

Dr. Deepa K

Designation: Assistant Professor

Department: Biotechnology

Qualification: Ph.D.

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Dr. Deepa K has contributed significantly to the field of Biotechnology through her research, publications, and professional engagements. She completed her Doctor of Philosophy (Ph.D.) in 2018 with a thesis titled "Transcriptome and Proteome Analysis of the Curcuminoid Biosynthetic Pathway in Turmeric (*Curcuma longa L.*)". This research, conducted under the guidance of Dr. Sheeja TE, Principal Scientist at ICAR-Indian Institute of Spices Research, Kozhikode, explored the pathways involved in curcuminoid biosynthesis in turmeric. She received the Dr. Alwar Memorial Prize (ICAR-IISR, Calicut) for Best Research Fellow (2017). She is the recipient of Dr. Alapatti Prasada Rao award (2015) for best research paper (poster), awarded by the Indian society for spices. Her research paper, "Comparative Transcriptome Analysis of Two Species of Curcuma Contrasting in a High-Value Compound Curcumin: Insights into Genetic Basis and Regulation of Biosynthesis," published in the esteemed "Plant Molecular Biology Reporter," was featured on the cover page of the journal, underscoring the significance of the findings. To her credit, she has also cleared **CSIR-NET** (National Eligibility Test) for Lectureship (2008) and **GATE** (Graduate Aptitude Test for Engineering, 2009).

Academic Qualification

Doctor of Philosophy (Ph.D) (2018)

Thesis titled "Transcriptome and proteome analysis of the curcuminoid biosynthetic pathway in turmeric (*Curcuma longa L.*)" at University of Calicut under the guidance of Dr. Sheeja TE, Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode

Master of Science in Biotechnology (2008) from Avinashilingam University for Women, Coimbatore with 8.57 CGPA (First class with distinction)

Bachelor of Science in Biotechnology (2006) from Maharaja College for Women-Erode, Bharathiar University with 76.1 % (First class with distinction)

Professional Experience

Presently working as Assistant professor at SAFI Institute of Advanced studies.

Worked as **part-time teacher** at Sacred Heart Sr. Secondary School, Puduparamba, Malappuram.

Voluntary trainee in tissue culture laboratory at Centre for Medicinal Plants Research, Arya Vaidya Sala, Kottakkal

Research fellow at ICAR-Indian Institute of Spices Research, Kozhikode from June 2012 to March 2015

Project: DBT funded project “Development of comprehensive SSR and SNP markers for the study of genetic diversity and association analysis in *Curcuma*”

PI: Dr. Sheeja TE

Research fellow at Kerala Agricultural University, Vellanikkara, Thrissur from November 2011 to June 2012

Project: DBT funded project “Evaluation of anti-cancer properties of crystal proteins from *Bacillus thuringiensis* from the Western ghats of Kerala

PI: Dr. D Girija

Research fellow at Kerala Agricultural University, Vellanikkara, Thrissur from September 2009 to October 2011

Project: ICAR funded project “Diversity of agriculturally important microorganisms in the Western Ghats of Kerala”

PI: Dr. D Girija

Trainee (Studentship) at Kerala Agricultural University, Vellanikkara, Thrissur from March 2009 to September 2009

Project: “Molecular characterization and development of trait related markers in cowpea (*Vigna unguiculata* (L) Walp.)”

PI: Dr. R. Keshavachandran

Handled theory and practical session on molecular biology techniques for B.tech, B.Sc, M.Sc, Ph.D, MBBS students and Lecturers during training programs held at Kerala Agricultural University, Thrissur

M. Sc Dissertation

M.Sc thesis on **Effect of *Withania somnifera* leaf extract in oxidatively stress induced apoptosis in *Saccharomyces cerevisiae*** under the guidance of Dr. S. Sumathi, Lecturer, Avinashilingam University for Women, Coimbatore, Tamil Nadu.

Summer project on **Antioxidant effect of methanolic extract of *Rhus Succedanea* in paracetamol intoxicated wistar albino rats** under the guidance of Mr. N. Thamizh selvam, Research Officer, Department of Biochemistry, Central Research Institute (Ayurveda), Cheruthuruthy, Kerala

