plant Pathology, Springer, 2011-2014
21. Elected Fellow, Association of Microbiologists of India, 2010
22. Elected Fellow, National Academy of Sciences, Allahabad, 2007
23. Elected Fellow, Andhra Pradesh Akademi of Sciences, Hyderabad 2007
24. Honorary Fellow, Association of Biotechnology and Pharmacy, 2007
25. Outstanding Young Scientist Award, Indian Society of Mycology and Plant Pathology, 2005.
26. President, Central Chapter, Indian Phytopathological Society, 2002.
27. Fellow of Indian Phytopathological Society, New Delhi -1998

Awards

1. Life Time Achievement Award by the Academy for Science, Technology and Communication, Hyderabad, Feb 2020
2. K.C. Mehta Memorial Biennial Award, National Academy of Agricultural Sciences, New Delhi 2018
3. J. C. Bose Fellowship, Department of Science and Technology, Government of India, 2018
4. Millennium Plaques of Honour, Indian Science Congress Association, Jan 2017 (presented by Prime Minister of India)

5. Tata Innovation Fellowship, Department of Biotechnology, April 2014
6. Best Faculty Researcher Award, Indian Chitin and Chitosan Society, 2014
7. Prof. G. Rangaswami Award in Agricultural Microbiology, Association of Microbiologists of India, Nov 2013
8. Life Time Achievement Award in Biotechnology, Association of Biotechnology and Pharmacy, 2012
9. Outstanding Young Scientist Award, Indian Society of Mycology and Plant Pathology, 2005.
10. Goyal Science Foundation's Rajib Goyal Young Scientist Award in Agriculture, Biological control of fungal diseases of plants, 1998

Awards to graduate students:

1. Dr. J. Madhuprakash, NASI Young Scientist Platinum Jubilee Award, National Academy of Sciences, Allahabad, 2018
2. Dr. J. Madhuprakash, Mahesh Kumar Prize for best research paper in Department of Plant Sciences, 2016
3. Dr. J. Madhuprakash, Braconnot Prize for Best Ph.D. thesis on Chitin from European Chitin Society, 2015
4. Dr. J. Madhuprakash, Young Scientist Award in Life Sciences including Agricultural Sciences, Andhra Pradesh Academy of Sciences, 2014
5. Dr. P. Purushotham, Young Scientist Award in Life Sciences including Agricultural Sciences, Andhra Pradesh Academy of Sciences, 2012
6. Dr. Battepati Uma, MJ Narasimhan Academic Contest Winner, Indian Phytopathological Society, 2012
7. Dr. T. Swaroopa Rani, MJ Narasimhan Academic Contest Winner, Indian Phytopathological Society, 2011

Note: In addition to these awards, several graduate students got best poster/best oral

presentation awards at different national/international conferences

Ongoing Research Activities

Prof. Appa Rao Podile's lab is engaged in research in the area of molecular plant-microbe interactions. His research group focuses on molecular interactions of rhizosphere bacteria with plants using metagenomic approaches, bioprocess development for production of chitooligosaccharides by enzymatic methods, nanotechnology for crop protection, etc.

Research Highlights:

- Molecular biology of plant-PGPR interactions
- Rhizosphere microbiome of legumes
- Bacterial chitinases for production of chitooligosaccharides:
 - o Transglycosylation by bacterial chitinases for the synthesis of long-chain chitooligosaccharides
 - o Chimeric chitinases, domain-swapping, protein engineering approaches to devise new and efficient chitinases

Ph.D.s Awarded

Mr. Bhuvana Chandra, B. 2020. Biochemical, biophysical and in silico characterization of a novel chitosanase and chitinases from bacterial sources

Mr. Mohan Krishna, M. 2019. Transglycosylation by chitinases from *Enterobacter cloacae* subsp. *cloacae* and apoptotic activity of chitooligosaccharides on breast cancer cells

Ms. Sravani, A. 2018. Groundnut plant growth promoting rhizobacteria interactions: Changes in root exudates, root proteome and bacterial cell wall proteome.

Ms. Sravana Sandhya, N. 2018. Chitosan nanoparticles–based approach to study induced defense responses, bioavailability and localization of harpinps in tomato.

Mr. Sippi Issac, K. 2017. Induction of defense responses in tobacco harpin bio-functionalized nanoparticles.

