CURRICULUM VITAE

Madhusudhana Reddy Janga
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EDUCATION

2011 Ph.D. Genetics, Osmania University, Hyderabad, India

2004 M.S. Biotechnology, Barkatullah University, Bhopal, India

2001 B.S. Biochemistry, Sri Krishnadevaraya University, Anantapur, India

PROFESSIONAL EXPERIENCES

Organization	Designation	Duration From	Duration To
Texas Tech University, Lubbock, TX, USA	Assistant professor	July 2023	Current
University of Missouri, Columbia, MO, USA	Assistant Director of Research – plant transformation core facility	May 2020	June 2023
Sanford Research, Sioux falls, SD, USA	Staff Scientist	May 2018	May 2020
Texas A&M University, College station, Texas, USA	Postdoctoral Research Associate	July 2013	April 2018
E. I. DuPont India pvt. Ltd. Hyderabad, India	Research Associate - Plant transformation	September 2008	June 2013
Kaveri seeds company pvt. Ltd. Hyderabad, India	Biotechnologist	November 2007	September 2008
Directorate of oilseeds research (ICAR), Hyderabad, India	Senior Research Fellow	December 2004	November 2007

AREA OF EXPERTISE

- **Plant Tissue culture:**
  - Generation of transgenic lines for various crops: Corn, Soybean, Cotton, Sorghum, Rice, and other species.
  - Genome editing through CRISPR/Cas9 system, gene silencing through RNAi, herbicide and insect resistant transgenic lines generation, characterization of promoters, genes, and generation of marker free events.
  - Established transformation methods using different explants immature embryo, mature embryo, scutellum derived calli, and embryo axis.
  - Standardization of transformation and regeneration protocols for different species and cultivars.
  - Developed embryo rescue method for rice to save one generation advancement per year
- **Molecular biology:**
  - Vector construction: Conventional, Goldengate, Gateway and Gibson assembly methods
  - Molecular characterization: copy number determination using qPCR and southern blotting, flanking sequence analysis
  - Gene expression analysis: qPCR, Northern blotting, western blotting
- **Bioinformatics:**

- Next Generation Sequencing: RNA-Seq, whole exome sequencing (WES), whole genome sequencing (WGS), Chip-Seq, CRISPR-mutant analysis.
- Statistics: R, Bioconductor packages

MENTORING (Students/Postdocs)

- **Graduate Students (4 in progress):**
  - Lekkala Sai Krishna (MS Advisor Spring 2024)
  - Lankireddy Sri Harsha Vardhan Reddy (MS Advisor Spring 2024)
  - Tomar Shraddha (MS Advisor Spring 2024)
  - Nagalla Lakshmi Venkat Sai Ram (MS Co-Advisor Spring 2024)

TEACHING

Graduate courses:

- **6001:003 Selected Topics in PSS on Bioinformatics RNA-seq (3 credits, Fall 2024)**

Undergrad courses:

- **PSS3421 - Fundamental Principles of Genetics (4 credits, Spring 2025)** CRN38524-001, CRN16289-701, CRN16311-702

Guest lectures:

- **5325 Transgenic & Plant Cell Genetics,** Texas Tech University. "Chromosome and gene organization, DNA structure and replication"
- **PLNT_SCI_4550/7550, Plant Biotechnology,** University of Missouri. "Plant tissue culture and transformation methods"
- **Plant biotechnology (AGRO/BIOTC 460):** Penn State University**. "**Plant tissue culture and transformation methods".
- **Advanced Plant Genetics (2021FS BIO_SC 8300):** Interdisciplinary Plant Group (IPG), University of Missouri. **"***Agrobacterium* mediated plant transformation"
- **Advanced Plant Genetics (2020FS BIO_SC 8300):** Interdisciplinary Plant Group (IPG), University of Missouri. **"***Agrobacterium* mediated plant transformation"
- **Advanced Molecular Genetics (NRE-763)**, department of Biological and Environmental Sciences (BES) at Alabama A&M University. (Advanced genomic tools and application of NGS technologies in plant genetics, Molecular tools: gene silencing through RNAi and Genome Editing technologies, Plant Transformation techniques, Transgenic plants: resistance to abiotic and biotic stresses, Development of transgenic plants and deregulation)
- **Genetics of human disease (CPHD-725),** Sanford school of medicine, at University of south Dakota. (Mendelian Diseases: dominant and recessive diseases with case examples)

