

Dr. Bipinchandra B. Kalbande

Mother's Name : Sunanda B. Kalbande
Father's Name : Bhaskar B. Kalbande
Date of Birth : 08/10/1984
Gender : Male
Marital Status : Married
Languages Known : English, Hindi, Marathi.
Permanent Address : "LAVANYA", Rathi Layout, Katol - 441302 (MS).
Mobile : +91 98817 13241
Email : vipinkalbande@gmail.com, vipin_kalbande@rediffmail.com



EMPLOYMENT STATUS

Designation : **Assistant Professor & Head of the Department**
Department : Department of Botany.
College : Nabira Mahavidyalaya Katol.

ACADEMICS DETAILS

| Degree / Diploma | Subject/Topic | University / Board | % |
|------------------|-------------------------------------|--------------------------------|--------|
| M.Sc. | Botany (Plant Biotechnology) | R. T. M. Nagpur University | 71.84% |
| Ph. D. | Biotechnology (Plant Biotechnology) | S.G.B. Amravati University | - |
| M. Phil. | Biotechnology (Plant Biotechnology) | Periyar University, Tamil Nadu | 61.00 |
| M. Sc. | Biotechnology (Plant Biotechnology) | R. T. M. Nagpur University | 60.80 |
| B. Sc. | C. B. Z. | R. T. M. Nagpur University | 66.96 |
| HSSC | Science | Maharashtra State Board, Pune | 62.83 |
| SSC | Science | Maharashtra State Board, Pune | 81.06 |

ELIGIBILITY TESTS FOR ASSISTANT PROFESSOR

| Exam | University / Board | Percentage | Year of passing |
|----------|--|------------|-----------------|
| SET | University of Pune, Maharashtra. | 56 % | 28/01/2018 |
| ASRB-NET | Indian Council of Agricultural Research, New Delhi | 53 % | 06/07/2016 |

TEACHING EXPERIENCE IN VARIOUS INSTITUTIONS

| Sr. No. | Position | Institution | Duration |
|---------|-----------------------|---|--|
| 1 | Adhoc Lecturer | Dept. of Botany, Kamla Nehru Mahavidyalaya, Nagpur. | 8 th Nov 2018 to 30 th April 2019 |
| 2 | Visiting faculty | Dept. of Mol. Bio. & Genetic Engineering | Jan 2015 to June 2019 |
| 3 | Visiting faculty | Hislop College, Nagpur. | Aug 2017 to June 2019 |
| 4 | Visiting faculty | V.T. Convent and Junior college, Nagpur. | Aug 2016 to Feb. 2018 |
| 5 | Contributory Lecturer | G.H. Rasoni Institute of Interdisciplinary Sciences Nagpur. | Aug 2006 to Feb 2007 |

RESEARCH EXPERIENCE IN VARIOUS INSTITUTIONS

| Sr. No. | Position | Institution | Duration |
|---------|------------------------|--|---|
| 1 | Senior Research Fellow | Central Institute for Cotton Research, Nagpur. | Oct. 23 rd 2008 to June 30 th 2012 |
| 2 | Skilled Researcher | Central Institute for Cotton Research, Nagpur. | April 2008 to Oct. 22 nd 2008 |
| 3 | Research Associate | Mahabeej Biotech Centre, Nagpur. | July 2007 to April 2008 |
| 4 | Senior Research Fellow | Central Institute for Cotton Research, Nagpur. | Oct 2006 to Mar 2007 |

DOCTORAL RESEARCH WORK

“Development of specific gene constructs for cultivable cotton (*Gossypium hirsutum* cv LRK-516) for its transformation and improvement”.

Supervisor: Dr. A. S. Patil, Professor (Biotechnology), Dept. of Biotechnology, S.G.B. Amravati University, Amravati.

DISSERTATION PROJECTS

✓ M. Sc. (Botany)

‘Identification and Molecular Characterization of Cotton Pathogens’

Supervisor: Dr. Vaishali Y. Charjan, Head, Department of Botany, Kamla Nehru Mahavidyalaya, Nagpur.