Area of Interest

- Secondary metabolite pathway studies
- Molecular biology
- Genomics

Publications

1. **Deepa K**, Sheeja TE, Rosana OB, Srinivasan V, Krishnamurthy KS, Sasikumar B (2017). Highly conserved sequence of *CIPKS11* encodes a novel polyketide synthase involved in curcumin biosynthesis in turmeric (*Curcuma longa* L.). *Industrial Crops and Products*, 97, 229-241. **Impact factor: 5.9.**
2. **Deepa K**, Sheeja TE, Santhi R, Sasikumar B, Cyriac A, Deepesh P V, Prasath D (2014). A simple and efficient protocol for isolation of high quality functional RNA from different tissues of turmeric (*Curcuma longa* L.). *Physiology and Molecular Biology of Plants*, 20, 263-271. **Impact factor: 3.9**
3. Girija D, **Deepa K**, Chubicka T, et al. (2023) Structural and functional validation of a cloned paraspordin from *Bacillus thuringiensis* isolate KAU 41 native to Western Ghats of India. *Proteins*. 1-9. **Impact factor: 2.9**
4. TE Sheeja, **K Deepa**, R Santhi, B Sasikumar (2015). Comparative transcriptome analysis of two species of *Curcuma* contrasting in a high value compound curcumin: insights into genetic basis and regulation of biosynthesis. *Plant Molecular Biology Reporter*, 33(6), 1825-1836. **Impact factor: 2.0**.
5. Girija D, **Deepa K**, Francis X, Irin A, Shidhi PR (2013). Analysis of cowdung microbiota-A metagenomic approach. *Indian Journal of Biotechnology*, 12, 372-378. **Impact factor:0.324**.
6. Chubicka T, Girija D, **Deepa K**, Salini S, Meera N, Achuthan CRM, Divya KM, Babu TD (2018). A paraspordin from *Bacillus thuringiensis* native to Peninsular India induces apoptosis in cancer cells through intrinsic pathway. *Journal of Biosciences*, 43(2), 407-416. **Impact factor: 2.7**.
7. Sarveshwar Sah, D. Girija, **K. Deepa**, P.A. Nazeem, P. M. Firoz, E. Sunil, A. Rincy (2014). Diversity of bacterial community in acid saline ‘*Pokkali*’ soil of Kerala by a culture-independent 16S rDNA sequencing approach. *Journal of Tropical Agriculture*, 52(1), 123-130. **NAAS score: 4.75**
8. Sahna H, Girija D, Nazeem PA, Sally KM, **Deepa K**, Swathi B, Sumbula V (2016). Molecular characterization of Geminivirus causing yellow vein mosaic in pumpkin. *International Journal of Science, Environment and Technology*, 5(1), 133-147. **NAAS score: 3.98**
9. T.E. Sheeja, R. Santhi, **K. Deepa**, P. Prashina Mol, R.S. Aparna and A. Giridhari (2018). Uncovering roles of microRNAs in regulation of curcumin biosynthesis in turmeric (*Curcuma longa* L.). *International Journal of Innovative Horticulture*, 7(2), 146-149. **NAAS score : 2.21**

- 10.** Thomas C, Girija D, **Deepa K**, Babu TD (2011). Detection of parasporin gene and its respective protein from *Bacillus thuringiensis* isolate, KAU 41. *Amala Research Bulletin*, 31, 31-36
- 11.** P. Prashina Mol, R.S. Aparna, T.E. Sheeja and **K. Deepa** (2021). Novel bHLH and WD 40 Transcription factors from turmeric (*Curcuma longa* L.) as putative regulators of curcumin biosynthesis. *Journal of Plantation Crops*, 49(1), 20–27

Oral presentation

- 1.** **Deepa K**, Sheeja TE, Prashina Mol P, Sasikumar B. A novel transcription factor, ClMYB4 is a putative repressor of curcumin biosynthetic pathway in turmeric (*C. longa*) under nutrient stress. In: 22nd biennial symposium on plantation crops during 15-17 December 2016, Kasaragod, Kerala
- 2.** **Deepa K**, D Girija. Diversity of parasporin genes in *Bacillus thuringiensis*. In: Impact of transgenics on biodiversity during 27-28 October 2011, Pattambi, Kerala

Poster presentation

- 1.** **Deepa K**, Sheeja TE, Rosana OB and Sasikumar B. Highly conserved sequence of *ClPKS11* is a novel gene involved in *de novo* curcumin biosynthesis in turmeric (*Curcuma longa* L.). In: Symposium on spices and aromatic crops (SYMSAC) VIII during 16-18 December 2015, Coimbatore. Received **Dr. Alapatti Prasad Rao Award for best Research Paper (Poster)**
- 2.** Sheeja TE, **Deepa K**, Santhi R and Sasikumar B. Comparative transcriptome analysis of *Curcuma longa* (turmeric) and *Curcuma aromatica* (wild turmeric) provide insights into genetic basis of curcuminoid biosynthesis and its regulation. In: 2014 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference during 17-19 November 2014, NIMHANS, Bangalore
- 3.** **Deepa K**, Sheeja TE and Sasikumar B. Construction of a normalized full length cDNA library from turmeric for rapid gene discovery. In: SYMSAC VII during 27-29 November 2013, Madikkeri, Karnataka
- 4.** Deepesh Mukundan, Rabisha VP, **Deepa K**, Anu Cyriac, Sheeja TE, Sasikumar B, Prasath D. Mining of SSR markers from transcriptome sequence data of turmeric (*Curcuma longa* L.) and their transferability in members of Zingiberaceae. In: New horizons and challenges in biotechnology and bioinformatics during 9-10 October 2014, Kasaragod, Kerala. Received **Best poster award**.
- 5.** D. Girija, **K. Deepa**, Francis Xavier, Irin Anton, PA Nazeem, R Keshavachandran, PR Shidhi. Analysis of cowdung microbiota-A metagenomic approach. In: Recent advances in cross-disciplinary microbiology: Avenues and challenges during 14-17 December 2010, Ranchi, Jharkhand

D. Girija, Francis Xavier, E Sunil, **K Deepa**, K Jisharaj, Anju Paul. Screening of bacterial isolates for management of municipal and urban solid waste. In: Waste Management: Experiences and strategies during 5-7 January 2011, Thrissur, Kerala

Additional Training/ skills acquired

Hands on training program on ‘Recombinant protein expression and purification techniques’ organized by Department of Biotechnology, Karpagam University, Coimbatore

International workshop on ‘rRNA sequencing, Phylogeny and next generation genome sequencing’, 51st Annual Conference of Association of Microbiologists of India (AMI)-2010-Ranchi, Jharkhand

Diploma in Computer Application (DCA) from Rashtriya Computer Saksharatha Mission

Working knowledge of basic bioinformatics tools

Submitted nucleotide sequences in NCBI database