

Mahatma Gandhi University
School of Biosciences



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ACADEMIC PROFILE

- Asst. Professor: 2010 onwards, Assistant Professor in Microbiology, School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala, India – 686 560.
- Post Doctoral: 2008-2010, Tokyo Biochemical Research Foundation (**TBRF**) Post Doctoral Fellow, Under **Prof. Ikuro ABE**, The University of Tokyo, Japan.
- Ph.D: 2001- 2008, Under **Dr. Soniya E.V.**, Scientist, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala, India.
- M.Sc: 1998-2000, **Microbiology (First Rank)**, School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala, India– 686 560.

HONORS, PRIZES AND SCHOLARSHIPS

- 2001 : **First Rank** in M.Sc Microbiology
- 2002 : **GATE 2002**
- 2002 : **CSIR-UGC- JRF-NET**
- 2005: **Prize** for the Poster presentation at the “International Conference on Biotechnological approaches for alleviating malnutrition and human health” organized by UAS, Bangalore, India.
- 2007 : Travel grant for invited participation at “**Interactive Meet with European and Indian Science Icons**” Host: Department of Science & Technology, Embassy of Germany in New Delhi, EU Delegation of EC in India at Vigyan Bhavan, New Delhi, February 8,2007.

- 2008 : **Prize** for the Poster presentation at the “**International symposium on Computational Biology, Bioinformatics and Synthetic Biology**” organized by Centre for Bioinformatics, University of Kerala, Thiruvananthapuram.
- 2008 : **Tokyo Biochemical Research Foundation (TBRF) Post Doctoral Fellowship** (One among the four Asian candidates selected for the Fellowship in 2008).
- 2016: Honored presentation of “**Bharat Gaurav Award**” by **India International Friendship Society**, May 2016.

ACHIEVEMENTS BY RESEARCH TEAM

- 2012 : First Prize for poster presentation for **Aswathy Agnes Joseph** at the **24th Kerala Science Congress**, organized by Rubber Board., Kottayam, Kerala, India on 29-31, January 2012.
- 2012: **First Prize for Paper presentation** for **Roshmi Thomas** at “Nanotechnology: Applications of Nanomaterials in Agriculture, Food and medicine, 25-26 July organised by BK College, Amalagiri, Kottayam.
- 2013: **First Prize for Paper presentation** for **Jasim B** at the “National Seminar on Advanced Biochemical Techniques: Relevance in Interdisciplinary Research Scenario” on September 3-4, organized by B.K. College, Amalagiri, Kottayam.
- 2014: **Senior Research Fellowship Award** for **Roshmi Thomas** from **Indian Council of Medical Research**
- 2015: **Best paper award** for **Rosemin Benny** at 25th Swadhesi Science congress December 2015.
- 2016: **Young scientist award for the best paper** for **Rohini Sabu** in the National seminar on Diversity of Microbes and Climate Change mitigation held during 3rd-5th February 2016 organized by Catholicate College, Pathanamthitta.
- 2016: **Best paper award** for **Jimtha John C** In UGC Sponsored National seminar on progress and prospects of Biotechnology, at St. Josephs College, Irinjalakuda on 14th and 15th January ,2016.

- 2016: **Best Poster Award** for **Anisha C** at the International Seminar on Emerging Trends in Organic Farming and Sustainable Agriculture organized by IUCOFSA, Mahatma Gandhi University, on 29th 31st Dec,2016
- 2017 : **Second prize for paper presentation** for **Snigdha .S** at National seminar on Recent Trends in Applied Life Sciences, March 15- 16,2017, School of Biosciences, Mahatma Gandhi University, Kottayam.

RESEARCH EXPERIENCES

- April- July 2000: **M.Sc. Project work** “Oxidation of Gaseous Hydrogen Sulphide in a Laboratory Scale Biofilter” carried out at Regional Research Laboratory (RRL, CSIR), Thiruvananthapuram, Kerala, India.
- August 2001: As **Junior Research fellow** for analysis of drinking water at National Environmental Engineering Research Institute (NEERI), Kochi Zonal Laboratory, Cochin, Kerala, India.
- October 2001 to May 2008: As **Research Fellow**, Rajiv Gandhi Centre for Biotechnology, Thycaud (PO), Poojappura, Thiruvananthapuram, Kerala, India.
- June 2008-2010: As **Post Doctoral Fellow**, University of Tokyo, Japan.
- January 2010- Current- Research Guide, School of Biosciences, MG University

FUNDED PROJECTS

I. AS PRINCIPAL INVESTIGATOR

1. **Dr. Radhakrishnan EK (Principal Investigator)** and Prof. (Dr.) Jyothis Mathew (Co-Investigator) “Molecular Exploration of Spice Associated Bacteria for Bioactive metabolites and PKS-NRPS genes” Major Project (15 Lakhs) from **DBT** under the DBT-RGYI Scheme (2011-2014, completed).
2. **Dr. Radhakrishnan EK (Principal Investigator)** and Prof. (Dr.) Jyothis Mathew (Co-Investigator), Dr. Sheela Sugathan (Co-Investigator), “Molecular Studies on Biofilm formation in Coagulase Negative Staphylococci” Major Project (22 Lakhs) from **ICMR** (2011-2014, completed).

3. **Dr. Radhakrishnan EK (Co-ordinator)** SARD Programme support from KSCSTE to School of Biosciences, Mahatma Gandhi University (21.25 Lakhs) (2014-2017).

4. **Dr. Radhakrishnan EK (Principal Investigator)** and Prof. (Dr.) Jyothis Mathew (Co-Investigator) Major Project from KSCSTE, 25 Lakhs, “Studies on molecular and chemical basis of plant growth promoting and anti-phytopathogenic properties of rhizosphere microorganisms” (2015 - 2018).

II. AS Co-INVESTIGATOR

1. **Dr. Radhakrishnan E.K** - Investigator of Project on "Metabolite profiling and mining of endophytic fungi for novel bioactive metabolites" as part of **DST-PURSE** programme support to Mahatma Gandhi University (2011-2014).

2. **Dr. Radhakrishnan EK** - (Co-Investigator) DBT-Mahatma Gandhi University, “Interdisciplinary Life Science Programme for Advanced Research and Education” Programme support from **DBT** to Mahatma Gandhi University (2012-2017).

3. Dr. Jayachandran K (Principal Investigator) and **Dr. Radhakrishnan EK** (Co-Investigator), Major Project from **KSCSTE** (2011-2014).