Mr. Papa Rao V. 2016. Characterization of unique chitinases from *Serratia marcescens* GPS5 and *Flavobacterium johnsoniae* Uw101.

Mr. Subhanarayan Das. 2015. Biochemical characterization of chitinolytic enzymes and evaluation of chitooligosaccharides generated by a chitosanase of plant growth promoting *Paenibacillus elgii*.

Mr. Madhuprakash Jogi. 2014. Structural and mutational analysis of transglycosylation by

chitinase D of *Serratia proteamaculans*.

Ms. Manjeet Kaur. 2014. Auxiliary role of bacterial chitin binding proteins in chitin digestion.

Ms. T. Swaroopa Rani, T. 2013. Non-host resistance-associated proteome changes in *Curtus-Xanthomonas* interactions.

Ms. B. Uma. 2013. Biochemical and molecular analyses of apoplastic defenses in tomato non-host resistance.

Ms. K. Suma. 2012. Characterization of chitinases and a hexosaminidase from *Stenotrophomonas maltophilia* k279a.

Mr. P. Purushotham. 2011. Hydrolytic and transglycosylation activities of *Serratia proteamaculans* on chitinous substrates.

Mr. K. Anil. 2011. Elicitor-mediated defense responses in groundnut and tobacco.

Mr. Debashish Dey. 2010. Induction of male sterility and disease resistance with the expression of harpinPss in transgenic tobacco.

Mr. V.L. Vasudev. 2009. Harpin-mediated cell death: Studies on events of cell death and biophysical features of harpinPss.

Ms. Ch. Neeraja. 2009. Cloning and characterization of chimeric *Bacillus* chitinases using domain-swapping.

Mr. B. Sashidhar. 2008. Mutagenic and transgenic approaches to manipulate mineral phosphate solubilization with special reference to glucose dehydrogenase.

Ms. B. Madhuri. 2006. Expression of hrpZ under developmentally regulated promoters to induce male sterility in tobacco.

Ms. C.B. Tripura. 2006. Molecular approach to alter the properties of the membrane-bound glucose dehydrogenase of Gram negative bacteria associated with mineral phosphate solubilization.

Ms. P. Sripriya. 2005. Characterization of cell death of *Saccharomyces cerevisiae* caused by the harpin of *Pseudomonas syringae* pv. *syringae*.

Mr. G. Krishna Kishore. 2004. Selection, characterization and application of fungicide-tolerant or chitinolytic bacteria for control of fungal diseases of groundnut with special reference to the late leaf spot.

Mr. N.C. Shreeram. 2004. Molecular analysis of genomes in interspecific hybrids of pearl millet (*Pennisetum glaucum* (L.) R Br.) Co-supervisor with Prof. N.C. Subrahmanyam.

Ms. K. Manjula. 2000. Characterization of chitinolytic activity of *Bacillus subtilis* AF 1 and its use in development of improved formulations for plant growth and disease control.

Activities 2020-21

Participated in the Webinar on DBT-TERI Ideation Platform (A platform initiated by Department of Biotechnology (DBT), Govt. of India and taken forward by TERI Deakin Nanobiotechnology Centre, on April 24, 2020

Chief Guest at the Webinar on "World Environmental Day" organized by the Department of Botany, Hindu College, Guntur, and delivered lecture on "Living with the Virus", on June 5, 2020.

Participated in the webinar on 'The Quality of Research Publications' organized by Maharaja Sayajirao University of Baroda June 16, 2020

Participated in the Conclave on Transformational Reforms in Higher Education under National Education Policy-2020 organized by UGC/MHRD on August 7, 2020

Participated in the One-Day International Webinar on Mahatma Gandhi on the Theme: "Peace from Within to Global Peace in Gandhian Framework" jointly organized by the UoH, Gandhi-King Global Initiative Stanford University, USA and the Gandhi-King Foundation, Hyderabad, India on August 31, 2020

Chief Guest at the inaugural of Faculty Development Programme, Higher Education Department, Andhra Pradesh on September 7, 2020.