✓ M. Sc. (Biotechnology)

‘Callus induction, biochemical characterization & regeneration of *Stevia rebaudiana* & *Gymnema sylvestre* by shoot organogenesis’

Supervisor: Dr. S. B. Nandeshwar, Principal Scientist & Head, Dept. of Biotechnology, Crop Improvement Division, CICR Nagpur.

✓ M. Phil. (Biotechnology)

‘Callus induction in *Stevia rebaudiana* in liquid and semisolid nutrient medium and its biochemical analysis’

Supervisor: Prof. G. N. Wagh, Head, Dept. of Microbiology, Jankidevi Bajaj College of Science, Wardha.

KEY RESEARCH ACHIEVEMENTS

1. Isolation and characterization of plant immunity booster gene i.e. *Non-expressor of Pathogenesis Related genes-1 (NPR1)* from *Arabidopsis thaliana* ecotype COL-0.
2. Development of transgenic cotton (*Gossypium hirsutum* cv LRK-516) with *AtNPR1* gene incorporation, making it more resistance to cotton pathogens.
3. Standardization of *Agrobacterium* mediated *In-Planta* transformation strategy of transgenic cotton development in which hectic stage of *in-vitro* regeneration of cotton is completely avoided.

4. Development of inverted repeat constructs (Sense-intron-Antisense) to target Cotton Leaf Curl Virus (*CLCuV*) by sequencing the complete viral genome.
5. Development of *CLCuV* resistance transgenic cotton by transforming the *CLCuV* susceptible cotton varieties by RNAi technology.

RESEARCH EXPERIENCE

1. Completed Ph.D. research project on “**Development of specific gene constructs for cultivable cotton (*Gossypium hirsutum* cv LRK-516) for its transformation and improvement**”.
2. Worked as a Senior Research Fellow in DBT funded project of “**Engineering Cotton Leaf Curl Resistance Cotton through RNA-interference Approach**” at Molecular Pathology lab, CICR, Nagpur, under the guidance of Dr. P. K. Chakrabarty, Assistant Director General (Plant Protection), ICAR. (DBT Project grant/2007-2010/ BT/PR5259/AGR/02/273).
3. Worked as a technical guide for production of Banana and other commercial tissue cultured plantlets and development of disease and insect resistance transgenic cotton and transgenic vegetables development at Molecular Pathology lab, CICR, Nagpur and Mahabeej Biotech Centre, Nagpur.
4. Worked on GM crop testing and characterization by PCR, Q-PCR, Southern, Northern Blotting and Bioassay against insects and pathogens.
5. Have good experience in *in-vitro regeneration* i.e. tissue culture development of Cotton, vegetable crops, medicinal plants and Banana.
6. Done complete genome sequencing and characterization of Cotton Leaf Curl Virus collected from *CLCuV* infested area of North India.
7. Worked on virus indexing and molecular marker development of plant pathogens.
8. Worked as Senior Research Fellow (Oct 2006 to Mar 2007), in the project ‘**Insecticide Resistance Management**’ funded by Ministry of Agriculture Government of India at Central Institute for Cotton Research (**C.I.C.R**), Nagpur, under Dr. K. R. Kranthi (Director, CICR, Nagpur).
9. Guided dissertation projects of M.Sc. Biotechnology, M.Sc. Molecular Biology and Genetic Engineering students of R.T.M. Nagpur University, Nagpur and trainee candidate in Biotech Industrial Training Program (BITP), Biotech Consortium India Limited (BCIL).