4. **Dr. Radhakrishnan EK** (Co-coordinator), DST-FIST Programme support to School of Biosciences, Mahatma Gandhi University (2016-2021)

RESEARCH AREAS

1. Exploration of endophytic microorganisms for bioactive compounds.

Endophytic microorganisms form micro-machines within the host plants by producing various bioactive natural products and also plant growth promoting chemicals. So we are interested to isolate various groups of endophytic microorganisms from taxonomically diverse and medicinally distinct plants. The isolated organisms will be studied in detail for the presence of bioactive natural products and also for the genes (especially those of the PKS and NRPS group) involved in the biosynthesis of bioactive compounds.

2. Exploration of plant associated bacteria for plant growth promoting and antiphytopathogenic properties

Plant associated bacteria are recently studied much for their beneficial effect on host plant. They exert beneficial effect to the host by both direct and indirect mechanism. Also some of these isolates have well equipped chemical machinery to resist plant pathogens. Considering the biodiversity richness of Kerala, many organisms with potential plant growth enhancement and antiphytopathogenic properties are well expected in association with taxonomically and

metabolically distinct plants. So we are interested to study plant growth promoting properties of bacteria from rhizosphere soil samples.

3. Microbial synthesis of metal nanoparticles

Nanoparticles exhibit unique properties because of their size, distribution and morphology. Among the various methods used for nanoparticle synthesis, biological methods especially those mediated by microorganisms are shown to have promising applications. So we are interested to explore the nanoparticles synthesizing properties of microbial isolates from diverse sources.

4. Mechanism of biofilm formation in coagulase negative *Staphylococci*

Biofilm formation in coagulase negative staphylococci (CoNS) makes them to have more threatening clinical effects associated with indwelling medical devices such as vascular catheters, prosthetic joints, etc. As the process of biofilm formation in CoNS is a highly complex and multifactorial, a detailed molecular investigation on the various molecular mechanisms behind this process is very important. So we are interested to study the molecular and chemical heterogeneity of biofilm formation among CoNS isolated from various clinical samples.

RESEARCH TEAM

Ph.D completed under supervision

1. Roshmi Thomas : “Biomedical applications of microbially fabricated silver and gold nanoparticles” (Ph.D awarded)
2. Jasim B : “Functional analysis and applications of endophytic bacteria from selected spice plants” (Ph.D awarded).
3. Jimtha John C : “Studies on plant growth promoting properties and applications of PGPR isolates from western ghat” (Ph.D awarded).
4. Soumya K R : “Molecular investigation on species diversity, antibiotic resistance and biofilm formation among coagulase negative *Staphylococci*” (Ph.D awarded).
5. Chithra S : “Bioprospecting of endophytic fungi from different cultivars of *Piper nigrum*” (Ph.D Thesis submitted).
6. Rohini Sabu : Plant growth promoting and antiphytopathogenic properties of endophytic bacteria from *Zingiber Officinale Rosc* (Ph.D Thesis submitted).
7. Anisha C : Beneficial endophytic fungi from Rhizomes of *Zingiber Officinale Rosc*. (Ph.D Thesis submitted).

Current Research Students

Sl No	Name of the Scholar	Year	Title of the Project/Study
1	Shiji Mathew	2015	Antimicrobial and wound healing properties of microbially generated silver nanoparticle based formulations.
2	Deepa P Mohanan	2015	Wound healing applications of phytonanoformulations.
3	Jishma P	2015	Studies on molecular and chemical basis of plant growth promoting and anti-phytopathogenic properties of rhizosphere microorganisms.
4	Snigdha	2016	Antimicrobial properties of Nanomaterials
5.	Aswani R	2017	Microbial role to induce plant immune response
6.	Aswathy Jayakumar	2017	Role of microbiome in plant stress response
7	Ashitha Jose	2017	Biochemical Response of microorganisms towards Nanoparticles

M.Phil. Project, M.Sc. Project and other student Trainings provided under supervision

- M.Phil
 1. Anisha C - 2010
 2. Anju Janardhanan - 2012
 3. Jasim B - 2012
 4. Soumya Rajappan - 2013
 5. Shiji Mathew - 2014
 6. Jishma P - 2015
 7. Bilzamol V Sasi - 2016
 8. Anju - 2017

- M.Sc. Project Completed
 1. Aswathy Agnes Joseph - 2011
 2. Vidhya Lakshmi - 2011
 3. Akhil Kishore - 2011
 4. Aswathy Viswam - 2012

5. Santhi AnnaThomas	- 2012
6. Roopa M	- 2012
7. Shimil Vellakkodiyam	- 2013
8. Acquiline Mary Paul	- 2013
9. Ashwathi P Nair	- 2013
10. Rakhi Narayanan	- 2014
11. Arathy GB	- 2014
12. Geethu P R	- 2014
13. Daya	- 2015
14. Rosemin	- 2015
15. Arun	- 2016
16. Dhanoop	- 2016
17. Rakhie	- 2016
18. Romy R.S	- 2016
19. Neethu T.K	- 2016
20. Saji Varghese	- 2016
21. Anagha Prakash	- 2016
22. Sreejith	- 2017
23. Shibil	-2017
24. Roshni	-2017
25. Haritha	-2017
26. Farha	-2017
27. Athulya	-2017
28. Nayana	-2017
29. Athira	-2017
30. Rahul	-2017

• **Trainings provided to candidates from other Institutions**

1. Anish	- 2013
2. Deepthi	- 2013
3. Meekha	- 2013
4. Pallavi Pavithran	- 2014
5. Reshmi R N	- 2014
6. Sreelakshmi K S	- 2015
7. Karthika N R	- 2015
8. Nimisha P	- 2015
9. Sreelekha S	- 2015
10. Mrudula M. M	- 2015
11. Kousalya	-2016
12. Anju	-2016
13. Chinnu	-2016
14. Aswathy	-2016
15. Sindhoora	-2016

