

Bio data

1. Name : **Dr. V. Ravishankar Rai**

2. Designation: Professor

Coordinator: Department Science and Technology(DST) PROMOTION OF UNIVERSITY RESEARCH AND SCIENTIFIC EXCELLENCE (PURSE)Program

Coordinator : UGC Innovative Program (PG Diploma in Food Quality and Safety)

Coordinator: Regional Science Centre, Mysore (Karnataka State Govt)

Coordinator :UPE (UGC) Infra structure Facilities Improvement

Coordinator : UPE(UGC) Campus Green Initiative

Coordinator: DST FIST Program

Chairman: Board of Studies in Clinical Research & Clinical Data Management

3. Address : Department of Studies In Microbiology
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4. Area of Specialization/interest:

Plant Biotechnology, Agriculture Microbiology, Food Technology, Forest Pathology, Endophytic Fungi, Medicinal Plants, Phytochemistry, Cell and Tissue Culture, Bacterial Quorum Sensing, Microbial Mediated Corrosion

5. Research and Teaching Experience

- i. Lecturer at St. Philomena College, Puttur, D.K. for one and half years (from 1.9.1981 to 30.12.1982).
- ii. Worked for the Ph.D. thesis entitled '*In vitro* studies and cytology of some commercially important forest trees' in the Department of Studies in Botany, University of Mysore (1983 - 88).
- iii. Temporary lecturer in Department of Studies in Botany, University of Mysore 16.12.1988 to 31.1.1991.
- iv. CSIR - Research Associate on the problem entitled 'Biotechnological approach to conserve the Forest Trees of Western Ghats' in Department of Studies in Botany, University of Mysore, Mysore from 1.2. 1991 to 4.9. 1992.
- v. Permanent Lecturer in the Department of Studies in Botany, University of Mysore, Mysore from 5.9.1992 to 31. 10 1994.
- vi. Lecturer in the Department of Studies in Applied Botany and Biotechnology, University of Mysore from 31.10.1994 to 06.09.2002
- vii. Reader in the Department of Studies in Applied Botany and Biotechnology, University of Mysore from 06-09-2002 to 22.3.2007



viii. Professor , Department of Studies in Microbiology , University of Mysore, Since 23.3.2007

ix. Professor and Coordinator, UGC Innovative Programme, Department of Studies in Microbiology, University of Mysore since August 2012.

6. Awards/Recognitions:

- Visiting Fellow, UNESCO Biotechnology Action Council Programme (1996)
- Indo-Israel Culture Exchange Programme, Fellowship , UGC, New Delhi (1998)
- DBT Overseas Fellowship(2008)
- Indo-Hungarian Educational Exchange Programme fellowship (2011)
- Indian National Science Academy under International Scientific Collaboration and Bilateral Exchange program to visit Turkey (2015)

Number of projects

Completed

Sl. No	Title	Funding Agency (Foreign/ Indian Government./ University	Year	Amount (in Rupees)
1.	Micropropagation and <i>In vitro</i> preservation Studies on rare and threatened flowering Plants with special Reference to Karnataka	Department of Biotechnology, Government of India, India	1997-2002	21 Lakhs
2.	Reintroduction of Rare flowering plants to the wild and their field evaluation	Department of Biotechnology, Government of India (DST) , India	2003-2006	24 lakhs
3.	Bioprospecting and <i>in vitro</i> Studies on Medicinal Forest Tree - <i>Hydnocarpus laurifolia</i> Sleumer	Department of Science and Technology Government of India, India	2003-2007	15 lakhs
4.	Nursery diseases of some important forest trees and their management.	University Grants Commission, New Delhi	2004-2007	6 lakhs
5.	Ex-situ conservation and utilization of medicinal plants of Karnataka for sustainable development	National Medicinal Plant Board, Government of India	2006-2012	15 lakhs
6	Genetic diversity and <i>in vitro</i> propagation and characterization of bioactive compounds of <i>Hypericum</i> species	University Grants Commission, New Delhi	2008-2011	6 lakhs
7	Endophytic microorganisms from rare medicinal plants producing bioactive compounds	DIBER, DRDO, Govt. of India.	2011-2014	10 Lakh

8.	Biodiversity, conservation and Phytochemical, Molecular Characterization of rare Medicinal Plants of Western Ghats	MHRD, Govt of India, Institution of Excellence (IOE)	2009-2012	7.5 Lakh
9.	Studies on Quorum Sensing Inhibitory Activity of Medicinal Plants	ICMR, Govt. of India	2012-2016	15 Lakh

On Going

Sl. No	Title	Funding Agency (Foreign/ Indian Government./ University)	Year	Amount (in Rupees)
1.	FIST Programme	Dept. of Science and Technology, Govt. of India	2011-2016	35 lakh
2.	University with Potential of Excellence Project (UGC)	Biosynthesis and cytotoxic effect of nanoparticles	2012-2017	UGC , New Delhi
3.	UPE and CEPEA project	Biosynthesis of nanoparticles and its biological applications	2013-2017	UGC , New Delhi
4.	UGC-Innovative Programme Food Safety and Quality)	UGC, Govt. of India	2012-2017	58.5 Lakh

5. Number of Ph.D candidates successfully completed: 16

Number of Ph. D candidates currently working: 10

6. Number of M. Phil candidates successfully completed: 18

7. Publications

Reviews in Books

1. Jamuna Bai A, Ravishankar Rai V (2017) Entosis Apoptosis and Beyond: The Many Ways Cells Die. James A Radosevich (Editor). **Springer** (In Press)
2. Rajesh P.S. and Ravishankar Rai V (2017) Quorum quenching endophytes: A novel approach for sustainable development of Agroecosystem. Endophytes: Biology and Biotechnology – Vol 1. Prof. Dr. Dinesh K. Maheshwari (Editor) **Springer**. (In Press)
3. Jamuna Bai A, Ravishankar Rai V. (2014) Environmental risk, human health and toxic effects of nanoparticles. In Nanomaterials for Environmental Protection. Editors: Boris I. Kharisov, Oxana V. Kharissova, H. V. Rasika Dias. **John Wiley & Sons**