CURRENT RESEARCH ACTIVITIES

1. Molecular characterization of plants and plant pathogens.
2. *In-vitro* regeneration and cell suspension studies on medicinal plants.
3. Bio-Nanotechnology; Biological synthesis of nanoparticles and their applications.

| PUBLICATION DETAILS | | | CITATIONS-24 | H-INDEX-3 | I10-INDEX-1 | | | |
|-------------------------------|--------------------------|-----------------|---------------------|---------------------|-------------|--------------|-------------------|---------------------------|
| International Research Papers | National Research Papers | Review articles | Paper presentations | Poster presentation | Abstracts | DNA sequence | Protein Sequences | Guided M.Sc. Dissertation |
| 12 | 04 | 03 | 03 | 05 | 11 | 88 | 80 | 17 |

Sequences deposited in GenBank at NCBI (www.ncbi.nlm.nih.gov)

88 DNA sequences & 80 protein sequences were deposited in GenBank (Annexure-I).

Research Papers: International Journals

1. Yadav A. M. & Kalbande B. B. (2020). "A Trilocular Hairy Fruit from the Deccan Intertrappean Beds of Jamsavali, M. P., India". *International Journal of Recent Scientific Research*, 11(05):38579-38583. (ISSN: 0976-3031) (DOI: <http://dx.doi.org/10.24327/ijrsr.2020.1105.5339>).
2. Chakrabarty P. K., Kumar P., Kalbande B. B., Chavhan R. L., Koundal V., Monga D., Pappu H. R., Roy A. & Mandal B. (2020). "Recombinant variants of cotton leaf curl Multan virus is associated with the breakdown of leaf curl resistance in cotton in northwestern India". *Virus Diseases*, 27(2):1-9. (ISSN: 2347-3517) (DOI: <https://doi.org/10.1007/s13337-020-00568-0>).
3. Chavhan R. L., Hinge V. R., Kadam U. S., Kalbande B. B. & Chakrabarty P. K. (2017). "Real-time PCR assay for rapid, efficient and accurate detection of *Paramyothecium roridum* a leaf spot pathogen of *Gossypium* species". *Journal of Plant Biochemistry and Biotechnology*, 27(2):1-9. (DOI: [10.1007/s13562-017-0431-9](https://doi.org/10.1007/s13562-017-0431-9)) (ISSN: 0974-1275) [Citations:1]
4. Kalbande B. B. & Patil A. S. (2016). "Plant tissue culture independent *Agrobacterium tumefaciens* mediated *In-planta* transformation strategy for upland cotton (*Gossypium hirsutum*)". *Journal of Genetic Engineering and Biotechnology*, 14(1):9-18. (DOI: [10.1016/j.jgeb.2016.05.003](https://doi.org/10.1016/j.jgeb.2016.05.003)) (ISSN:1687-157X) [Citations:13]
5. Kalbande B. B., Patil A. S. & Chakrabarty P. K. (2016). "An efficient, simple and high throughput protocol for Cotton genomic DNA isolation". *Journal of Plant Biochemistry and Biotechnology*, 25(4):437-441. (DOI: [10.1007/s13562-016-0360-z](https://doi.org/10.1007/s13562-016-0360-z)) (ISSN: 0974-1275) [Citations:5]
6. Kalbande B. B. & Patil A. S. (2016). "Cloning and Characterization of *NPR1* Gene from *Arabidopsis thaliana* 5 ecotype Col-0". *International Journal of Current Research in*

Biosciences and Plant Biology, 3(2):15-26. (DOI: <http://dx.doi.org/10.20546/ijcrbp.2016.302.003>)
(ISSN: 2349-8080)