RESEARCH FUNDING

Year	Status	Agency	Role	Total funding	My portion
2025	**Pending**	National peanut Board	**Janga, M (PI)** Mattison, C (Co-PI) Puppala, N (Co-PI)	$30,000	$15,000
2024	**Pending**	USDA-NIFA-NLGCA-010975	**Janga, M (PI)**	$149,994.06	$149,994.06

2024	**Pending**	USDA-NIFA AFRI A1152	Son T (PI) **Janga, M (Co-PI)** Mostofa M (Co-PI)	$649,999	$68,000
2024	**Pending**	USDA-NIFA PHPPP-A1141	PI: Stanley O. Samonte Co-PI: Darlene Sanchez **Co-PI: Janga, M**	$750,000	$319441
	Declined				
2024	**Declined**	USDA-NIFA AFRI A1112	**Janga, M (PI)**	$749,723	$749,723
2024	**Declined**	USDA-NIFA-SBIR-010774 – PKG00287262	Verne A. Luckow (PI) **Janga, M (Co-PI)**	$ 181,500	$87,499
2024	**Declined**	NSF 24-546	Luis Herrera Estrella (PI) Damar Lopez-Arredondo (Co-PI) **Janga, M (Co-PI)**	$1,728,191	$180,000
2024	**Declined**	Texas State Support Committee/Cotton Incorporated	Janga, M (PI)	$91,104	$91,104
2023	**Declined**	USDA-NIFA-SBIR-009962	Luckow, V (PI). Janga, M (Co-PI)	$175,000	$73,750
2023	**Declined**	United States Department of Energy	Luckow, V (PI). Janga, M (Co-PI)	$250,000	$125,000
2023	**Declined**	USDA-ARS, Scab initiative	Zhong, S (PI) **Janga, M (Co-PI)** Leng, Y (Co-PI)	$125,000	$35,000
2023	**Declined**	USDA-NIFA AFRI A1152	Son T (PI) **Janga, M (Co-PI)** Mostofa M (Co-PI)	$649,999	$80,000
	Withdrawn				
2024	Withdrawn	NSF-DBT NSF 24-547 Plant Genome Research Project	Janga, M (PI-NSF) Samonte, O (Co-PI - NSF) Eswarayya R, (PI-DBT) VLN Reddy (Co-PI - DBT)	$1,503,640	$871,131
2024	Withdrawn	NSF-DBT NSF 24-547 Plant Genome Research Project	Janga, M (PI - NSF) Parkhi, V (PI - DBT) Bhattacharya, A (Co-PI - DBT) Char, B (Co-PI - DBT)	$930,153	$930,153

Professional Service:

- **Associate Editor**: **Physiology and molecular biology of plants,** Springer publishing group.
- **Reviewer**: Plant Biotechnology Journal, Plant cell reports, The Plant Genome, Current Plant Biology , Physiology and molecular biology of plants, Journal of Phytopathology, International Journal of Molecular Sciences, Non-coding RNA, Plant Science Today, Advances in Bioscience and Biotechnology, Journal of DNA and RNA Research, Journal of Agricultural Science, Genes, Agronomy, Forests.

Patents

1. Rathore KS, **Janga MR,** Pandeya D, Campbell LM. Methods and compositions for modulating gossypol content in cotton plants. US11206798B2. 2019

