GYANESHWAR PRASAD

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EDUCATION

Ph.D, Biochemistry	(1998)	Maharaja Sayajirao University of Baroda-India
M.Sc, Biochemistry	(1990)	Maharaja Sayajirao University of Baroda-India
B.Sc, Biology	(1988)	Osmania University Hyderabad, India

EMPLOYMENT

2013-Present	Associate Professor, University of Wisconsin-Milwaukee.
2007-2012	Assistant Professor, University of Wisconsin-Milwaukee.
2004-2207	Research Associate, University of Minnesota, St Paul.
2003-2004	Associate Specialist, University of California, Berkeley.
2000-2003	Post-Doctoral Fellow, University of California, Berkeley.
1998-2000	Project Scientist, International Rice Research Institute Manila, Philippines.
1993-1997	Lecturer, Maharaja Sayajirao University of Baroda, India.

AWARDS AND HONORS

Graduate School Research Fellow award, University of Wisconsin, Milwaukee (2011)
Graduate School Research Fellow award, University of Wisconsin, Milwaukee (2010)
Nominated for Shaw Scientist Award by UWM (2008 and 2010)

FELLOWSHIPS

1. Post-Doctoral Fellowship of Department of Biotechnology, India (1997)
2. Senior Research Fellowship, University Grants Commission, India (1992-94).
3. Junior Research Fellowship, University Grants Commission, India (1990-92).

TEACHING/MENTORING EXPERIENCE

Courses Taught

Microbial Diversity and Physiology (Advanced Undergraduate/Graduate)
Environmental Microbiology (Advanced Undergraduate/Graduate)
Foundations of Biological Sciences (Undergraduate)
Survey of Microorganisms (Undergraduate)

Students/Post-doctoral fellow mentored

Mentored 4 post-doctoral fellows
Mentored 4 Ph.D students (3 graduated; 1 current)
Mentored 12 undergraduate students
Member of thesis committee of 15 Ph.D students

RESEARCH FUNDING:

Current:

PI: Gyaneshwar Prasad
Title: Elucidating rhizobial interactions and the possibility of symbiotic nitrogen in the non-nodulating legume *Gleditsia triacanthos* L.
Agency: National Science Foundation (IOS# 1519900)
Amount to PI: US$ 292,133.
REU Supplemental Grant
Amount to PI: US$ 6,458.
Granting Period: 2015-2019.

PI: Gyaneshwar Prasad.
Co-PI: Dave Zhao
Title: Understanding the mechanism of rice colonization by *Rhizobium* sp. IRBG74 and enhancing its potential for rice growth promotion.
Agency: Research Growth Initiative, UW Milwaukee.
Amount: US$ 135,000.
Amount to PI: US$ 100,000
Granting Period: 2017-2019.

PI: Gyaneshwar Prasad
Title: Evolution of symbiotic nitrogen fixation: Comparing rhizobial interactions with nodulating (*Chamaecrista fasciculata*) and non-nodulating (*Gleditsia triacanthos*) basal legumes.
Agency: Research and Creative Activities Support, UW Milwaukee.
Amount: US$ 8,500.

Granting Period: 2018-2019

Past:

PI: Gyaneshwar Prasad
Co-PI: Jean-Michel Ane (UW Madison)
Title: Understanding and utilizing a unique association between rhizobia and rice.
Agency: *National Science Foundation* (IOS# 1256879)
Amount to PI: US$ 360,740.
*Granting Period: 2013-2016.
REU Supplemental Grant
Amount to PI: US$ 5,597

PI: Gyaneshwar Prasad
Co–PI: Jean-Michel Ane (UW Madison)
Title: Characterizing a unique association between rice and rhizobia
Agency: UW Milwaukee/UW Madison Intercampus Research Initiative Grant
Amount to PI: US$ 36,943.
Granting period: 07/01/2012 – 07/31/2013.

PI: Gyaneshwar Prasad
Co-PI: Michael Sadowsky (University of Minnesota)
Title: Functional and ecological genomics of sulfonate utilization by soybean nodulating *Bradyrhizobium japonicum*.
Agency: Research Growth Initiative UW Milwaukee
Amount to PI: US$98,400.
Granting period: 07/01/2009-07/31/2010.