Chief Guest at the Valedictory of International e-conference - OU - Advances in Microbial Biotechnology and Bio-therapeutics (AMTB) on September 12, 2020

Participated in the U.S. India International Dialogue Series on National Education Policy: India's National Education Policy 2020 and Road Ahead for Internationalization of Higher Education organized by the Indian School of Business and the US Consulate on September 24, 2020

Panelist at the webinar on "NEP 2020: A Paradigm Shift in Content and Intent- A Look into Higher Education" organized by the VNR Vignana Jyoti Institute of Engineering & Technology on November 21, 2020

Chief Guest at the 6th India International Science Festival organized virtually by the CSIR Indian Institute of Chemical Technology on December 1, 2020

Keynote Lecture at 61st Annual International Conference of the Association of Microbiologists of India (AMI) and Indian Network for Soil Contamination and Research (INSCR), jointly organized by The Energy and Resource Institute (TERI), University of Delhi, Indian Agricultural Research Institute (IARI) in virtual mode on February 3, 2021

Delivered Science Day Lecture on "Soil, plants, and livestock — 'metaecosystem'" at National Institute of Animal Biotechnology, Hyderabad, on February 27, 2021

Delivered the Keynote Address in the 9th Indian Chitin and Chitosan Society Symposium in virtual mode on February 28, 2021

Delivered the inaugural address at the "Indo-German Workshop on Advanced Automotive Steels (IGWAAS-2021)" on March 4, 2021

Post-Doctoral Fellows

Presently Working:

- Dr. Mohammad Imran Mir, SERB-NPDF (Nov 2022 onwards)

Former Post-Docs:

- Dr. Anamika Pal, IOE PDF -UOH (Nov 2023 – Apr 2024)
- Dr. Radhe Shyam, IOE PDF-UOH (Nov 2023 – Feb 2024)
- Dr. Swaroopa Rani T., DST Project – RA-III (Mar 2023 – Jul 2023)

- Dr. Ramprasad E.V.V., SERB-NPDF;CSIR Pool Scientist (SRA) (Jun 2017 – Jun 2023)
- Dr. Ashish Ranjan, Ramalingaswami Re- entry Fellow (Jul 2019 - Oct 2020)
- Dr. Vishakha Pandey, UGC-DS Kothari PDF (Apr 2019 – May 2022)
- Dr. Dokku Sivaramakrishna, UGC-DS Kothari PDF (Jun 2016 – May 2019)
- Dr. B. Ramakrishna Goud, UGC-DS Kothari PDF (Apr 2015 – Mar 2018)
- Dr. Anjali Bose, UGC-DS Kothari PDF (Jan 2014 – Nov 2016)
- Dr. Sadaf Kalam, DST-Women Scientist A (May 2013 – May 2016)
- Dr. Madhuprakash J., EU Project RA (Jun 2015 – Aug 2015)
- Dr. Swaroopa Rani T., DBT Project Overheads (Jan 2014 – Mar 2014)
- Dr. Jalaja N., DBT Project RA (Apr 2013 – Apr 2014)
- Dr. Suvarna Lakshmi G., (May 2012 – Apr 2013)
- Dr. Narayana Rao V.R.V., DBT Project RA (Sep 2012 – Mar 2013)
- Dr. Praveen M, UGC – DS Kothari PDF (Apr 2009 – Mar 2011)
- Dr. Swarnalee Dutta, DBT CREBB PDF; DBT RA (Jun 2008 – Aug 2012)

Completed Projects

Projects Completed in the last 10 Years

DBT- “India-UK Nitrogen Fixation Centre (IUNFC)” as a PI of a project coordinated by Dr. D.L.N. Rao, IISS, Bhopal, Rs. 84.16 lakhs for Prof. Podile’s lab at Univ. of Hyderabad, (June 2016– December 2019)

DBT-TATA Innovation “Preparation and evaluation of long-chain chitooligosaccharides (CHOS) – induced innate immunity in plants” (Rs. 36 lakhs) 2015–2019

European Union – NanoBioengineering of Bioinspired Biopolymers “Nano3Bio”, (Euro 1,40,000 for Prof. Podile’s lab – total: 9 million Euro; Involves 22 partners – including 8 academic partners and 14 Small and Medium Scale Entrepreneurs from Europe) 2013–2017.