16. Cimmiya	-2017
17. Induja	-2017
18. Merin	-2017
19. Bichu	-2017
20. Arathy	-2017

WORKSHOPS/CONFERENCES ATTENDED

1. **“Recent Trends in Genomics”**, XXVII Annual Conference of the Indian Society of Human Genetics, 14-16 February 2002, organized by Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala.
2. **“National Workshop on Bioinformatics”** organized by Centre for Development of Imaging technology (C-DIT) and Tropical Botanical Garden and Research Institute (TBGRI), 10-12 June, 2002, Thiruvananthapuram, Kerala.
3. One day seminar on **“Trends in Biotechnology”** organized by Tropical Botanical Garden and Research Institute (TBGRI) and Society for Biotechnologists India (SBTI), 24 July, 2002, TBGRI, Thiruvananthapuram, Kerala.
4. Participated in the **“ICRO-EMBO-UNESCO - International workshop on Biotechnological tools for Plant improvement”**, 7-20 September 2003, organized by K.S.R College of Arts and Science, Thiruchengodu, Tamilnadu, India
5. Participated **“International Symposium on Steroid Hormone Receptor Superfamily and Molecular signaling (SHRSMS)”**, 25-27, November 2004 organized by Rajiv Gandhi Centre for Biotechnology Thiruvananthapuram, Kerala.
6. Participated **“National Seminar on Life Style and Diseases”** 19-20, January 2012 organized School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala.
7. Participated **“A Short Course on Metagenomics: Role of Next Generation Sequencing and Bioinformatics”** 15th Oct to 24th Oct, 2012 organised by Anand Agricultural University, Anand, Gujarat.
8. Participated **“ National Seminar on Water Resource Management: Present Uses, Status, Conservation and Cooperation”** organized by Bishop Moore college, Mavelikara on 20th - 22nd March, 2013.

PUBLICATIONS, PRESENTATIONS AND INVITED TALK

I. PUBLICATIONS – IN JOURNALS

67. Roshmi Thomas, Shiji Mathew, Nayana AR, Jyothis Mathews, and **Radhakrishnan E. K**, Microbially and phytofabricated AgNPs with different mode of bactericidal action were identified to have comparable potential for surface fabrication of central venous catheters to combat *Staphylococcus aureus* biofilm, Accepted in **Journal of Photochemistry & Photobiology, B: Biology**

66. Rohini Sabu, Soumya KR, Radhakrishnan EK, Endophytic Nocardiosis sp. from *Zingiber officinale* with both antiphytopathogenic mechanisms and antibiofilm activity against clinical isolates Accepted in **3 Biotech**.

65. Jishma P, Nisma Hussain, Romy, Rakhie, Jyothis Mathew, **Radhakrishnan EK**, Strain specific variation in plant growth promoting volatile organic compound production by five different *Pseudomonas* spp. as confirmed by response of *Vigna radiata* seedlings(Accepted in **Journal of Applied Microbiology**.

64. Aswani R and **Radhakrishnan E.K**, Plant beneficial mechanisms and applications of endophytic bacteria, Review, Accepted in **BAOJ Microbiology**.

63. Jimtha John C, Jishma .P, Sreelekha S., Chithra S Radhakrishnan E.K., Antifungal properties of prodiginin producing rhizospheric *Serratia* sp. Accepted in **Rhizosphere, 2017**.

62. Anisha C, **Radhakrishnan E.K** Metabolite analysis of endophytic fungi from cultivars of *Zingiber officinale* Rosc. identifies myriad of bioactive compounds including tyrosol Accepted in **3 Biotech**.

61. Chithra S, Jasim B, , Mathew J, **Radhakrishnan EK** Endophytic *Phomopsis* sp. colonization in *Oryza sativa* was found to result in plant growth promotion and piperine production"- Accepted in **Physiologia Plantarum**

60. Roshmi Thomas, Jishma P and **Radhakrishnan EK** "Photocatalytic and antibacterial effects of Silver nanoparticles fabricated by *Bacillus subtilis* SJ15. Accepted in **Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry**.

59. Snigdha S, Sabu Thomas, **Radhakrishnan EK** (2017) Polymer Based Tissue Engineering Strategies for Neural Regeneration. **Adv Tissue Eng Regen**, Med Open Access 2(1): 00016. 2017, 2(1): 00016, DOI: 10.15406/atroa.2017.02.00016- Mini Review

58. Soumya KR , Sheela Sugathan, Suja Varghese, Jyothis Mathew, **Radhakrishnan EK** Virulence factors associated with coagulase negative staphylococci isolated from human infections. Accepted in **3 Biotech**.

2017

57. **Mini K.D, Mini K.Paul, Radhakrishnan E.K and Jyothis Mathew** Characterization of Keratinase from *Aspergillus flavus* S125 International Research Journal of Natural and Applied Sciences Vol. 3, Issue 10, October 2016

56. Rohini Sabu and **E.K. Radhakrishnan**. Bioprospecting of Endophytic Bacteria from *Zingiber officinale* with Antibacterial Activities. **Int.J.Curr.Microbiol.App.Sci.** 5(9): 462-467.

55. Snigdha, Shiji Mathew, Nandakumar K, Sabu Thomas, **Radhakrishnan EK**, Antimicrobial, antibiofilm and microbial barrier properties of poly (ϵ -caprolactone)/cloisite 30B thin films **3Biotech**, 2016 Dec; 6(2): 249.

54. Jasim B, Sreelakshmi S, Jyothis Mathew and **Radhakrishnan EK**. “Bioactive peptide biosynthesis by endophytic *Bacillus mojavensis* from *Bacopa monnieri* **3Biotech**, 2016 Dec; 6(2): 187.

53. Jimtha , **Radhakrishnan EK**, Multipotent plant probiotic rhizobacteria from Western Ghats, its effect on quantitative enhancement of medicinal natural product biosynthesis **Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.** (2016). doi:10.1007/s40011-016-0810-3.

52. Soumya KR , Sheela Sugathan, Jyothis Mathew, **Radhakrishnan EK** Studies on co-existence of mec gene, IS256 and novel sasX gene among human clinical coagulase negative staphylococci , **3Biotech**, 2016 Dec; 6(2): 233.

51. Jasim B, Roshmi Thomas, Jyothis Mathew and **Radhakrishnan EK**. Plant growth and diosgenin enhancement effect of silver nanoparticles in Fenugreek (*Trigonella foenum-graecum* L. **Saudi Pharmaceutical Journal.** <http://dx.doi.org/10.1016/j.jsps.2016.09.012>

50. Jimtha John C, Jishma P, Arathy G B, Anisha C, **Radhakrishnan EK** (2016) “Identification of plant growth promoting rhizosphere *Bacillus* sp. WG4 antagonistic to *Pythium myriotylum* and its enhanced antifungal effect in association with *Trichoderma* sp.” - **Journal of Soil science and plant nutrition**, ol.16 no.3 Temuco set. 2016, doi.org/10.4067/S0718-95162016005000026

49. Ouseph Varghese, Neethu Sahadevan, **Radhakrishnan EK**, Jyothis Mathew (2016) Antifungal effect of *Zingiber zerumbet* extract and its compatibility with tobacco decoction-a biopesticide **International Journal of Advanced research** 4(2) 455-460.