4. Jamuna Bai A, Ravishankar Rai V (2014) The Role of Nanotechnology in Medicine as Drug Delivery Agents, Therapeutics, Diagnostic and Imaging Tools. *Advanced Science, Engineering and Medicine*. 6, 1–11.
5. Jamuna A Bai and Ravishankar Rai V (2014) Quorum sensing in food borne bacteria and use of quorum sensing inhibition as food intervention technique. In: V Ravishankar Rai, and Jamuna A. Bai (2014) *Microbial Food Safety and Preservation Techniques*. (Edited Book) **CRC Press**, United States. Pp.399-414.
6. Jamuna A Bai and Ravishankar Rai V (2014) Application of Dairy propionic acid bacteria in fermented foods. In: *Beneficial Microbes in Fermented and Functional Foods*. V Ravishankar Rai, and Jamuna A. Bai (2014) (Edited Book) **CRC Press**, United States. Pp.399-414.
7. V Ravishankar Rai and Rajesh P (2014) Probiotics: Live medium in human gut. In: *Beneficial Microbes in Fermented and Functional Foods*. . V Ravishankar Rai, and Jamuna A. Bai (2014) (Edited Book) **CRC Press**, United States. Pp.399-414.
8. Pradeepa V. Samaga and V. Ravishankar Rai (2014) Diversity and Bioactivity of Endophytic Fungi from *Nothapodyte foetida* (Wt.) *Sleumer* and *Hypericum mysorens* Heyne . Kharwar, R.N., Upadhyay, R., Dubey, N., Raghuwanshi, R. (Eds) *Microbial Diversity and Biotechnology in Food Security*. **Springer**. 91-102
9. T. S. Avinash and Ravishankar V. Rai (2014) Antifungal Activity of Plant Growth Promoting Rhizobacteria against *Fusarium oxysporum* and *Phoma*. Kharwar, R.N., Upadhyay, R., Dubey, N., Raghuwanshi, R. (Eds) *Microbial Diversity and Biotechnology in Food Security*. **Springer**. 257-264.
10. Jamuna Bai A, Ravishankar Rai V (2014) Quorum-sensing systems in *Pseudomonas* In: *Quorum Sensing vs Quorum Quenching: A Battle with No End in Sight*. Editor: Kalia, Vipin Chandra. **Springer**
11. Jamuna Bai A and V. Ravishankar Rai (2013) Microbial biofilms and their control by various antimicrobial strategies. *Microbial pathogens and strategies for combating them: science, technology and education* (A. Méndez-Vilas, Ed. Formatex Research Center) 124-133.
12. V. Ravishankar Rai and Jamuna Bai A (2012). Nanoparticles and their potential application as antimicrobials. In: *Science against Microbial Pathogens: Communicating Current Research and Technological advances*. A Mendez Vilas (Ed.) Badajoz, Spain. Pp 197-209
13. A Jamuna Bai and V. Ravishankar Rai (2011) Bacterial Quorum Sensing and Food Industry. *Comprehensive Reviews in Food Science and Food safety*. 10:183-193. **(IF: 4.903) (Wiley)**
14. Rajeev Bhat, Ravishankar Rai V and AA Karim (2010) Mycotoxins in Food and Feed – Present Status and Future Concerns. *Comprehensive Reviews in Food Science and Food safety*. 9:51-81 **(IF: 4.903) (Wiley)**
15. V. Ravishankar Rai and T Mamatha (2010) Seed mycoflora and physicochemical and biochemical changes in tree seeds during storage. In: *Proceedings of Tree Seed*

- symposium: Recent Advances in Seed Research and *Ex situ* Conservation, Taipei, Taiwan. 165-184.
16. Rajeev Bhat and Ravishankar Rai V (2009) Plant based edible vaccines –Prospects and perspectives. In: Ravishankar Rai V and Rajeev Bhat (Editors) Biotechnology Concepts and Applications. Alpha Science International, UK. For India Narosa Publisher, New Delhi. pp. 333-358.
 17. Ravishankar Rai. V and Bhanumathi. (2009) Forest Pathology in India – A Review. In: Mycology in the New Millennium – Prospects and Outlook (Ed. KR Sridhar) Published by IK International, New Delhi, 78-106.
 18. Ravishankar Rai V and A G Pradeep (2007) Eco-friendly measures to safeguard farmers saved seeds from fungal pathogens .In: Seed Borne diseases Eco-friendly management. Scientific Publishers Jodhpur, India, 131-136.
 19. Ravishankar Rai V and Thippaswamy (2007) Evaluation of the efficacy of biopesticides on seed mycoflora and seedling quality of some oil seed crops In: Seed Borne diseases Eco-friendly management Scientific Publishers Jodhpur ,India Page No 191-198.
 20. V. Ravishankar Rai (2005) Somatic Embryogenesis in Sandalwood. In: Protocols of Somatic Embryogenesis-Woody Plants (Eds: S. M. Jain and P.K. Gupta). **Springer** 497-504.
 21. Ravishankar Rai V. and T. Mamatha (2005) Seedling diseases of some important forest trees In: Proceedings of IUFRO Meeting on Diseases and Insects in Forest Nurseries (Ed: Lilja. J R Sutherland, M Poteri and C Mohanan) Finnish Forest Research Institute, Page 51-63
 22. Ravishankar Rai V. and T. Mamatha (2004) Fungal Diseases of Forest Tree Species in India and their Management (Ed. Sampat Nehra). Aavishkar Publishers & Distributors, India. 69-83
 23. Ravishankar Rai (1999) Biotechnology of Tree spices of South India. In: Role of Biotechnology in Medicinal and Aromatic plants (Edited by I. A. Khan) Ukaaz Publication, Hyderabad. Page No. 274-290.

Edited Books

1. Ravishankar Rai. V and Rajeev Bhat (2009) Biotechnology: Concepts and Applications (Edited Book) Alpha Science International, UK. For India Narosa Publisher, New Delhi.
2. V Ravishankar Rai, and Jamuna A. Bai (2014) Microbial Food Safety and Preservation Techniques. (Edited Book) **CRC Press**, United States.
3. V Ravishankar Rai, and Jamuna A. Bai (2014) Beneficial Microbes in Fermented and Functional Foods (Edited Book) **CRC Press**, United States.
4. V Ravishankar Rai (2016) Advances in Food Biotechnology. (Edited Book) **Wiley Publisher**, UK.