DBT-Development and scale-up of a bioprocess for production of chitooligosaccharides using recombinant chitinases (Total cost Rs. 46 lakhs) 2013–2016

BIRAC-supported project jointly with Sri Biotech on “Development and commercialization of bioherbicide for rice weeds” April 2014 – Feb 2015 (closed because the industrial partner has

sold out company), Rs. 40 lakhs at University of Hyderabad
 DBT- Molecular basis of groundnut-PGPR interaction and development of liquid formulation, (Total cost Rs. 64 lakhs) 2012–2015
 DBT – Elicitor-loaded nanoparticles for crop protection (Total cost Rs. 62 lakhs) 2010–2014
 CSIR – Selection of suitable combination of chitosan and PGPR for tomato and elucidate the mechanism using molecular approaches (Rs. 23 lakhs) 2010–2013

Recent Publications

1. Prasad, P., Kalam, S., Sharma, N.K., Podile, A.R. and Das, S.N., 2022. Phosphate solubilization and plant growth promotion by two *Pantoea* strains isolated from the flowers of *Hedychium coronarium* L. *Frontiers in Agronomy*, 4, p.990869.
2. Pandey, V., Prasad, M.S.L. and Podile, A.R., 2022. Comparative proteomic analysis identifies potential pathogenicity/virulence factors in *Fusarium oxysporum* f. sp. *ricini* inciting vascular wilt disease in castor. *Physiological and Molecular Plant Pathology*, 122, p.101925.
3. Bhuvanachandra B, Sivaramakrishna D, Alim S, Swamy MJ, Podile AR (2022). Deciphering the thermotolerance of chitinase O from *Chitiniphilus shinanonensis* by in vitro and in silico studies. *International Journal of Biological Macromolecules*. 210:44-52.
4. Kalam S, Basu A, Podile AR (2022). Difficult-to-culture bacteria in the rhizosphere: The underexplored signature microbial groups. *Pedosphere*. 32(1):75-89.
5. Vora SM, Ankati S, Patole C, Podile AR, Archana G (2021). Alterations of primary metabolites in root exudates of intercropped *Cajanus cajan*–*Zea mays* modulate the adaptation and proteome of *Ensifer* (*Sinorhizobium*) *fredii* NGR234. *Microbial Ecology*. 83(4): 1008-1025.
6. Bellamkonda R, Sarma PVSRN, Ankati S, Bhuvanachandra B, Podile AR (2021). Elicitation of defense response by transglycosylated chitooligosaccharides in rice seedlings. *Carbohydrate Research*. 510:108459.
7. Jorin B, Maluk M, Atoliya N, Kumar SC, Chalasani D, Tkacz A, Singh P, Basu A, Pullabhotla S, Kumar M, Mohanty SR, East AK, Ramachandran VK, James EK, Podile AR, Saxena AK, Rao D and Poole PS (2021) Genomic Diversity of Pigeon Pea (*Cajanus cajan* L. Millsp.) Endosymbionts in India and Selection of Potential Strains for Use as Agricultural Inoculants. *Frontiers in Plant Sciences*. 12:680981.
8. Chalasani D, Basu A, Sarma PVSRN, Jorin B, Neal A, Poole PS, Podile AR, Tkacz A (2021). Poor competitiveness of *Bradyrhizobium* in pigeon pea root colonisation in Indian soils. *mBio*. 12(4): e00423-21.
9. Mallakuntla MK, Penugurti V, Manavathi B, Podile AR (2021). Chitooligosaccharides induce apoptosis in human breast cancer cells. *Carbohydrate Polymer Technologies and*

Applications. 2: 100077. Doi: 10.1016/j.carpta.2021.100077.