48. Sunitha V.S., Sunil M.A., **Radhakrishnan EK**, Jyothis Mathew, Immunomodulatory activity of *Vetiveria zizanioides* extract on peritoneal macrophages of albino mice (2015) **International Journal for Pharmaceutical Research Scholars** ISSN No: 2277 – 7873 V4 1-4.

47. Sunitha V S, Sunil M A, **Radhakrishnan EK**, Jyothis Mathew, Immunomodulatory Activity of *Caesalpinia sappan* L. Extracts on Peritoneal macrophage of Albino Mice, 2015) **International Journal of Science and Research (IJSR)** ISSN: 2319-7064.

46. V.S.Sunitha, M.A.Sunil, **Radhakrishnan EK** and Jyothis Mathew “Invitro and In vivo immunomodulatory effects of thirst quenchers of Kerala on murine peritoneal macrophages” (2014) **Nepal Journal of Epidemiology** 4(2) ISSN 2091-0800.

45. Jasim B, Jyothis Mathew, **Radhakrishnan EK**, “Identification of a Novel endophytic *Bacillus* sp. from *Capsicum annuum* with highly efficient and broad spectrum plant probiotic effect” - **Journal of Applied Microbiology**. 2016 Oct;121(4):1079-94. doi: 10.1111/jam.13214. Epub 2016 Aug 9.

44. Jishma, Roshmi Thomas, Rakhie, **Radhakrishnan EK**, “Exploration of Photocatalytic Properties of Microbially Designed Silver Nanoparticles on Victoria Blue B” **Bioprocess and Biosystem Engineering**, 2016, 10.1007/s00449-016-1581-1.

43. Jasim B, Rosemin Benny, Rohini Sabu, Jyothis Mathew, **Radhakrishnan EK** “Metabolite and mechanistic basis of antifungal property exhibited by endophytic *Bacillus amyloliquefaciens* BmB 1, **Appl Biochem Biotechnol**, 2016: 1-16.

42. Jasim B, Sreelekshmi, Jyothis Mathew, **Radhakrishnan EK** “Surfactin, Iturin and Fengycin biosynthesis by endophytic *Bacillus* sp from *Bacopa monnieri*” . **Microbial Ecology**, 2016, 10.1007/s00248-016-0753-5

41. KR Soumya, Shiji Mathew, Sheela Sugathan, Jyothis Mathew and **Radhakrishnan EK**, “Studies on prevalence of biofilm associated genes and primary observation on sasX gene in clinical isolates of Coagulase negative staphylococci”. **Acta Pathologica Microbiologica Scandinavica**. 2016 Apr;124(4):319-26.

2016

40. Suada, Jasim, Jimtha, Gayathri, **Radhakrishnan EK**, Remakanthan, A – Phytostimulatory and hardening period reducing effects of plant associated bacteria on micropropagated *Musa*

accuminata cv. Grand naine, **In Vitro Cellular and Developmental Biology – Plant** – (2015), 51:682- 687.

39. Roshni Thomas, **Radhakrishnan EK** "Effect of biofabricated gold nanoparticle based antibiotic conjugates on Minimum Inhibitory Concentration of bacterial isolates of clinical origin- **Gold Bulletin**, 2015, 48:63-71.

38. Jasim B, Anish, Shimil, Jyothis Mathew, **Radhakrishnan EK** “Studies on plant growth promoting properties of fruit associated bacteria from *Elettaria cardamomum* and molecular analysis of ACC deaminase gene” **Appl Biochem Biotechnol**, 2015, 177:175-189.

37. Roshni Thomas, **Radhakrishnan EK** “Electrospun polycaprolactone membrane incorporated with biosynthesized silver nanoparticles as effective wound dressing biomaterial” **Appl Biochem Biotechnol**, 2015, 176:2213-2224

36. Roshni Thomas, Soumya KR, Jyothis Mathew, **Radhakrishnan EK**, Inhibitory effect of silver nanoparticle fabricated urinary catheter on colonisation efficiency of Coagulase Negative Staphylococci, **Journal of Photochemistry and Photobiology B: Biology**, 2015, 149:68-77.

35. Jasim B, Geeethu, Jyothis Mathew, **Radhakrishnan EK** "Effect of endophytic *Bacillus* sp. from selected medicinal plants on growth promotion and diosgenin production in *Trigonella foenum graecum*", submitted to **Plant Cell, Tissue and Organ Culture (PCTOC): Journal of Plant Biotechnology**, 2015, 122:565-572.

34. Anisha C, **Radhakrishnan EK**, Gliotoxin-Producing Endophytic *Acremonium* sp. from *Zingiber officinale* Found Antagonistic to Soft Rot Pathogen *Pythium myriotylum*. **Appl Biochem Biotechnol**. 2015 Apr;175(7):3458-67.

33. Jasim B, Soumya R, Jyothis Mathew and **Radhakrishnan EK**, Exploration of actinomycetes endophytically associated with *Piper nigrum* for antimicrobial, antiproliferative and antioxidant activity", **The Journal of Microbiology, Biotechnology and Food Sciences**, 2015 (282-286).

2015

32. **Radhakrishnan EK**, Smitha V. Bava (equal contributor) Sai Shyam Narayanan , Lekshmi R. Nath , Arun Kumar T. Thulasidasan, Eppurathu Vasudevan Soniya, Ruby John Anto, “[6]-Gingerol Induces Caspase-Dependent Apoptosis and Prevents PMA- Induced Proliferation in Colon Cancer Cells by Inhibiting MAPK/AP-1 Signaling”, **PLoS ONE**, 2014, 9(8): e104401.

31. Jasim B, Jimtha John C, Shimil Vellakudiyam, Jyothis Mathew and **Radhakrishnan EK**, Studies on the factors affecting Indole-3-acetic acid production in endophytic bacteria and molecular analysis of ipdC gene, **Journal of Applied Microbiology** 2014, 117(3):786-99.

30. John C. Jimtha, P. V. Smitha, C. Anisha, Thomas Deepthi, George Meekha, **Radhakrishnan EK**, G. P. Gayatri, A. Remakanthan. Isolation of endophytic bacteria from embryogenic suspension culture of banana and assessment of their plant growth promoting properties. **Plant Cell Tiss Organ Cult** 2014, 118: 57–66.