5. V Ravishankar Rai, and Jamuna A. Bai (2014) Food Safety and Protection (Edited Book) **CRC Press**, United States.
6. V Ravishankar Rai, and Jamuna A. Bai (2017) Nanotechnology Applications in Food Industry (Edited Book) **CRC Press**, United States (under Preparation)

Publications in Refereed Journal

1. Keerthi Kumari C N, Jamuna Bai A., Ravishankar Rai V. (2017) Endophytic Peptides - A Source of Therapeutic Agents. *Current Protein & Peptide Science* (in Press) **(IF=2.441) (Bentham science)**
2. Raksha K. Ramesh, S. Pavan Kumar Chottanahalli, Netkal M. Madegowda b, V. Ravishankar Rai c, Sannaiah Ananda (2017) Electrochemical synthesis of hierarchical flower-like hierarchical In₂O₃/ZnO nanocatalyst for textile industry effluent treatment, photo-voltaic, OH scavenging and anti-bacterial studies. *Catalysis Communications*. 89: 25-28. **(IF=3.38) (Elsevier)**
3. Raksha K. Ramesh S. Pavan Kumar Chottanahalli, Netkal M. Madegowda V. Ravishankar Rai, Sannaiah Ananda (2017) Electrochemical synthesis of hierarchical flower-like hierarchical In₂O₃/ZnO nanocatalyst for textile industry effluent treatment, photo-voltaic, OH scavenging and anti-bacterial studies. *Catalysis Communications*, 89, 10, 2017, 25–28 **(IF= 3.389) (Elsevier)**
4. P Sankar Ganesh and Ravishankar Vittal Rai (2016) Inhibition of quorum sensing controlled virulence factors of *Pseudomonas aeruginosa* PAO1 by *Murraya koenigii* essential oil: Study in a *Caenorhabditis elegans* N2 model. *Journal of Medical Microbiology* (in Press). **(IF: 2.248) (Microbiology Society)**
5. Jamuna Bai A, V. Ravishankar Rai (2016). Effect of small chain N-acyl homoserine lactone quorum sensing signals on biofilms of food-borne pathogens. *Journal of Food Science and Technology*. 53(9):3609-3614. **(IF: 1.241) (Springer)**
6. Kiana Alaswand Zaraswand and V. Ravishankar Rai (2016) Identification of the traditional and non-traditional sulfate-reducing bacteria associated with corroded ship hull. *3 Biotech* 6:197
7. Mahesh Bhat, S. L. Belagali, P. Rajesh Shastry and V. Ravishankar Rai (2016) Synthesis, characterization, and biological study of phenylalanine amide derivatives. *Monatshefte für Chemie*. 147 (11), pp 2001–2008. **(IF=1.222) (Springer)**
8. Kiana Alaswand Zaraswand and V. Ravishankar Rai (2016) Inhibition of a sulfate reducing bacterium, *Desulfovibrio marinisediminis* GSR3, by biosynthesized copper oxide nanoparticles. *3Biotech* 84(6) 1-7. **(Springer)**
9. Rajesh P.S. and Ravishankar Rai V. (2016) Inhibition of QS-regulated virulence factors in *Pseudomonas aeruginosa* PAO1 and *Pectobacterium carotovorum* by AHL-lactonase of endophytic bacterium *Bacillus cereus* VT96. *Biocatalysis and Agricultural Biotechnology*: 7, 154-163. **(Elsevier)**

10. Kangkana Banerjee and V. Ravishankar Rai (2016) Study on green synthesis of gold nanoparticles and their potential applications as catalysts. *Journal of Cluster Science*. 27, 1307-1315 **(IF: 1.302) (Springer)**
11. T.S. Avinash and Ravishankar V. Rai (2013) Plant growth promoting rhizobacteria: A boon to Agriculture. *International Journal of Agricultural and Food Science*. 6(2): 28-36.
12. Rajesh P.S. and Ravishankar Rai V. (2015). Purification and antibiofilm activity of AHL-lactonase from endophytic *Enterobacter aerogenes* VT66. *International Journal of Biological Macromolecules*. 81, 1046- 52. **(IF: 3.138) (Elsevier)**
13. Pallavi Ananda K and V Ravishankar Rai (2015) Role of Nanotechnology in epigenetic reprogramming. *Stem Cells and Development*. 24, 535-549. **(IF= 3.777)**
14. Kangkana Banerjee and V. Ravishankar Rai (2015) Preliminary Screening of Mycochemicals in *Aspergillus fischeri* for Synthesizing Silver Nanoparticles and Their Antioxidant Activity. *Materials Focus*. 4: 1-7.
15. Pradeepa V Samaga and V Ravishankar Rai (2015) Diversity and bioactive potential of endophytic fungi from *Nothapodytes foetida*, *Hypericum mysorens* and *Hypericum japonicum* collected from Western Ghats of India. *Annals of Microbiology*. DOI 10.1007/s13213-015-1099-9 **(IF: 1.232) (Springer)**
16. P. Sankar Ganesh, V. Ravishankar Rai (2015) Evaluation of Anti-bacterial and Anti-quorum Sensing Potential of Essential Oils Extracted by Supercritical CO₂ Method against *Pseudomonas aeruginosa*. *Journal of Essential Oil Bearing Plants*. 18, 264-275. **(IF: 0.313) (Taylor and Francis)**
17. P. Sankar Ganesh and Ravishankar Rai V (2015) In vitro anti-biofilm activity of *Murraya koenigii* essential oil extracted using supercritical fluid CO₂ against *Pseudomonas aeruginosa* PAO1. *Natural Product Research*. DOI: 10.1080/14786419.2015.1004673. **(IF: 0.919) (Taylor and Francis)**
18. Mohammed Aman, Ravishankar Rai V. (2015), Potent toxigenic effect of *Mycosphaerella musicola* on locally growing banana varieties, *Phytoparasitica*, DOI 10.1007/s12600-015-0456-3 **(IF: 1.034) (Taylor and Francis)**
19. Rajesh P.S. and Ravishankar Rai V. (2015). Use of *ahvA* gene amplification for AHL-lactonase production from endophytic bacterium *Enterobacter* species. *International Journal of Biological Macromolecules*. 72, 1013- 17. **(IF: 3.138) (Elsevier)**
20. Srinath BS and Ravishankar Rai V (2015) Biosynthesis of Gold nanoparticles using extracellular molecules produced by *Enterobacter aerogenes* and their catalytic study. *Journal of Cluster Science* DOI: 10.1007/s10876-014-0835-9 **(IF: 1.302) (Springer)**
21. Srinath BS and Ravishankar Rai V (2015) Rapid biosynthesis of gold nanoparticles by *Staphylococcus epidermidis*: its characterization and catalytic activity. *Materials Letters* DOI: 10.1016/j.matlet.2015.01.151 **(IF: 2.437) (Elsevier)**
22. Govindappa M, Shruthi B, Sahana N Murthy, Shwetha S, Akshatha R V, Channabasavai and Ravishankar Rai V (2015) Determination of capsaicinoids from endophytic fungi