10. Bijlani S, Singh NK, Eedara VV, Podile AR, Mason CE, Wang CC, Venkateswaran K (2021). *Methylobacterium ajmalii* sp. nov., isolated from the International Space Station. *Frontiers in Microbiology*. 12:639396.
11. Mallakuntla MK, Podile AR (2021). Catalytic efficiency of a multi-domain transglycosylating chitinase from *Enterobacter cloacae* subsp. *Cloacae* (EcChi2) is influenced by polycystic kidney disease domains. *Enzyme and Microbial Technology*. 143:109702.
12. Bhuvanachandra B, Sivaramakrishna D, Alim S, Preethiba G, Rambabu S, Swamy MJ, Podile AR (2021). New Class of Chitosanase from *Bacillus amyloliquefaciens* for the Generation of Chitooligosaccharides. *Journal of Agricultural and Food Chemistry*. 69(1):78-87.
13. Mallakuntla MK, Vaikuntapu PR, Bhuvanachandra B, Podile AR (2020). Selection and mutational analyses of the substrate interacting residues of a chitinase from *Enterobacter cloacae* subsp. *cloacae* (EcChi2) to improve transglycosylation. *Int. J. Biol. Macromol*. 165:2432-2.
14. Dokku S, Bhuvanachandra B, Nadendla, SR, Podile AR (2020). Efficient conversion of alpha-chitin by multi-modular chitinase from *Chitiniphilus shinanonensis* with KOH and KOH-urea pretreatment. *Carbohydrate Polymers*. 250: 116923.
15. Kalam S, Basu A, Podile AR (2020). Functional and molecular characterization of plant growth promoting *Bacillus* isolates from tomato rhizosphere. *Heliyon*. 6: e04734.
16. Rani TS, Madhuprakash J, Podile AR (2020). Chitinase-E from *Chitiniphilus shinanonensis* generates chitobiose from chitin flakes. *Int. J. Biol. Macromol*. 163: 1037-1043.
17. Podile, A.R., Basu, A. (2020). Opportunities, Challenges and Directions in Science and Technology for Tackling COVID-19. *Trans Indian Natl. Acad. Eng*. 5: 97–101.
18. Madhuprakash J, Rani TS, Podile AR, Eijsink V, Sorlie M (2020). Thermodynamic insights into the role of aromatic residues in chitooligosaccharide binding to the transglycosylating chitinase-D from *Serratia proteamaculans*. *BBA - Proteins and Proteomics* 1868(7): 140414.
19. Dokku S, Bhuvanachandra B, Mallakuntla MK, Das SN, Ramakrishna B, Podile AR. (2020). Pretreatment with KOH and KOH-urea enhanced hydrolysis of alpha-chitin by an endo-chitinase from *Enterobacter cloacae* subsp. *cloacae*. *Carbohydrate Polymers*. 235:115952.
20. Bhuvanachandra B, Podile AR (2020). A transglycosylating chitinase from *Chitiniphilus shinanonensis* (CsChiL) hydrolyzes chitin in a processive manner. *Int. J. Biol. Macromol*. 145:1-10.

21. Basa S, Nampally M, Honorato T, Das SN, Podile AR, El Gueddari NE, Moerschbacher BM (2020). The pattern of acetylation defines the priming activity of chitosan tetramers. *J. Am. Chem. Soc.* 142(4):1975-1986
22. Nerusu A, Vaikuntapu PR, Chinthapalli DK, Podile AR, Subramanyam R (2020). Truncated domains of human serum albumin improve the binding efficiency of uremic toxins: A surface plasmon resonance and computational approach. *Int. J. Biol. Macromol.* 155:1216-1225.
23. Ankati, S. and Podile, A.R. (2019). Metabolites in the root exudates of groundnut change during interaction with plant growth promoting rhizobacteria in a strain-specific manner. *J. Plant Physiol.* 243:153057.
24. Manjeet K, Madhuprakash J, Mormann M, Moerschbacher BM, Podile AR (2019). A carbohydrate binding module-5 is essential for oxidative cleavage of chitin by a multi-modular lytic polysaccharide monooxygenase from *Bacillus thuringiensis* serovar kurstaki. *Int. J. Biol. Macromol.* 127:649-656.
25. Madhuprakash J, Dalhus B, Vaaje-Kolstad G, Sakuda S, Podile AR, Eijsink VG, Sorlie M (2019). Structural and thermodynamic signatures of ligand binding to the enigmatic chitinase D of *Serratia proteamaculans*. *J. Phys. Chem B.* 123(10):2270-2279.
26. Ankati, S., Rani, T.S. and Podile, A.R. (2019) Changes in root exudates and root proteins in groundnut–*Pseudomonas* sp. interaction contribute to root Colonization by bacteria and defense response of the host. *Journal of Plant Growth Regulation.* 38(2):523-538.
27. Vaikuntapu, P.R., Mallakuntla, M.K., Das, S.N., Bhuvanachandra. B., Ramakrishna, B., Nadendla, S.R. and A.R. Podile. (2018) Applicability of endochitinase of *Flavobacterium johnsoniae* with transglycosylation activity in generating long-chain chitooligosaccharides. *Int J Biol Macromol.* 117: 62-71.
28. Ramakrishna, B., Vaikuntapu, P., Mallakuntla, M.K., Bhuvanachandra, B., Sivaramakrishna, D., Uikey, S. and A.R. Podile. (2018) Carboxy-terminal glycosyl hydrolase 18 domain of a carbohydrate active protein of *Chitinophaga pinensis* is a non-processive exochitinase. *Int J Biol Macromol.* 115:1225-1232.
29. Madhuprakash, J., Dalhus, B., Rani, T.S., A.R. Podile, Eijsink V.G.H. and Sorlie M. (2018) Key residues affecting transglycosylation activity in family 18 chitinases: Insights into donor and acceptor subsites. *Biochemistry.* 57(29):4325-4337.
30. Ankati, S., and Podile, A.R. (2018) Understanding plant-beneficial microbe interactions for sustainable agriculture. *Journal of Spices and Aromatic Crops.* 27(2):93-105.
31. Sravani, A., Rani, T.S. and Podile, A.R. (2018) Partner-triggered proteome changes in the cell wall of *Bacillus sonorensis* and roots of groundnut benefit each other. *Microbiological*