Publications

1. Phogat S, Lankireddy SV, Lekkala S, Anche VC, Sripathi VR, Patil GB, Puppala N, **Janga MR*** (2024) Progress in genetic engineering and genome editing of peanuts: revealing the future of crop improvement. Physiology and Molecular Biology of Plants:1-17
2. Kim W-S, Gillman JD, Kim S, Liu J, **Janga MR**, Stupar RM, Krishnan HB (2024) Bowman–Birk Inhibitor Mutants of Soybean Generated by CRISPR-Cas9 Reveal Drastic Reductions in Trypsin and Chymotrypsin Inhibitor Activities. International Journal of Molecular Sciences 25 (11):5578
3. Zhong S, Leng Y, **Janga M**, Poursafar A, Safar S, Amusan O, Riasat A, Shi G, Dai W, Liu Z Site-Directed Mutagenesis and Gene Insertion in Wheat through Wheat x Maize Hybridization Coupled with Genome Editing Technology. In: Plant and Animal Genome Conference/PAG 31 (January 12-17, 2024), 2024. PAG.
4. deRiso JL, Mukherjee M, **Janga M**, Simmons ALC, Kareta Jr M, Tao J, Chandrasekar I, Surendran K (2024) Kidney collecting duct cell type composition is regulated by Notch signaling via modulation of mTORC1. bioRxiv:2024.2004. 2009.587573
5. Toinga-Villafuerte S, **Janga MR**, Isabel Vales M, Rathore KS: Green fluorescent protein gene as a tool to examine the efficacy of Agrobacterium-delivered CRISPR/Cas9 reagents to generate targeted mutations in the potato genome. *Plant Cell, Tissue and Organ Culture (PCTOC)* 2022, **150**(3):587-598.
6. Mukherjee M, Ratnayake I, **Janga M**, Fogarty E, Scheidt S, Grassmeyer J, DeRiso J, Chandrasekar I, Ahrenkiel P, Kopan R: Notch signaling regulates Akap12 expression and primary cilia length during renal tubule morphogenesis. *FASEB journal: official publication of the Federation of American Societies for Experimental Biology* 2020, **34**(7):9512.
7. Mukherjee M, DeRiso J, **Janga M**, Fogarty E, Surendran K: Foxi1 inactivation rescues loss of principal cell fate selection in Hes1-deficient kidneys but does not ensure maintenance of principal cell gene expression. *Developmental biology* 2020, **466**(1-2):1-11.
8. Mukherjee M, Fogarty E, **Janga M**, Surendran K: Notch signaling in kidney development, maintenance, and disease. *Biomolecules* 2019, **9**(11):692.
9. **Janga MR**, Pandeya D, Campbell LM, Konganti K, Villafuerte ST, Puckhaber L, Pepper A, Stipanovic RD, Scheffler JA, Rathore KS: Genes regulating gland development in the cotton plant. *Plant biotechnology journal* 2019, **17**(6):1142-1153.
10. Pandeya D, López-Arredondo DL, **Janga MR**, Campbell LM, Estrella-Hernández P, Bagavathiannan MV, Herrera-Estrella L, Rathore KS: Selective fertilization with phosphite allows unhindered growth of cotton plants expressing the ptxD gene while suppressing weeds. *Proceedings of the National Academy of Sciences* 2018, **115**(29):E6946-E6955.
11. Pandeya D, Campbell LM, Nunes E, Lopez-Arredondo DL, **Janga MR**, Herrera-Estrella L, Rathore KS: ptxD gene in combination with phosphite serves as a highly effective selection system to generate transgenic cotton (Gossypium hirsutum L.). *Plant Molecular Biology* 2017:1-11.
12. **Janga MR**, Raoof MA, Ulaganathan K: Effective biocontrol of Fusarium wilt in castor (Ricinius communis L.) with Bacillus sp. in pot experiments. *Rhizospher* 2017, **3**(1):50-52.
13. Joshi SG, Kumar V, **Janga MR**, Bell AA, Rathore KS: Response of AtNPR1-expressing cotton plants to Fusarium oxysporum f. sp. vasinfectum isolates. *Physiology and Molecular Biology of Plants* 2017, **23**(1):135-142.
14. **Janga MR**, Campbell LM, Rathore KS: **CRISPR/Cas9-mediated targeted mutagenesis in upland cotton (Gossypium hirsutum L.)**. *Plant Molecular Biology* 2017:1-12.
15. **Reddy JM,** Raoof MA, Ulaganathan K**,**: Development of specific markers for identification of Indian isolates of Fusarium oxysporum f. sp. ricini. *European journal of plant pathology* 2012, **134**:713-719.

16. **Reddy JM,** Raoof MA, Ulaganathan K: Variability among Fusarium oxysporum f.sp. ricni strains causing wilt of Castor. *Journal of Oilseeds Research* 2009, **26**(Special Issue):499-502.
17. Raoof MA, **Reddy JM,** Ulaganathan K: Molecular characterization of different Fusarium spp. isolates. *Indian Journal of Oilseeds Research* 2009, **26**(Special issue):178-181.

Book chapters

1. Patel SR, Verma AK, Verma VC, **Janga MR,** Nath G: Bacteriophage therapy–Looking back in to the future. In: *The Battle Against Microbial Pathogens: Basic Science, Technological Advances and Educational Programs.* vol. 2: Formatex; 2015: 284-294.