29. Thomas R, Nair AP, KR S, Mathew J, **Radhakrishnan EK**. Antibacterial activity and synergistic effect of biosynthesized AgNPs with antibiotics against multidrug-resistant biofilm-forming coagulase-negative staphylococci isolated from clinical samples. **Appl Biochem Biotechnol**. 2014, 173(2): 449-60.

28. Chithra S, Jasim B, Anisha C, Mathew J, **Radhakrishnan EK**. LC-MS/MS based identification of piperine production by endophytic *Mycosphaerella* sp. PF13 from *Piper nigrum*. **Appl Biochem Biotechnol**. 2014, 173(1): 30-5.

27. Roshmi Thomas, Anju Janardhanan, Rintu T Varghese, Sonia E V, Jyothis Mathew and **Radhakrishnan EK**. Antibacterial properties of silver nanoparticles synthesized by marine *Ochrobactrum* sp., **Brazilian Journal of Microbiology**..

26. Jasim B, Anisha C, Rohini S, Kurian JM, Jyothis M, **Radhakrishnan EK**. Phenazine carboxylic acid production and rhizome protective effect of endophytic *Pseudomonas aeruginosa* isolated from *Zingiber officinale*. **World J Microbiol Biotechnol**. 2014, 30(5): 1649-54.

25. Chithra S, Jasim B, Sachidanandan P, Jyothis M, **Radhakrishnan EK**. Piperine production by endophytic fungus *Colletotrichum gloeosporioides* isolated from *Piper nigrum*. **Phytomedicine**. 2014, 21(4): 534-40.

24. Jasim B, Aswathy, Jimtha John C, Jyothis Mathew and **Radhakrishnan EK** "Isolation and Characterization of Plant Growth Promoting endophytic Bacteria from the Rhizome of *Zingiber officinale*", **3 Biotech**, 2014, 4:197–204.

23. Vidhya Lakshmi Das, Roshmi Thomas, Rintu T Varghese, Soniya EV, Jyothis Mathew and **Radhakrishnan EK** Extracellular synthesis of silver nanoparticles by a *Bacillus* sp. isolated from industrialized area, **3 Biotech** 2014, 4:121–126.

2014

22. Shini Zacharia, Asha Peter, Jyothis Mathew, **Radhakrishnan EK**, *P. americana* as an Intestinal Carrier of Nosocomial and Food Borne Bacterial Pathogens, **Asian J Pharm Clin Res**, 2013, 6(4): 38-41.

21. K.R. Soumya, Santhi Anna Thomas, Sheela Sugathan, Jyothis Mathew and **Radhakrishnan EK**, Antibiotic susceptibility and multiplex PCR analysis of Coagulase Negative Staphylococci

isolated from laboratory workers, **International Journal of Current Microbiology and Applied Sciences** 2013, 2(11): 266-272.

20.Suja Philip, **Radhakrishnan EK** and Jyothis Mathew, Adherence of *Staphylococcus epidermidis* to different smooth surfaces and efficacy of rifampicin to prevent surface colonization, **International Journal of Pharmacy and Integrated Life Sciences**, 2013, 1(16): 62-72.

19.Suja Philip, **Radhakrishnan EK** and Jyothis Mathew, Detection of icaAB and mecA Genes in *Staphylococcus epidermidis* by Combined Polymerase Chain Reaction and Analysis, **World Journal of Pharmaceutical research**, 2013, 2(4):1008-1017.

18.Anisha C, Jyothis Mathew, **Radhakrishnan EK**, Plant Growth promoting properties of endophytic *Klebsiella* sp. isolated from *Curcuma longa*, **International Journal of Biology, Pharmacy and Allied Sciences**, 2013, 2(3): 593-601.

17.Anju Janardhanan, Roshmi Thomas, Rintu T Varghese, Sonia E V, Jyothis Mathew and **Radhakrishnan EK** Biosynthesis of silver nanoparticles by a *Bacillus* sp. of marine origin, **Material Science Poland**, 2013, 31(2):173-179.

16.Jasim B, Rohini Sabu, Anisha C, Jimtha John C, Jyothis Mathew and **Radhakrishnan EK**, Antifungal and Plant Growth Promoting Properties of Endophytic *Pseudomonas aeruginosa* from *Zingiber officinale*, **Journal of Pure and Applied Microbiology**, 2013, 7(2): 1003-1009.

15.Jasim B, Jimtha Joseph, Jyothis Mathew and **Radhakrishnan EK**, Plant growth promoting potential of endophytic bacteria isolated from *Piper nigrum*, **Plant Growth Regulation**, 2013, 71:1-11.

14.Asha Peter, Shini Zacharia, **Radhakrishnan EK** and Jyothis Mathew "Antimicrobial resistance trends with special reference to vancomycin resistance among different species of Enterococci" **International Journal of Pharma and Bio Sciences** 2013, 4(1): 356 - 363.

2013

13.Roshmi Thomas, Jasim B, Jyothis Mathew and **Radhakrishnan EK**, Extracellular synthesis of silver nanoparticles by endophytic *Bordetella* sp. isolated from *Piper nigrum* and its antibacterial activity analysis, **Nano Biomedicine and Engineering**, 2012, 4(4): 183-187.

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11.Suja Philip, **Radhakrishnan EK**, Jyothis Mathew, "Antimicrobial Susceptibility and Plasmid Pattern Analysis of Coagulase Negative Staphylococci Isolated from Different Sources", **Asian Journal of Pharmaceutical and Clinical Research**, 2012, 5(4): 207-210.

10.Roshmi Thomas, Aswathy Viswan, Jyothis Mathew, **Radhakrishnan EK**. "Evaluation of Antibacterial Activity of Silver Nanoparticles Synthesized by a Novel Strain of Marine *Pseudomonas Sp*", **Nano Biomedicine And Engineering**, 2012, 3(3): 163 - 172.

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8.Anisha C, Jyothis Mathew and **Radhakrishnan EK** "Extracellular Lipolytic Enzyme Production by a Novel Extremely Halophilic Bacterium" **Universal Journal of Environmental Research and Technology**, 2012, 2(3): 143-148.

7.Mini K Paul, Mini K D, Ally C Antony, **Radhakrishnan EK** and Jyothis Mathew "Utilization of prawn shell powder for the production of chitinase by *Kurthia gibsonii mb126*. **International Journal of Pharma and Bio Sciences** 2012, 3(3): 163 - 172.