- (*Aspergillus niger*, *Alternaria* sp. and *Penicillium* sp.) of *Capsicum annuum* using LC. Plant Science Feed. 5: 21-27. Feed, 2015; 5 (2): 21-27
23. Srinath B S and Ravishankar Rai V (2014) Biosynthesis of highly monodispersed, spherical gold nanoparticles of size 4-10 nm from spent cultures of *Klebsiella pneumoniae*. 3 Biotech, 1-6. (DOI 10.1007/s13205-014-0265-2). **(Springer)**
 24. Jamuna Bai A, Ravishankar Rai V. (2014). Quorum sensing inhibitory and anti-biofilm activity of essential oils and their in vivo efficacy in food systems. Food Biotechnology. 28(3) 269-292. **(IF: 0.814) (Taylor and Francis)**
 25. Pradeepa Vasudeva Samaga, Vittal Ravishankar Rai and Kuriya Madav Lokanatha Rai (2014). Production of an antimicrobial cytochalasan by an endophytic *Chaetomium globosum* HYML55 from *Hypericum mysorensense* and its RNA secondary structure analysis. Chemistry and Ecology 30(6). 566-578. **(Springer)**
 26. Pampa K.J. Lokanath NK, Girish TU, Kunishima N. Ravishankar Rai V (2014) Crystal structures of product-bound complex of UDP-*N*-acetyl-D-mannosamine dehydrogenase from *Pyrococcus horikoshii* OT3. Biochemical and Biophysical Research Communications, 453. 662–667. **(IF: 2.371) (Elsevier)**
 27. Pampa K J , Neratur K. Lokanath, Naoki Kunishima and Ravishankar Rai V (2014). The first crystal structure of NAD-dependent 3-dehydro-2-deoxy-D-gluconate dehydrogenase from *Thermus thermophilus* HB8. Acta Crystallographica Section D: Biological Crystallography. D70, 994–1004. **(IF: 2.512)**
 28. M. Govindappa, V. Ravishankar Rai and S. Lokesh (2014) Induction of resistance against *Cercospora* leaf spot in safflower by seed treatment with plant growth-promoting rhizobacteria. Archives of Phytopathology and Plant Protection: 47, 2479-2492.
 29. Kavitha Keshava Navada and V Ravishankar Rai (2014). Ethnomedicinal value of *Pterocarpus santalinus* (Linn. f.), a Fabaceae member: A short review. Oriental Pharmacy and Experimental Medicine. 14: 313- 317. **(Springer)**
 30. Kangkana Banerjee and V. Ravishankar Rai (2014) Food Nanotechnology the New Era for Food Sector and Its Bottleneck. Green Science and Technology. 2, 1-9.
 31. Jamuna Bai A, Ravishankar Rai V (2014). Quorum sensing regulation and inhibition of exoenzyme production and biofilm formation in the food spoilage bacteria *Pseudomonas psychrophila* PSPF19. Food Biotechnology. 28:293–308. **(IF: 0.814) (Taylor and Francis)**
 32. Rajesh PS, Pradeepa V Samaga, Lokanatha Rai KM and Ravishankar Rai V (2014) *In Vitro* biological activity of Aromadendrin-4'-methyl ether isolated from root extract of *Ventilago madraspatana* Gaertn with relevance to anticandidal activity. Natural Product Research (DOI: 10.1080/14786419.2014.968152) **(IF: 0.919) (Taylor and Francis)**
 33. Jamuna Bai A, Ravishankar Rai V (2014). Attachment and biofilm formation by *Pseudomonas fluorescens* PSD4 isolated from dairy processing lines. Food Science and Biotechnology 23(6): 1903-1910. **(IF: 0.699) (Springer)**

34. Kiana Alaswand Zaraswand and V. Ravishankar Rai (2014). Microorganisms: Induction and Inhibition of Corrosion in Metals. *International Journal of Biodeterioration & Biodegradation*. 87:66–74. **(IF: 2.429) (Elsevier)**
35. T.S. Avinash and Ravishankar V. Rai (2013) Biocontrol potential of plant growth promoting Rhizobacteria against Fusarium wilt disease of Cucurbit. *ESci J. Plant Pathol*. 2. 155-161.
36. Rajesh P.S. and Ravishankar Rai V. (2013). Quorum quenching activity in cell-free lysate of Endophytic Bacteria isolated from *Pterocarpus santalinus* Linn., and its effect on quorum sensing regulated biofilm in *Pseudomonas aeruginosa* PAO1. *Microbiological Research*. 169(7-8):561-569. **(IF: 2.561) (Elsevier)**
37. T.S. Avinash and Ravishankar V. Rai (2013) Identification of diverse fungi related with selected Cucurbitaceae Vegetables. *Journal of Agricultural Technology*.9: 1837-1848.
38. K. Namratha, K. Byrappa, J. Bai, V. Ravishankar Rai, D. Ehrentraut, I. A. Ibrahim, M. Yoshimura (2013) Antimicrobial activity of silver doped ZnO designer nanoparticles. *Journal of Biomaterials and Tissue Engineering*. 3:1-6.
39. K. Namratha, K. Byrappa, J. Bai, V. Ravishankar Rai, D. Ehrentraut, I. A. Ibrahim, M. Yoshimura (2013) Synthesis and biological activities of organics assisted Pd doped Zn nanoparticles through novel solution processing routes. *Materials Focus* 2 : 136-142.
40. Rajesh P.S. and Ravishankar Rai V. (2013). Molecular identification of aiiA homologues gene from endophytic Enterobacter species and in silico analysis of putative tertiary structure of AHL-lactonase. *Biochemical and Biophysical Research Communications* 443, 290–295. **(IF: 2.371) (Elsevier)**
41. Pradeepa V Samaga and V. Ravishankar Rai (2013) Free radical scavenging activity and active metabolite profiling of endophytic fungi from *Nothapodytes foetida* and *Hypericum mysorense*. *International Journal of Chemical and Analytical Science* (4): 96-101. Doi: [org/10.1016/j.ijcas.2013.07.007](http://dx.doi.org/10.1016/j.ijcas.2013.07.007)
42. Pradeepa V Samaga and V. Ravishankar Rai (2013) Evaluation of pharmacological properties and phenolic profile of *Hypericum japonicum* Thunb. from Western Ghats of India. *Journal of Pharmacy research* 7: 626-632. **(Elsevier)**
43. Pradeepa Vasudeva Samaga, Vittal Ravishankar Rai and Kuriya Madav Lokanatha Rai (2013) *Bionectria ochroleuca* NOTL33 – an endophytic fungus from *Nothapodyte foetida* producing antimicrobial and free radical scavenging metabolites. *Annals of Microbiology* 1–11. **(IF: 1.232) (Springer)**
44. Jamuna Bai A, Ravishankar Rai V (2013). Antioxidant and antibacterial activities of methanolic extracts of *Rotula aquatica* and *Ancistrocladus heyneanus* leaves. *Journal of Pharmacy Research*. 6, 313-317.
45. Rajesh P.S. and Ravishankar Rai V. (2013). Hydrolytic enzymes and quorum sensing inhibitors from endophytic fungi of *Ventilago madraspatana* Gaertn., *Biocatalysis and Agriculture Biotechnology*. DOI: <http://dx.doi.org/10.1016/j.bcab.2013.01.002i> **(Elsevier)**