INVITED TALKS

International Crop Research Institute for Semi-Arid Tropics, Hyderabad, India 2018.
23nd North American Symbiotic Nitrogen Fixation Conference, Mexico 2015
M. S. University of Baroda, India, 2014
University of Minnesota, St Paul 2011
University of Wisconsin, Madison 2011
Milwaukee Microbiology Society 2008 and 2011

SYNERGISTIC ACTIVITIES

1. Member of editorial board of *Biol. Fert. Soil*, *Symbiosis*.
2. Member of scientific advisory committee (25th North American Symbiotic Nitrogen Fixation Conference, May 31st-June 3, 2020).

3. Ad-Hoc reviewer for Mol. Plant-Microbe Interact, Environ. Microbiology, Microbes Environment, Ann. Microbiol, Plant Soil, PLOS One, Symbiosis, Appl. Soil Ecol.; Phytobiomes
4. Member of scientific advisory committee (22nd North American Symbiotic Nitrogen Fixation Conference, July 14-17, 2013)
5. Panel member-National Science Foundation (2013), Ad hoc reviewer (2015)
6. Active participant in Milwaukee Microbiology Society- a student chapter of American Society of Microbiology.

PUBLICATIONS

Peer-reviewed Journal Articles

1. Speck J, James EK, Sugawara M, Sadowsky MJ, **Gyaneshwar P (2019)**. An alkane sulfonate monooxygenase is required for symbiotic nitrogen fixation by *Bradyrhizobium diazoefficiens* (syn. *Bradyrhizobium japonicum*) USDA110^{T}. ***Appl. Environ. Microbiol***. DOI: 10.1128/AEM.01552-19 (In press).
2. Das S, Sreevidya VS, Udvadia A, **Gyaneshwar P (2019).** Dopamine-induced sulfatase and its regulator are required for *Salmonella enterica* serovar Typhimurium pathogenesis. ***Microbiol.*** 165: 302-310.
3. Zhao CZ, Huang J, **Gyaneshwar P**, Zhao DD **(2018)**. *Rhizobium* sp. IRBG74 alters Arabidopsis root development by affecting auxin signaling. ***Front. Microbiol.*** 8,2556.
4. Faoro H, Menegazzo R, Battistoni F, **Gyaneshwar P**., et al. **(2016)**. The oil-contaminated soil diazotroph *Azoarcus olearius* DQS4^{T} is genetically and phenotypically similar to the model grass endophyte *Azoarcus* sp. BH72. ***Environ. Microbiol. Rep***. 9: 223-238. (***Commentary on the article published in EMIR***).
5. Mitra S, Mukherjee A, Wiley-Kalil A, Das S, Owen H, Reddy PM, Ane J-M, James EK and **Gyaneshwar P. (2016)**. A rhamnose-deficient lipopolysaccharide mutant of *Rhizobium* sp. IRBG74 is defective in root colonization and beneficial interactions with its flooding-tolerant hosts *Sesbania cannabina* and wetland rice. ***J. Expt. Bot.*** 67: 5869-5884. ***(Cover Page)***
6. Crook M, Mitra S, Ane J-M, Sadowsky MJ and **Gyaneshwar P**. (**2013**). Complete genome sequence of the *Sesbania* symbiont and rice growth-promoting endophyte *Rhizobium* sp. Strain IRBG74***. Genome Announ***. doi: 10.1128/genomeA.00934-13.
7. Gehlot HS, Tak N, Kaushik M, Mitra S, Chen W-M, Poweleit N, Panwar D, Poonar N, Parihar R, Tak A, Sankhla IS, Ojha A, Rao SR, Simon MF, dos Reis Jr FB, Perigolo N, Tripathi AK, Sprent JI, Young JPW, James EK and **Gyaneshwar**

P. (**2013)**. An invasive Mimosa in India does not adopt the symbionts of its native relatives. ***Ann. Bot***. 112: 179-196.