6.Itoh T., Tokunaga K., **Radhakrishnan EK.**, Fujii I., Abe I., Ebizuka Y., Kushiro T. "Identification of a key prenyltransferase involved in biosynthesis of the most abundant fungal meroterpenoids derived from 3,5-dimethylorsellinic acid". **ChemBioChem**, 2012,13(8):1132-1135.

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5.Suja Philip, Minu Thomas, **Radhakrishnan EK** and Jyothis Mathew "Species Distribution and Virulence Properties of Coagulase-Negative Staphylococci Isolated from Human and Domestic Animal Sources" **Asian J. of Microbiol. Biotech. Env. Sc.** 2011, 13(4): 743-748.

4. **Radhakrishnan EK**, Rintu T Varghese and E V Soniya, Unusual intron at the second exon of the Type III polyketide synthase gene of *Alpinia calcarata* Rosc. **Gene. and Mol. Bio.** 2010, 33(1): 141-145.

3. **Radhakrishnan EK** and Soniya. E.V, Molecular analysis of type III polyketide synthase (PKS) gene family from *Zingiber officinale* Rosc **Af. Jour. Pla. Sci**, 2009, 3 (3): 044-048.

2. **Radhakrishnan EK**, Sivakumar K.C and Soniya EV, Molecular Characterization of Novel form of Type III Polyketide Synthase from *Zingiber officinale* Rosc. and its Analysis using Bioinformatics Method. **Jou. Prot. and Bioinfo.** 2009, 2(7): 310-315.

1.Soniya. EV. Kannapiran. P, Sindhu C Unni, Nisha Joy and **Radhakrishnan EK** Transformation and regeneration of *Solanum melongena* using *Agrobacterium tumefaciens* **J. Plant Biol.**, 2005, 32(1): 29-32.

PATENT

One filed

Two submitted

BOOK CHAPTERS

1. Soumya K R, Suja Philip, Sheela Sugathan, Jyothis Mathew and **Radhakrishnan E K** Book chapter titled “Mechanisms behind the Establishment of Coagulase Negative Staphylococci as Successful Nosocomial Pathogens” in the book “RECENT DEVELOPMENTS IN BIOTECHNOLOGY published by Studium Press LLC, USA (in press).
2. Roshmi Thomas, Jyothis Mathew and **Radhakrishnan EK** Book chapter titled “Recent Advances in Microbial Synthesis of Metal Nanoparticles” in the book “RECENT DEVELOPMENTS IN BIOTECHNOLOGY published by Studium Press LLC, USA (in press).
3. Deepa P. Mohanan, Robin Augustine, Nandakumar Kalarikkal, **Radhakrishnan E. K.**, and Sabu Thomas “Electrospun Matrices for Biomedical Applications: Recent Advance” book chapter in Nanomedicine and Tissue Engineering State of the Art and Recent Trends. <http://www.sponpress.com/books/details/9781771881180/>
4. Shiji Mathew, Keerthi T.R and **Radhakrishnan E. K.**, Metal oxide nanoparticles “Pharmaceutical nanotechnology Elsevier, 2016 (Submitted).

II. POSTER PRESENTATIONS

1. At the International Conference on “**Plant genomics and Biotechnology: Challenges and Opportunities**” Indira Gandhi Agricultural University, Raipur on 26-28th October 2005.
2. At the “**International Conference on Biotechnological approaches for alleviating malnutrition and human health**” organized by the University of Agricultural Sciences, Bangalore on 9th to 11th January, 2006.
3. At the “**GDEST – India- US workshop on Agricultural Biotechnology for the Global Public Good**” organized by M.S. Swaminathan Research Foundation, Chennai, India. October 4-6, 2006.

4. At the “**International Conference in Bioinformatics**” organized by Department of Biotechnology, Government of India, Indian Institute of Technology, Delhi and Jawaharlal Nehru University held at New Delhi on December 18-20, 2006.
5. At the “**94th Indian Science Congress**” held at Annamalai University, Annamalai Nagar on January 3 to 7, 2007.
6. At the "**Plant & Animal Genomes XV Conference**" at Town & Country Convention Center San Diego, CA held on January 13-17, 2007 (Accepted).
7. At the "**International Conference on New Horizons in Biotechnology**" organized by NIIST, Trivandrum, November 26-29, 2007.
8. At the second "**International Conference of Natural Products and Cancer**" organized by Translational Cancer Research group, December 9 - 12, 2007, Fariyas Holiday Resort, Lonavala, Mumbai, India.
9. At the "**International symposium on Computational Biology, Bioinformatics and Synthetic Biology**” organized by Centre for Bioinformatics, University of Kerala, Thiruvananthapuram, January 17-19, 2008.
10. At the "**5th International Conference on Plant Metabolomics**", Yokohama, Japan, July 15-18, 2008.
11. At "**The Annual Meeting of the Pharmaceutical Society of Japan**", Kyoto - March 27, 2009 (<http://www.metabolism.jst.go.jp/ronbun/abe.html>) (Poster on combinatorial biosynthesis of polyketides).
12. At "**The Annual Meeting of the Pharmaceutical Society of Japan**", Kyoto - March 27, 2009 (<http://www.metabolism.jst.go.jp/ronbun/abe.html>) (Poster on cloning and characterization of plant polyketide synthases).
13. At "**The Annual Meeting of the Pharmaceutical Society of Japan**", Kyoto - March 27, 2009 (<http://www.metabolism.jst.go.jp/ronbun/abe.html>) (Poster on cloning and functional analysis polyketide synthase from *Curcuma*).
14. At the International Symposium on “**Genomics of Crops, Medicinal Plants and Microbes**” organized by Department of Botany, University of Kerala on May 29-31, 2011.

15. At the second International Conference on "**Nanomaterials: Synthesis, Characterization and Applications**" organized by Centre for Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam on January 12-14, 2012.
16. At the "**24th Kerala Science Congress**" at Rubber Board., Kottayam organized by Rubber Board., Kottayam, Kerala, India. on 29-31, January 2012.
17. Jasim B, Roshmi Thomas, Jyothis Mathew and **Radhakrishnan E.K**, Bioactive silver nanoparticle synthesis by endophytic bacteria from *Piper nigrum*, Nanotechnology: Applications of Nanomaterials in Agriculture, Food and medicine, 25-26 July 2012 organised by B.K. College, Amalagiri, Kottayam.