46. Chaitra Narayan L, Ravishankar Rai V and Supinya Tewtrakul. (2013). Emerging need to use phytopharmaceuticals in the treatment of HIV. *Journal of Pharmacy Research*, 6(1), 218-223.
47. Ravishankar V. Rai, P. S. Rajesh and Hyung-Min Kim (2012) Medicinal use of *Coscinium fenestratum* (Gaertn.) Colebr.: A short review. *Oriental Pharmacy and Experimental Medicine*, 13. 1-9 (**Springer**)
48. A. Bittsánszky, V. Rai Ravishankar and G. Oros (2012) Response of Glutathione Conjugation System to Soil Borne *Rhizoctonia* Infection of Okra. *Acta Phytopathologica et Entomologica Hungarica* 47. 191–202
49. K. Namratha, K. Byrappa, Rajesh P S, V. Ravishankar Rai (2013) Hydrothermal and Solvothermal syntheses, in situ surface modified and antioxidant activity of codoped Advanced ZnO nanoparticles. *Journal of Nanopharmaceutics and Drug Delivery*. 1, 258-265.
50. P. Sharanappa and V. Ravishankar Rai (2011) Micropropagation of *Thalictrum dalzellii* Hook., through Rhizome Buds. *Journal of Phytology* 3: 51-55
51. Govindappa, M., Ravishankar, Rai V. and Lokesh, S. (2011) Screening of *Pseudomonas fluorescens* isolates for biological control of *Macrophomina phaseolina* root-rot of safflower. *African Journal of Agricultural Research*. 6: 6256-6266.
52. Chaitra Narayan L, V Ravishankar Rai and Supinya Tewtrakul (2011) A Screening strategy for selection of Anti-HIV-1 Integrase and anti-HIV- 1 Protease Inhibitors from extracts of Indian Medicinal plants. *International Journal of Phytomedicine* 3: 312-318
53. Jamuna Bai A. and Ravishankar Rai V (2011). Bacterial Quorum Sensing and Food Industry. *Comprehensive reviews in Food Science and Food Safety*, 10, 183-193. (**IF=5.053**) (**Wiley**)
54. Jamuna Bai A., Ravishankar Rai V. and Pradeepa V. Samaga (2011). Evaluation of the antimicrobial activity of three medicinal plants of South India. *Malaysian Journal of Microbiology*, 7, pp. 14-18.
55. Mohammed Aman, Ravishankar Rai V and Pradeepa V Samaga (2010). Antimicrobial and phytochemical screening of *Boswellia serrata* Roxb., *Rhus mysorensis* Heyne, *Strychnos potatorum* Linn. and *Schefflera stellata* Gaertn. *Medicinal and Aromatic Plant Science and Biotechnology*, 4, 69-72.
56. Chandrika M and V. Ravishankar Rai (2010) RAPD Markers for genetic analysis in micropropagated Plants of *Dictyospermum ovalifolium*, a rare Plant of Western Ghats, India. *Medicinal and Aromatic Plant Science and Biotechnology*, 4, 19-23
57. Shilpashree H P and Ravishankar Rai V (2010) Effect of Phytohormones on Callus Formation, Plant Regeneration and Hypericin Production in *Hypericum mysorensis*. *International Journal of Plant Development Biology*. 4. 31-36
58. Govindappa M, Ravishankar Rai V and Lokesh M (2011). *In Vitro* and *In Vivo* Responses of Different Treating Agents against wilt Disease of Safflower. *Journal of Cereals and oil Seeds*, 2, 16-25.

59. Chandrika M, Ravishankar Rai V and Thoyajaksha (2010). ISSR marker based analysis of micropropagated plantlets of *Nothapodytes foetida*. *Biologia Plantrum* 54: 561-565.
60. Rajeev Bhat, Ravishankar Rai V and AA Karim (2010) Mycotoxins in Food and Feed – Present Status and Future Concerns. *Comprehensive Reviews in Food Science and Food safety*. 9:57-8157. **(IF=5.053) (Wiley)**
61. H. P. Shilpashree, V. Ravishankar Rai (2010) Fatty Acid Composition and Antimicrobial Activity of Leaf and Flower Extracts of *Hypericum mysorensense* Medicinal and Aromatic Plant Science and Biotechnology 3: 117-119
62. Chandrika M, and Ravishankar Rai V (2009) An assessment of genetic stability in micropropagated plants of *Ochreinauclea missionis* by RAPD markers 3: *Current Trends in Biotechnology and Pharmacy* 3: 320-328
63. Chandrika M, and Ravishankar Rai V(2009) Genetic fidelity in Micropropagated plantlets of *Ochreinauclea missionis* an endemic, threatened and medicinal tree using ISSR markers *African Journal of Biotechnology* 8 , 2933-2938,
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Conference/Seminar organized