8. Das S, Singh S, Forst S, McClelland M, and **Gyaneshwar P**. (**2013)**. Characterization of an acid-inducible sulfatase in *Salmonella enterica* serovar Typhimurium. ***Appl. Environ. Microbiol.*** 79: 2092-2095.
9. Sugawara M, Epstein B, Badgley BD, Unno T, Xu L, Reese J, **Gyaneshwar P**, Denny R, Mudge J, Bharti AK, Farmer AD, May GD, Woodward JE, Médigue C, Vallenet D, Lajus A, Rouy Z, Martinez-Vaz B, Tiffin P, Young ND, and Sadowsky MJ. (**2013**). Comparative genomics of the core and accessory genomes of 48 *Sinorhizobium* strains comprising five genospecies. ***Genome Biol.*** 14 (2) R17.
10. Zou L, Zengb Q, Lin H, **Gyaneshwar P**, Cheng G, and Yang C-H. (**2012**). SlyA regulates type III secretion system (T3SS) genes in parallel with the T3SS master regulator HrpL in *Dickeya dadantii*. ***Appl. Environ. Microbiol***. 78: 2888-2995
11. **Gyaneshwar P**, Hirsch AM, Moulin, L., Chen WM, Elliott GN, Bontemps C, Estrada-de los Santos P, Gross E, dos Reis Junior FB, Sprent JI, Young JPW, and James EK. (**2011**). Legume nodulating betaproteobacteria: diversity, host-range and future prospects. ***Mol. Plant-Microbe Interact***. 24: 1276-1288.
12. Sugawara M, Shah GR, Sadowsky MJ, Paliy O, Speck J, Vail AW, and **Gyaneshwar P.** (**2011**). Expression and functional roles of *Bradyrhizobium japonicum* genes involved in the utilization of inorganic and organic sulfur compounds in free-living and symbiotic conditions. ***Mol. Plant-Microbe Interact***. 24: 451-457.
13. Sreevidya VS, Hernandez-Oane R, **Gyaneshwar P**, Lara-Flores M, Ladha JK and Reddy PM (**2010**). Auxin distribution pattern regulates the initiation and radial position of lateral root development of rice. ***Plant Sci***. 178: 531-538
14. Cummings SP, **Gyaneshwar P**, Andrews M, Huphry D, Elliot GN, Nelson A, Orr C, Pettitt D, Santos S, Krishnan HB, Vinuesa P, Odee D, Young PJ and James EK (**2009**). *Rhizobium (Agrobacterium) radiobacter* strain IRBG74 can effectively nodulate several species of *Sesbania*. ***Environ. Microbiol*** 11:2510-25.
15. Loh KD, **Gyaneshwar P**, Papadimitriou EM, Fong R, Kim KS, Zhou Z, Inwood W and Kustu S **(2006)**. A new pathway for pyrimidine catabolism. ***Proc. Natl. Acad. Sci.*** **USA** 103: 5114-5119. (***Commentary on the article published in PNAS***)
16. **Gyaneshwar P,** Paliy O, McAuliffe J, Popham DL, Jordan MI and Kustu S (**2005**). Sulfur and nitrogen limitation in *Escherichia coli* K12: specific homeostatic responses. ***J. Bacteriol.*** 187: 1074-1090.
17. **Gyaneshwar P,** Paliy O, McAuliffe J, Jones A, Jordan MI and Kustu S (**2005**). Lessons from *E.coli* genes similarly regulated in response to sulfur or nitrogen limitation. ***Proc. Natl. Acad. Sci.*** **USA** 102: 3453-3458.