III. ORAL PRESENTATIONS

1. Radhakrishnan EK and Soniya EV, At "**International Conference on Biotechnology and Neuroscience**", **Cochin, Kerala**, 29-31st December, 2004.
2. Radhakrishnan EK and Soniya EV, At the seminar on "**Biotechnology and Economic Development - A Kerala Scenario**" organised by Society for Biotechnologists India. Thiruvananthapuram on March 25-26, 2006.
3. Radhakrishnan EK and Soniya EV, At the "**National Conference on Biotechnology and Molecular Medicine**" organized by Amrita Institute of Medical Sciences and Society for Biotechnologist India at Amrita Institute of Medical Sciences, Kochi, Kerala held on 13-14, January 2007.
4. Radhakrishnan EK and Soniya EV, At the "**19th Kerala Science Congress**" at Dinesh auditorium, Kannore., organized by Kannore University and CWRDM, Calicut, Kerala, India on 29-31, January 2007.
5. Radhakrishnan EK and Soniya EV, At National Centre for Biological Sciences (NCBS), Bangalore as invited talk for "**Young Investigator Programme**" on 12th November 2007.
6. Radhakrishnan EK and Ikuro Abe, At the "**Annual meeting of Tokyo Biochemical Research Foundation (TBRF)**" Tokyo, Japan on Dec 1st 2008.
7. Radhakrishnan EK and Ikuro Abe, At the "**Annual meeting of Tokyo Biochemical Research Foundation (TBRF)**", Tokyo, Japan on Dec 14, 2009.
8. Roshmi Thomas, Anju Janardhanan, Jyothis Mathew and **Radhakrishnan E.K**, presentation at "Nanotechnology: Applications of Nanomaterials in Agriculture, Food and medicine, 25-26

July 2012 organised by BK College, Amalagiri, Kottayam (**First Prize for Paper presentation**).

9. Soumya K R, Santhi Anna Thomas, Jyothis Mathew, Sheela Sugathan and **Radhakrishnan E K**, presentation at the International Conference on Epidemiology, 16- 18 August 2012 organised by St.Thomas College, Pala, Kottayam.
10. Jasim B, Jyothis Mathew and **Radhakrishnan EK**, presentation at “the 25th Kerala Science Congress”, on 29th January to 1st February, 2013 at Technopark campus, Thiruvananthapuram.
11. Shimil V, Jasim B, Jimtha John, Jyothis Mathew and **Radhakrishnan E.K.** “presentation at the National Seminar on Advanced Biochemical Techniques: Relevance in Interdisciplinary Research Scenario” on September 3-4, 2013, organized by B.K. College, Amalagiri, Kottayam.
12. Jasim B, Anisha C, Rohini Sabu, Jyothis Mathew and **Radhakrishnan E.K.** presentation at the “National Seminar On Advanced Biochemical Techniques: Relevance in Interdisciplinary Research Scenario” on September 3-4, 2013, organized by B.K. College, Amalagiri, Kottayam. (**First Prize for Paper presentation**).
13. Soumya K R, Acquiline Mary Paul, Sheela Sugathan, Jyothis Mathew and **Radhakrishnan E.K.**, presentation at the National Seminar On Advanced Biochemical Techniques: Relevance in Interdisciplinary Research Scenario” on September 3-4, 2013, organized by B.K. College, Amalagiri, Kottayam.
14. JishmaP,Roshmi Thomas and **Radhakrishnan EK**, Development of Microbially Fabricated Nanoparticle Based Method for Photocatalytic Detoxification of textile dye (Page no. 109)
15. Roshmi Thomas and **Radhakrishnan EK**, Electronspun Polycaprolactone/AgNPs Nano Composite Membrane as Effective Biomaterial against Wound Infection (Page no. 134)
16. Jimtha John C, Karthika NR, Jyothis Mathew and **Radhakrishnan EK**, Reduction of NPK Requirement by PGPR for the Cultivation Leafy Vegetables (Page no. 147)
17. Rohini Sabu and **Radhakrishnan EK**, A Microbiological approach to prevent the Rhizome Rot of Ginger Caused By *Pythium myriotylum* (Page no. 169)
18. Rosemin Benny, Jasim B and **Radhakrishnan EK**, Studies on Antiphytopathogenic Properties of Endophytic *Bacillus* sp.

19. Chithra s, Jasim B, Jyothis M, **Radhakrishnan EK**, Piperine Production by Endophytic Fungi Isolated From *Piper nigrum* (Page no. 201)
20. Jishma P, Divya, Radhakrishnan EK, Value added functional formulation of prawn shell waste for management of Plant diseases in a cost effective and eco friendly manner, at Swadeshi Science Congress, Nov 7-9, 2016 at CMFRI, Kochi, Page no 12
21. Rohini Sabu, Soumya KR, Radhakrishnan EK, Endophytic Nocardiosis from *Zingiber officinale* with Broad Spectrum Antiphytopathogenic and antibiofilm activity against clinical isolates at Swadeshi Science Congress, Nov 7-9, 2016 at CMFRI, Kochi, Page no 194
22. Aswani R, Saji Varghese, Radhakrishnan EK Promising applications of phytochemical constituents of *Zingiber zerumbet* as remedy to manage rhizome rot in *Zingiber officinale* at Swadeshi Science Congress, Nov 7-9, 2016 at CMFRI, Kochi, Page no 227.
23. Shiji Mathew and Radhakrishnan E.K., Difference in antimicrobial mechanisms of silver nanoparticles synthesized by two different biogenic routes. National seminar on Recent Trends in Applied Life Sciences, March 15- 16, 2017, School of Biosciences, Mahatma Gandhi University, Kottayam.
24. Rohini Sabu, and Radhakrishnan EK. National seminar on Recent Trends in Applied Life Sciences, March 15- 16, 2017, School of Biosciences, Mahatma Gandhi University, Kottayam.
25. Roshmi Thomas and Radhakrishnan EK, Surface fabrication of urinary catheter using biosynthesized silver nanoparticles to combat colonization efficiency of Coagulase Negative *Staphylococci*. National seminar on Recent Trends in Applied Life Sciences, March 15- 16, 2017, School of Biosciences, Mahatma Gandhi University, Kottayam.
26. Snigdha.S, Nandhakumar Kalarikkal, Sabu Thomas and Radhakrishnan E.K. Effect of molecular interaction among components of nanocomposites on anti- Staphylococcal activity. National seminar on Recent Trends in Applied Life Sciences, March 15- 16, 2017, School of Biosciences, Mahatma Gandhi University, Kottayam.