- Sir M. Visveswaraya 150th Birth Anniversary Commemorative one day symposium on "Microbial Energy," September 15, 2010.
- Coordinator-Science Communicator Meet 103rd INDIAN SCIENCE CONGRESS January 3rd -7th, 2016, Mysore

Conference/Seminar Chaired / Co-Chaired:

- National trends in plant disease and management. at Department of Studies in Applied Botany Kuvempu University, Shimoga, 2001
- National Seminar on New Frontiers in Plant Pathology organized by Indian Society of Mycology and Plant Pathology & Dept. of Applied Botany and Biotechnology, Kuvempu University, Shimoga, 2006.
- Conservation, Improvement, Cultivation and Management of Sandal (*Santalum album L.*) at Institute of Wood Science and Technology, Bangalore, 2007
- National Conference on Plant Biodiversity and Bioprospecting at Department of studies in Botany, Mysore, 2009
- Plenary speaker in 20th Scientific Conference of the Microscopy Society of Malaysia and 21st Annual General Meeting at Kuala Lumpur, Malaysia, 2011
- 12th International Congress of Ethnopharmacology at International Society for Ethnopharmacology and Jadavpur University, Kolkata, 2012.

- National Conference on Biotechnology and Society – 2012 at Kuvempu University, Shimoga, 2012
- 7 International Food Convention (IFCON) th NSURE – HEALTHY FOODS Organized by Association of Food Scientists & Technologists (India) held on 18 - 21 December 2013 at CFTRI, Mysore, India
- International Symposium on Chemical Biology-Drug Discovery on 9th and 10th January ,2014 held in the University of Mysore
- International Symposium on Chemical biology approaches to Metabiomics, Chemical genomics and epigenomics and second annual meeting of chemical Biology Society of India February 18th & 19th 2015, University of Mysore.
- Key note speaker in International Conference on Biosciences 2016 on 'Advancing Biodiversity for sustainable food security held Udayan University in Bali in July 26 - 27, 2016.

Conference/Seminar paper presented:

1. Sanjaya, H. S. Ananthapadmanabha and Ravishankar Rai V (1997). In vitro shoot multiplication from the mature tree of *Santalum album* L. International Seminar ; Institute of food Science and Technology and Karnataka State Forest Dept., Bangalore. Pp 45
2. Sanjaya, H. S. Ananthapadmanabha and Ravishankar Rai V (1997). In vitro and in vivo micrografting of *Santalum album* L shoot tips. International Seminar; Institute of food Science and Technology and Karnataka State Forest Dept., Bangalore. Pp 60
3. Presented a paper National symposium on Seed Science and technology, at university of Mysore (1999)
4. Ravishankar Rai V. and Thoyajaksha (2001) in vitro propagation of rare plants of Western Ghats of India. Golden jubilee symposium; biotechnological innovation in conservation and analysis of plant diversity. Pp 53.
5. Sanjaya, T.S. Rathore and V. Ravishankar Rai. (2001). In vitro cloning of Indian sandal (*Santalum album* L.) – a highly priced, over exploited tree species. Golden jubilee symposium; biotechnological innovation in conservation and analysis of plant diversity. Pp 63.
6. T. Mamatha and Ravishankar Rai V. (2002). Leaf blight nursery disease of *Terminalia catapa* Linn. caused by *Fusarium solani* and its management in vitro. Asian Congress of Mycology and Plant pathology, Mysore. Pp 262.
7. S. Anand kumrar, S. Lokesh and Ravishankar Rai (2002). Efficacy of different seed treatment on seed microflora and seedling quality of Okra (*Ablemoschus esculentus* (L.)Monech). Asian Congress of Mycology and Plant pathology, Mysore. Pp 230.
8. Govindappa M. and Ravishankar Rai (2002). Management of *Fusarium oxysporum* F. sp. Carthami, a wilt causing seed borne pathogen of Safflower using fungicides, biocontrol agents, formulations and plant extracts in green house conditions. Asian Congress of Mycology and Plant pathology, Mysore. Pp 229.
9. Ravishankar Rai V. and T. Mamatha (2003) Seedling diseases of some important forest trees In: Proceedings of IUFRO Meeting on Diseases and Insects in Forest Nurseries (Ed:Lilja. J R Sutherland, M Poteri and C Mohanan) Finnish Forest Research Institute, Page 51-63

10. Thoyajaksha and V.Ravishankar Rai, (2004). In vitro multiplication of *Amomum microstephanum* Baker an endangered species in Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp 35.
11. M.Govindappa and V.Ravishankar Rai, (2004) Alternation of peroxidase, PAL and catalase enzymes of safflower plants as induced by chemicals, biocontrol agents and plant extracts against *Macrophomina* root rot, in Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp 52.
12. Mashooda Beghum, V.Ravishankar Rai, S. Lokesh, and H. Shekar Shetty (2004). Synergistic effect of fungicides on the incidence of seed mycoflora of Okra, In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology.
13. B.G . Bharath, S. Lokesh, V. Ravishankar Rai and H. Shekar Shetty (2004) Seed-borne fungal diseases of watermelon and their management, In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore.
14. V.Ravishankar Rai, Thoyajaksha and M.Chandrika (2004). Reintroduction of rare micropropagated plants to wild and their field evaluation. In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp 34.
15. G.N.Poornima and V.Ravishankar Rai, (2004) In vitro propagation of wild yams, *Dioscorea oppositifolia* Linn. and *Dioscorea pentaphylla* Linn., In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp 33.
16. K.Harish kumar and V.Ravishankar Rai, (2004). In vitro studies on medicinal forest tree *Nothapodytes foetida*. In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp. 32.
17. K.Vidhya Sankar and V.Ravishankar Rai, (2004). In vitro studies on medicinal forest tree –*Hydnocarpus laurifolia* (Dennst.) Sleumer, in Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, DOS in Applied Botany, University of Mysore, Mysore. Pp. 31.
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19. Rai V. R. (2004). Ex-situ conservation of threatened medicinal forest trees of Western Ghats of India. Biology in Asia International Conference 2004., Singapore. Pp 62.
20. T.Mamatha and V.Ravishankar Rai, (2004). Seed mycoflora, biochemical and physicochemical changes in seeds of forest tree species during storage. In Proceedings of the National Seminar on Emerging Trends in Applied Botany, Seed Science and Technology, Pp. 85
21. M.Hemanth Raj and V.Ravishankar Rai (2006) Nursery Diseases of Medicinal Plants, in National Seminar on New Frontiers in Plant Pathology, Pp. 23.