Invited talks

1. Genetic transformation of recalcitrant crop species. Institute for Plant Biotechnology, New Delhi and Division of Plant Physiology, ICAR-Indian Agricultural Research Institute jointly organized 10-day training program on "Genome Editing for Crop Improvement: Strategies and Applications" from 1st to 12th July, 2024. Date & Time of talk: 4th July, 2024; 5:30PM (Indian time)
2. Genome editing for characterization of genes regulating gland development in cotton. 42nd Annual meeting of plant tissue culture association (India) & International symposium on advances in plant biotechnology and genome editing-2021 (APBGE-2021). Session 4: Gene/ Genome Editing for Plant Improvement.
3. CRISPR/Cas9-Mediated Targeted Mutagenesis in Upland Cotton (Gossypium hirsutum L.). Beltwide Cotton Conferences 2018. Recorded presentation: https://ncc.confex.com/ncc/2018/videogateway.cgi/id/6683?recordingid=6683

Abstracts, posters and research papers presented in Symposia:

- Lekkala S, Verma P K, & **Janga MR.** (2024). Identification of key genes involved in gossypol biosynthesis pathway through comparative transcriptome analysis in cotton (*Gossypium hirsutum L.*). *IGCAST symposium 2024, TTU, Lubbock*.
- Lankireddy S V, Lekkala S, & **Janga MR.** (2024). Utilizing developmental regulatory (DR) genes to improve transformation efficiency in soybean. .). *IGCAST symposium 2024, TTU, Lubbock*.
- Verma PK, Das A, Ojha M, Ghose K, Patil GB, Puppala N, **Janga MR**. Elucidating the molecular basis of resistance to *Sclerotium rolfsii* in peanuts through comparative transcriptome profiling. .). *IGCAST symposium 2024, TTU, Lubbock*.
- Zhong S, Leng Y, **Janga M**, Poursafar A, Safar S, Amusan O, Riasat A, Shi G, Dai W, Liu Z: Site-Directed Mutagenesis and Gene Insertion in Wheat through Wheat x Maize Hybridization Coupled with Genome Editing Technology. In: Plant and Animal Genome Conference/PAG 31 (January 12-17, 2024): 2024. PAG.
- **Janga MR,** Campbell LM, Rathore KS. (**2018**). CRISPR/Cas9-Mediated Targeted Mutagenesis in Upland Cotton (Gossypium hirsutum L.). Beltwide Cotton Conferences 2018.
- Stephany Toinga, **Madhusudhana Janga**, Maria Isabel Vales, Keerti S Rathore. (2019). Evaluation of the CRISPR-Cas9 System for Targeted Gene Knockout in Potato (Solanum tuberosum L.). ASA, CSSA and SSSA International Annual Meetings (2019). Poster number: 1638.
- **Janga MR,** Campbell LM, Rathore KS. (**2017**). CRISPR/Cas9-mediated mutagenesis of an integrated transgene in the cotton genome. Poster Number 12: 4th Annual Texas A&M University ENG-LIFE workshop.
- **Janga, MR,** konganti K and Rathore KS. (**2016**). RNA-seq-based transcriptome analysis on various tissues of upland cotton (Gossypium hirsutum L.). Poster Number: 300-156-Y, Category: Genes & Genomes: Bioinformatics, **ASPB 2016**.
- **J. Madhusudhana Reddy**, M.A.Raoof and K.Ullaganathan 2007. "Cultural, Morphological, and Pathogenic variability in castor wilt pathogen *Fusarium oxysporum* f.sp. *ricini"*. National Seminor on Changing Global

Vegitable Oils Scenario: Issues and Challenges Before India held at Directorate of Oilseeds Research, Hyderabad during 29-31 January 2007 page:232-235.

- C. Radhika, **J. Madhusuddhana Reddy** and V. Dinesh Kumar 2007. "Genetic Diversity of Castor Varieties using RAPD markers." National Seminor on Changing Global Vegitable Oils Scenario: Issues and Challenges Before India held at Directorate of Oilseeds Research, Hyderabad during 29-31 January 2007. page:26-28.
- **Madhusudhana Reddy**, Raoof, M. A. and Ulaganathan, K. 2006. "Identification of RAPD markers for castor wilt pathogen *Fusarium oxysporum* f.sp. *ricini***."** In international symposium on Frontiers in Genetics and Biotechnology- Retrospect and prospect held at Osmania University, Hyderabad during 7-10 January 2006**.** page-97.
- Mehtab Yasmeen and **Madhusudhana Reddy**, 2006. "Molecular characterization of *Trichoderma viride* (B-16) isolates through RAPD analysis." In international conference on biotechnology for sustainable agriculture and agroindustry held at pragathi resorts, Hyderabad during 9-11 March 2006.

Service:

1. **Judge for poster competition, IGCAST symposium. November 14th, 2023, Location: Texas Tech Dairy Barn**
2. **The Davis College Graduate Program Fellowship application review for Davidson Graduate Research Fellowship 2024.**
3. **Judge for poster competition, 2024 Davis College Graduate Student Poster Competition. September 26th, 2024, Location: Texas Tech Dairy Barn**