18. Goh EB, Bledsoe PJ, Chen LL, **Gyaneshwar P**, Stewart V and Igo MM (**2005**). Hierarchical Control of Anaerobic Gene Expression in *Escherichia coli* K-12: the Nitrate-Responsive NarX-NarL Regulatory System Represses Synthesis of the Fumarate-Responsive DcuS-DcuR Regulatory System. ***J. Bacteriol***. 187: 4890-4899.
19. Zimmer D, Paliy O, Thomas B, **Gyaneshwar P** and Kustu S (**2004**). Genome image programs: visualization and interpretation of *Escherichia coli* microarray experiments**.** ***Genetics*** 167: 2111-2119.
20. Loyd L, Jones S, Jovanovic G, **Gyaneshwar P**, Rolfe M, Thompson A and Buck M (2004). Identification of a new member of the phage shock protein response in *Escherichia coli*, the phage shock protein G (PspG). ***J. Biol. Chem***. 279: 55707-55714.
21. Soupene E, vanHeeswijk WC, Plumbridge J, Stewart V, Bertenthal D, Lee H, **Gyaneshwar P**, Paliy O, Charennoppakul P and Kustu S (**2003**). Physiological studies of *Escherichia coli* strain MG1655: growth defects and apparent cross-regulation of gene expression. ***J. Bacteriol***. 185: 5611-5626.
22. **Gyaneshwar P**, Naresh Kumar G, Parekh LJ and Poole PS (**2002**). Role of soil microorganisms in improving P nutrition of plants. ***Plant Soil*** 245*:* 83-93.
23. **Gyaneshwar P**, James EK, Reddy PM, and Ladha JK (**2002**). *Herbaspirillum* colonization increases growth and nitrogen accumulation in aluminium-tolerant rice varieties. ***New phytol.***154: 131-146.
24. James EK, **Gyaneshwar P**, Mathan N, Barraquio WL, Olivares FL and Ladha JK (**2002**). Infection and colonization of rice seedlings by the plant growth promoting bacterium *Herbaspirillum seropedicae Z67.* ***Mol. Plant Microbe Interact****.* 15: 894-906.
25. Peng S, Biswas JC, Ladha JK, **Gyaneshwar P** and Chen Y (**2002**). Influence of rhizobial inoculation on photosynthesis and grain yield of rice. ***Agron. J***. 94: 925-929.
26. **Gyaneshwar P**, James EK, Mathan N, Reddy PM, Reinhold-Hurek B and Ladha JK (**2001**). Endophytic colonization of rice by a diazotrophic strain of *Serratia marcescens*. ***J. Bacteriol***. 183: 2634-2645
27. Tan Z, Hurek T, **Gyaneshwar P**, Ladha JK and Reinhold-Hurek B (**2001**). Novel endophytes of rice form a taxonomically distinct subgroup of *Serratia marcescens*. ***Syst. Appl. Microbiol****.* 24: 245-251.
28. **Gyaneshwar P**, Reddy PM and Ladha JK (**2000**). Nutrient amendments affect colonization of rice by endophytic strains of *Serratia marcescens* IRBG500 and *Herbaspirillum seropedicae Z67*. ***J. Microbiol. Biotechnol****.* 10: 694-699.
29. Saxena SS, Ladha JK, **Gyaneshwar P,** Reinhold-Hurek B, Hernandez RJ and Biswas JC (**2000**). Evaluation of *lacZ* and *gus A* markers to study rhizobial colonization in rice roots. ***Indian J. Microbiol.*** 40: 15-20.

30. **Gyaneshwar P**, Parekh LJ, Archana G, Poole PS, Hutson RA, Collins MA and Naresh Kumar G (**1999**). Involvement of phosphate starvation induced glucose dehydrogenase in soil P solubilization by *Enterobacter asburiae.* ***FEMS Microbiol. Lett.*** 171: 223-229.
31. **Gyaneshwar P**, Naresh Kumar G and Parekh LJ (**1998**). Effect of buffering on the P solubilizing abilities of microorganisms. ***World J. Microbiol. Biotechnol***. 14: 669-673.
32. **Gyaneshwar P**, Naresh Kumar G and Parekh LJ (**1998**). Cloning of mineral phosphate solubilizing genes from *Synechocystis* PCC 6803**.** ***Curr. Sci***. 74: 1097-1099.

H-INDEX: 17

Book chapters

1. *Raturi A, **Gyaneshwar P**, Singh SK, Tak N, Gehlot HS (2013). Bacterial endophytes and their significance in the sustainable production of food in non-legumes. Climate change and abiotic stress tolerance. Tuteja N (ed). Wiley-VCH Verlag GmbH & Co., Weinheim, Germany (In Press).
2. James EK, **Gyaneshwar P**, Olivares FL & Andrews M (2004). N_2 fixation by non-legumes: the potential of associative and endophytic N_2 fixation in agricultural systems. Aspects of Applied Biology. 72: 125-129.
3. **Gyaneshwar P**, Naresh Kumar G, Parekh LJ & Poole PS (2002). In: *Food Security in Nutrient-Stressed Environments: Exploiting Plant's Genetic Capabilities*. Adugyamfi JJ (ed). Dev. Plant Soil Sci. Kluwer Academic Publishers, The Netherlands.
4. Hurek T, Tan Z, Mathan N, Egener T, Engelhard M, **Gyaneshwar P**, Ladha JK & Reinhold-Hurek B (2000). In: *The Quest for Nitrogen Fixation in Rice*. Ladha JK & PM Reddy (eds.), International Rice Research Institute, Manila, Philippines pp. 47-62.
5. **Gyaneshwar P**, Naresh Kumar G & Parekh LJ (1998). In: *Biofertilizers and Biopesticides*. Deshmukh, A. M (ed). Technoscience Publishers, Jaipur, India.
6. James EK, **Gyaneshwar P**, Barraquio WL, Mathan N & Ladha JK (2000). In: *The Quest for Nitrogen Fixation in Rice*. Ladha JK & PM Reddy (eds.), International Rice Research Institute, Manila, Philippines pp. 119-140.