22. Shilpashree, H.P. and Ravishankar Rai, V. (2006) In vitro studies on medicinal tree *Hydnocarpus laurifolia* Sleumer. National Conference on emerging trends and future challenges in biotechnology. Bangalore.
23. Ravishankar Rai V., Thoyajaksha and Chandrika M. (2006) Genetic stability and reintroduction of rare micropropagated plants and their field evaluation, National Conference on emerging trends and future challenges in biotechnology. Bangalore.
24. Ravishankar Rai V. (2006) Ex-situ conservation of rare plants of Western Ghats. National Seminar on Wildlife biodiversity conservation, Pondicherry. Pp 5.
25. J.Sijila, V.Ravishankar Rai and Banumathi A. (2006) Seed borne infection of Bitter gourd by *Didymella bryoniae* and its management. In National Seminar on New Frontiers in Plant Pathology held at Department of Applied Botany, Kuvempu University, Pp. 27.
26. Banumathi A and V.Ravishankar Rai (2006) Seedling diseases of forest trees and their management. In National Seminar on New Frontiers in Plant Pathology, held at Department of Applied Botany, Kuvempu University Pg 122.
27. Rohini and V.Ravishankar Rai (2006) Seed-borne nature of *Rhizoctonia solani* and its management in Okra, In National Seminar on New Frontiers in Plant Pathology. Pp. 147.
28. Mohammed Aman, Jamuna Bai and Ravishankar Rai V. (2009) Phytochemical and Antimicrobial Screening of Some Medicinal plants. In National Seminar on Plant biodiversity and bioprospecting, Pp. 79.
29. Physicochemical and biochemical changes in tree seeds during storage. In. IUFRO Tree seed symposium: Recent advances in seed research and *ex-situ* conservation held at Taiwan Forestry Research Institute, Taipei, Taiwan, Republic of China, August (2010)
30. "Ex- situ conservation of forest biodiversity for sustainable development". In. "Biodiversity, Livelihood and Climate Change in the Himalayas, ICBLCC-2010", held at Kathmandu, Nepal held on December, (2010)
31. Pradeepa V Samaga, Jamuna Bai A and Ravishankar Rai V. (2011). Evaluation of antibacterial and antioxidant potential of *Hypericum japonicum* Thumb. In International Symposium on Challenges in Drug Discovery Programme (ISCDDP-2011), Mysore.
32. Rajesh P.S, Pradeepa V Samaga and Ravishankar Rai V. (2011). *In vitro* antimicrobial activity studies of root extracts of *Ventilago madraspatana* Gaertn. In International Symposium on Challenges in Drug Discovery Programme (ISCDDP-2011).February, 2011, Mysore.
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34. Ravishankar Rai V. and Jamuna Bai A. (2011). Inhibition of Quorum sensing regulated bacterial pathogenesis by phytochemicals. In 1st Global Forum on Bacterial Infections: Balancing Treatment Access and Antibiotic Resistance, New Delhi, India.
35. Ravishankar Rai V. and Jamuna Bai A. (2011). Studying Quorum Sensing Regulated Biofilm Formation using confocal microscopy. In: 20th Scientific Conference of Microscopy Society of Malaysia & General Meeting, Negeri Sembilan, Malaysia.
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38. Jamuna Bai A and Ravishankar Rai V (2012). Inhibition of quorum sensing regulated virulence factor production in *Pseudomonas aeruginosa* by essential oils. In: International Conference on Regulatory Network Architecture in Bacteria, SASTRA University, India.
39. Chaitra Narayan L and Ravishankar Rai V (2012). *In vitro* antioxidant and anti HIV potential of *Amoora rohituka*. In 16th International symposium on herbal and Traditional medicine, Saurashtra University Rajkot, Gujarat.
40. Avinash T.S. and Ravishankar Rai. V. (2012) Antagonist activity of plant growth promoting rhizobacteria against *F. oxysporum* of cucurbitaceae. In: International conference on Exploration of Biotechnology by Student Scholars and Researchers -2012 organized by Department of Biotechnology, SIET, Tumkur, India.

Chairman/Member of Authority/Committee etc

- Member, Board of Studies in Applied Botany, Mysore, 2001-2004
- Member, Board of Examination in Plant science, Calicut, 2001-2003
- Member, Board of Examiner, Applied Botany, Mysore, 2004-2007
- Member, Board of Studies in Applied Botany, Mysore, 2004-2007
- Member, Board of Studies in Biotechnology, Mysore, 2004-2007
- Member, Board of Examination in Plant science, Calicut, 2004-2005
- Chairman, Board of Examination in Biotechnology (UG), Mysore, 2005-2006
- Chairman, Board of Examination in Biotechnology (PG), Mysore, 2005-2006
- Member, Board of Examination in Biotechnology (PG), Tumkur, 2005-2008
- Member, Board of Examination (PG), Biotechnology, JSS College, Mysore, 2005-2009
- Chairman, Board of Examination in M. Phil. (Seed technology), Mysore, 2006-2007
- Member, Board of Examination in Biotechnology, Mysore, 2006-2007
- Coordinator, Department of Studies in Microbiology, 2007-08
- Chairman, Dept of Studies in Microbiology, 2008-11
- Chairman, BOS in Microbiology, University of Mysore 2007-10
- Member, BOS in Biochemistry, University of Mysore 2007-10
- Member, BOS in Genetics, University of Mysore 2007-10
- Member, BOS in Botany, University of Mysore, JSS Women's College, Mysore, 2007-11
- Member, BOS in Microbiology, Yuvaraja College, Mysore 2007-11
- Chairman, Board of Examination in Microbiology, Mysore, 2009-2010
- Member, BOS in Microbiology, Gulberga University, 2010-12
- Member, BOS in Microbiology, Pondicherry University, 2010-12
- Chairman, BOS in Microbiology, Bellary University, 2010-11
- Chairman, BOE in Biotechnology, Tumkur University, 2009-12
- Coordinator, DST-FIST Programme, Department of Studies in Microbiology, University of Mysore, 2010-11
- Life Member, Indian science Congress Association
- Life member, Association of Microbiology of India.
- Member, Biosafety Committee, Coffee Board, Mysore 2010-11
- Expert Member, Equipment Purchase Committee, Anthropological Survey, India, Mysore(2011-12)