IV. INVITED LECTURES

1. At the “**PHARMACHEM**” - the Scientific Seminar organized by Department of Pharmaceutical Sciences, Mahatma Gandhi university, on 24th February, 2011.

2. At the “**International Symposium on Genomics of Crops, Medicinal Plants and Microbes**” organized by Department of Botany, University of Kerala on May 29-31, 2011.
3. At the “**BIOCELEST**” seminar organized by Mar Augusthinose College, Pala on Sep 23, 2011.
4. At the “**National Conference on Biodiversity**” organized by All Saints College, Thiruvananthapuram, Kerala, on Sep 28-29, 2011.
5. At the “**National Conference on Bioprospecting of Plant Genetic Resources of Western Ghats**” organized by St.Thomas College, Pala on Nov 22-23, 2011.
6. At the “**National Conference on Computing Paradigms and Bioinformatics (CPBI 2012)**” organized by School of Computer Sciences, Mahatma Gandhi university, on 17-18 January, 2012.
7. At the “**National Conference on Biodiversity**” organized by Govt.Brennen College, Dhramadom, Kannur on March 9, 2012.
8. Talk as part of the “**Inculcating Research Acumen - Lecture Series**” organized by Department of Biosciences, MES College, Marambally on September 27, 2012.
9. At the “**Workshop on Tools and Techniques in Molecular Biology and Bioinformatics**” organised by the SNGS College, Pattambi on 11 to 13 February, 2013.
10. **Invited Lecture on Metagenomics** at the “**International Workshop on Molecular Markers and Genome Analysis in Plants**” organized by Department of Botany, University of Kerala on March 12-16, 2013.
11. **Invited Lecture on Emerging Understanding on Microbes** organized by Zoology Association, St.Aloysius College, Edathuva on August 29, 2013.
12. **Invited Lecture** at the **Inauguration of Botany and Biotechnology Association** of Bishop Moore College, Mavelikara on 20th February, 2014.
13. **Invited Lecture** in the technical seminar on “**Interactive meet on Advances in Biosciences**” organised by Indian Institute of Spice Research, Calicut on Feb 26th 2014.
14. **Invited Lecture** at UGC sponsored “**National Seminar on Microbes for Green Environment**” organised by St.Mary’s College, Thrissur on 22nd August 2014.

15. **Invited Lecture** at the “**National seminar on Industrial Microbiology- Trends and Perspectives**” organized by Department of Biochemistry and Microbiology, Govt. College for Women, Thiruvananthapuram on October 14, 2014.
16. **Invited talk** at the **National Conference on biomaterials in Medicinal Chemistry**, organized by **Department of Natural Products Chemistry**, School of Chemistry, Madurai Kamaraj University, 21st and 22nd December, 2015.
17. Invited talk at the **National Seminar on Nanotechnology meets Microbiology – “Emerging applications of Nanotechnology in Microbiology”**, organized by E.M.E.A College of Arts and Science, February 17, 2016.
18. Invited talk at the “**Exploring the indigenous Biodiversity of Kerala for Potential Plant Probiotic microorganisms**” organized by **The Indian Science Congress Association**, Cochin chapter, March 29, 2016.
19. Invited talk at the “**Microbiology, biotechnology and biosafety**” in the **International Conference of Indian Science Congress Association**, organized by **The Indian Science Congress Association**, Cochin chapter, October 25, 2016.
20. Invited talk at the “**National Seminar**” organized by Department of Biotechnology, St.Thomas College, Pala on December 5, 2016.
21. Invited talk at the “**National Seminar on Microbial Technologies for Environment Management**” organized by University College, Kerala University Thiruvananthapuram on December 7th and 8th 2016.
22. Invited talk at the “**International Seminar**” organized by Department of Botany, Kariavattom, University of Kerala, Thiruvananthapuram on December 17, 2016.
23. Invited talk at the “**International Seminar on Emerging Trends in Organic Farming and Sustainable Agriculture**” organized by IUCOFSA, Mahatma Gandhi University, on 29th 31st Dec, 2016.
24. Invited Talk at the **International Seminar on Globalisation and India’s Innovation System: A ‘Creative Destruction’** organized by the K.N. RAJ Study Centre For Planning And Centre -State Financial Relations, Mahatma Gandhi University, on 4th -6th Feb, 2017.

25. Invited Talk at the **National Seminar** on “**Recent Innovations and Current Trends in Biological Sciences (RICTBS-2017)**” organized by the Department of Botany & Biotechnology, Bishop Moore College, Mavelikara, Alappuzha, Kerala on 8th Feb, 2017.

26. Invited Talk at the National Seminar organized by Marthoma College, Thiruvalla, on Feb 15, 2017.

NCBI -SEQUENCE SUBMISSIONS

(1) AY307163 (2) AY509195 (3) AY873969 (4) DQ418480 (5) DQ418481
(6) DQ418482 (7) DQ418483 (8) DQ418484 (9) DQ41848 (10) HQ837638
(11) JQ886797 (12) JQ886795 (13) JQ886793 (14) JQ886796 (15) JQ886794
(16) JQ886792 (17) JN835216 (18) JN835214 (19) JN835212 (20) JN835217
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(36) HM161816 (37) DQ486012 (38) AY876936 (39) HM161808 (40) EU399815
(41) KX247107 (42) KX247108 (43) KX247109 (44) KX247110 (45) KX247111
(46) KX247112 (47) KX247113 (48) KX247114 (49) KX247115 (50) KX247116
(51) KX247117(52) KX247118(53) KX247119(54) KX247120 (55) KX247121 (56) KX247122
(57) KX247123 (58) KX247124 (59) KX247125(60) KX247126

OTHER DETAILS AND POSITIONS

1. **Research Linkage** - Inter University Instrumentation Centre, M.G.University, Kottayam
Inter University and International Centre for Nanoscience,
M.G.University, Kottayam
2. **Member** –Board of studies for Microbiology, Kerala University
3. **Member** – Board of studies for Microbiology, SB College, Changanassery
4. **Member Secretary** – Institutional Biosafety Committee, MG University
5. **Secretary** – Alumni Association, School of Biosciences
6. **Member – Life Member**
 1. Association of Microbiologists India

2. Indian Science Congress Association

3. Kerala Science Academy

7. **Editorial Board Member** – 1. Journal of Food & Industrial Microbiology

2. International Journal of Advanced Research and Review