Research. 217:91-100.

32. Sandhya R. N, Swaroopa R. T, Papa Rao V, Rajesh Rao M, A.R. Podile (2018) HarpinPss encapsulation in chitosan nanoparticles for improved bioavailability and disease resistance in tomato. *Carbohydrate Polymers* 199: 11-19.
33. Bhuvanachandra B, Madhuprakash J, and A.R. Podile (2018) Active-site mutations improved the transglycosylation activity of *Stenotrophomonas maltophilia* chitinase A. *Biochimica et Biophysica Acta (BBA)-Proteins and Proteomics*. 1866 (3), 407-414.
34. Thilagar G., Bagyaraj D J., Podile A.R. and Papa Rao V. (2018). *Bacillus sonorensis*, a novel plant growth-promoting rhizobacterium in improving growth, nutrition and yield of chilly (*Capsicum annuum* L.). *Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.* 88, 813-818.
35. Gayatri, G., Agurla S., Kuchitsu, K., Anil, K., Podile, A.R., and Raghavendra, A.S. (2017) Stomatal Closure and Rise in ROS/NO of *Arabidopsis* guard Cells by Tobacco Microbial Elicitors: Cryptogein and Harpin. *Frontiers in Plant Sciences* 8, 1096
36. Kalam, S., Das, S.N., Basu, A. and Podile, A.R., (2017) Population densities of indigenous Acidobacteria change in the presence of plant growth promoting rhizobacteria (PGPR) in rhizosphere. *Journal of Basic Microbiology* 57 (5), 376-385.
37. Mallakuntla, M.K., Vaikuntapu, P.R., Bhuvanachandra, B., Das, S.N and Podile, A.R. (2017) Transglycosylation by a chitinase from *Enterobacter cloacae* subsp. *cloacae* generates longer chitin oligosaccharides. *Scientific Reports* 7(1), 5113.
38. Das SN, Martin W, Pavan Kumar N, Bhuvanachandra B, Ramana N, Balamurugan R, Swamy MJ, Moerschbacher BM and A.R. Podile (2016). Amino groups of chitosan are crucial for binding to a family 32 carbohydrate binding module of a chitosanase from *Paenibacillus elgii*. *Journal of Biological Chemistry* 291(36):18977-18990.
39. Vaikuntapu PR, Rambabu S, Madhuprakash J and A.R. Podile (2016). A new chitinase-D from a plant growth promoting *Serratia marcescens* GPS5 for enzymatic conversion of chitin. *Bioresource Technology*, 199: 200-207.
40. Kalam S, Lodha T., Nirosha P., Podile A. R., Sasikala Ch and Ramana Ch. V. (2016). *Paenibacillus arachidis* sp. nov., isolated from groundnut seeds. *Int J Syst Evol Microbiol*, 66: 2923-2928.
41. Deepika, K.V., Kalam, S., Sridhar, P.R., Podile, A.R. and Brahmachari, P.V. (2016). Optimization of rhamnolipid biosurfactant production by mangrove sediment bacterium *Pseudomonas aeruginosa*. *Biocatalysis and Agricultural Biotechnology*, 5: 38-47.