- Chairman, Board of Studies in Microbiology, Vijayanagar Sri Krishnadevaray, University, Bellary
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- Member- Board of Studies in Bioscience (PG) University of Mysore(2016-19)
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- Member- Board of Studies in Food Science and Technology (PG) Pondicherry University (2015-18)
- Member - Board of Examination in Microbiology(PG) University of Mysore (2014-16)
- Member , Board of Examination , Department of Microbiology, Bangalore university 2015-2016
- Member , Board of Studies in Food Science and Nutrition , St. Philomena College, Mysore 2015-2017
- Member, Reception committee for Centenary Celebration , University of Mysore, 2015-16
- Member, Technical review committee , 103rd Science Congress , University of Mysore, 2016
- Member, Expert committee , Pre selection DST –INSPIRE Faculty Award , University of Mysore, 2015
- Member- Ph. d Doctoral Committee in Microbiology ,Bangalore University (2016)
- Expert Member, Equipment Purchase Committee for Research KR Hospital Mysore , India, Mysore (2015-16)
- Editorial committee Member in (2010 to Present):
 1. In sight Bacteriology
 2. In sight Microbiology
 3. Plant Cell Biotechnology and Molecular Biology Journal
 4. Journal of emerging trends in Engineering and Applied Sciences
 5. Asian Journal of agriculture Sciences
- Coordinator, UGC Innovative Programme, Department of Studies in Microbiology, 2012 - 2017
- Member , Advisory committee , National Service Scheme , University of Mysore, Mysore 2014 -16
- Member , Governing Council , Manasagangotri School Mysore, 2014-16
- Member of Centre with Potential for Excellence in Particular Area (CPEPA) in Processing (UGC) , Characterization and Applications of Advanced Functional Nano Materials, University of Mysore (2012-16)
- Member of University with Potential for Excellence (UGC) , University of Mysore Mysore (2012-16)
- Member, Board of Studies in Applied Botany, Kuvempu University (2014-2015)
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- Member, Board of Studies in Applied Botany University of Mysore (2010-2013)
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- Member, Board of Studies in Botany, JSS Women's College, Mysore (2007-2011)
- Member, Board of Studies in Microbiology, Pondicherry University (2010-2013)
- Member, Board of Studies in Microbiology, Gulbarga University (2011-2014)
- Member, Board of Studies in Microbiology, Yuvaraja College, Mysore (2010-2012)
- Member- Technical Review Committee 103rd Indian Science Congress , University of Mysore (2016)
- Member, Board of Studies in Microbiology, JSS College for Women, Mysore (2016-2017).
- Member, Board of Studies in Biotechnology & Microbiology Dharwad University (2016-2017)
- Member, Board of Studies in Food Science and Technology, Pondicherry University (2016-2019)
- Member, Board of Studies in Biotechnology & Microbiology, Bangalore University (2015-2017)
- Member, Board of Studies in Bioscience, University of Mysore (2016-2019)
- Member, Board of Studies in Genetics , University of Mysore (2015-2018)

Any other Information

Abroad Visit

1. **Italy:** Presented a Paper in "8th International Congress of Plant Tissue and Cell Culture held at Firenze, Italy. Funded by Department of Science and Technology, Govt. of India (1994)
2. **Australia:** Visiting Fellow at School of Biological Sciences, Perth, W. Australia, Funded by UNESCO Biotechnology Action Council Programme (1996)
3. **Singapore:** Visited National University of Singapore UNESCO, Biotechnology Action Council Programme (1996)

Presented a paper in Biology in Asia International conference, National Institute of Education, Nanyang Technological University Singapore Funded by DST, New Delhi (2004)
4. **Israel:** Presented a paper in 9th International Congress on Plant Tissue and Cell Culture held at Jerusalem, under Indo-Israel Culture Exchange Programme, UGC, New Delhi (1998)
5. **USA:** Worked as Visiting Fellow in the Department of Molecular Biology and Microbiology, University of Central Florida, Orlando, DBT Overseas Fellowship(2008)

Worked as Visiting Fellow Department of Biology, Virginia University , DBT Overseas Fellowship (2008)
6. **Taiwan:** Presented a paper on "Physicochemical and biochemical changes in tree seeds during storage. In. IUFRO Tree seed symposium: Recent advances in seed research and *ex-situ* conservation held at Taiwan Forestry Research Institute, Taipei, Taiwan, Republic of China, 2010.

Invited by Agriculture Biotechnology Research Institute, Academia Sinica, Taipei, Taiwan (2010)

7. **Nepal:** Presented a paper on “*Ex- situ* conservation of forest biodiversity for sustainable development”. In. “Biodiversity, Livelihood and Climate Change in the Himalayas, ICBLCC-2010”, held at Kathmandu, Nepal held on December, 2010.
8. **Hungary:** Indo-Hungarian Educational Exchange Programme May- June, 2011
9. **Malaysia:** Plenary Speaker in “Studying Quorum Sensing Regulated Biofilm Formation using Confocal Microscopy.” in 20th Scientific Conference of the Microscopy Society of Malaysia and 21st Annual General Meeting, Malaysia. December, 2011. Visited Malayan University on 29th July 2016.
10. **Canada :** Attended 2nd International Festival of Science, Technology, Engineering and Mathematics (STEM fest) , 27th September to 3rd October 2015, Saskatoon
11. **Turkey:** Visited Yıldız Technical University Chemical and Metallurgical Engineering Istanbul under Indian National Science Academy under International Scientific Collaboration and bilateral Exchange program 22.11. 2015 to 30.11.2015
12. **Indonesia:** Key note speaker in the International Conference on Biosciences 2016 on 'Advancing Biodiversity for sustainable food security held Udayan University in Bali in July 26 - 27, 2016.