7. **Kalbande B. B.** & Patil A. S. (2015). "Callus induction studies on *Gossypium hirsutum* L. cv LRK-516 using hypocotyl explant". *Cotton Research Journal*, 6(2):119-124. (ISSN: 0970-308X).
8. **Kalbande B. B.**, Yadav A. M. & Kadu G. S. (2013). "In-vitro regeneration with *Agrobacterium* mediated transformation of *Solanum melongena* L, Brinjal". *Indo-American Journal of Life Sciences and Biotechnology*, 1(1):20-27. (ISSN: 2347-2243)
9. **Kalbande B. B.**, Vyas A., Yadav A. M., Narwade A. V. & Nandeshwar S. B. (2012). "Agrobacterium mediated transformation and plant regeneration from different explants of *Lycopersicon esculentum*". *Plant Cell Biotechnology and Molecular Biology*, 13(1&2):53-58. (ISSN: 0972-2025)
10. Chakrabarty P. K., **Kalbande B. B.**, Chavhan R. L., Narwade A., Suchitra, S. V., Warade J. W., Nandeshwar S. B. & Monga, D. (2012). "Engineering cotton leaf curl virus resistant cotton through RNA interference approach". *Cotton Research Journal*, 3(2):174-191. (ISSN: 0970-308X)
[Citations:4]
11. Nandeshwar S. B., Chakrabarty P. K., Singh K., Meshram M. & **Kalbande B. B.** (2011). "Development of biotic stress resistance transgenic diploid cotton utilizing *Agrobacterium* and shoot apical meristem cells". *World Cotton Research Conference-5*, Nov. 7-11:120-128. (ISBN: 978-93-81361-51-1)
12. Chakrabarty, P. K., Sable, S. V., Koundal, B. K., **Kalbande, B. B.**, Monga, D., Soni, R. & Pappu, H. R. (2011). "Diversity in Cotton Leaf Curl Virus (CLCuV) isolates prevalent in north western India and analysis of recombinant events in light of breakdown of CLCuV resistance in cotton". *American Phytopathology*, 101:6, 20-20. (WOSUID: WOS:000295045400171) [Citations:1]

Research Papers: National Journals

13. Yadav A. M. & **Kalbande B. B.** (2020). "A New Petrified Unilocular Capsular Fruit *Valvulocarpon Mohgaonse* Gen. Et. Sp. Nov. From Deccan Intertrappean Beds of Mohgaonkalan, M.P., India". *Bioinfolet*, 17(13B):485-490. (ISSN: 0976-4755)
14. **Kalbande B. B.** & Yadav A. M. (2020). "Antifungal activity of Copper Nanoparticles against *Aspergillus niger* & *Penicillium notatum*". UPA National Peer Reviewed Interdisciplinary e-Journal, 5:30-37. (ISSN 2455-4375)
15. Charjan V. Y., **Kalbande B. B.** & Yadav A. M. (2017). "Callus induction culture studies on *Vigna radiata*". *The Botanique*, 21(11):169-173.
16. Yadav A. M. & **Kalbande B. B.** (2017). Multiple shoot induction and regeneration of endangered medicinal plant Brahmi (*Bacopa monnieri* Penn.). *Kamla Nehru Research Journal KNJR*, 1:80-84. (ISBN 978-93-86011-45-9)

Review Articles

1. **Kalbande B.B.**, Sutar S.R., Meshram M.D, Sable S.V. (2012). Different methods of DNA extraction and troubleshooting. *Agrobios Newsletter*, Vol.11:03.10-12.
2. **Kalbande B.B.**, Ghonge V.L., Sutar S.R., Sable S.V., Meshram M.D., Warade J. (2012). Principles of DNA extraction and role of various components used in DNA extraction. *Agrobios Newsletter*, Vol.12:01.06-08.
3. Ghonge V.L., Sutar S.R., **Kalbande B.B.**, Warade J. (2011). An introduction to gene switching and gene use restriction technology. *Agrobios Newsletter*, Vol.10:04.13-15.

Paper Presentations

1. Chakrabarty P. K., **Kalbande B. B.**, Chavhan R. L., Narwade A., Suchitra, S. V., Warade J. W., Nandeshwar S. B. & Monga, D. (2011). Engineering cotton leaf curl virus resistant cotton through RNA interference approach. World Cotton Research Conference-5, Renaissance Convention Centre, Mumbai, November 7-11, 2011. (*International Conference*)
2. Chakrabarty, P. K., Kalbande, B. B., Chavhan, R. L., Sable, S. V., Warade, J., Vyas, A. & Nandeshwar S. B. (2010). Engineering cotton leaf curl resistance cotton through RNA interference approach. National Seminar on Biotechnology for Agriculture, Health, Industry and Environment. College of Agriculture, Nagpur, February 20-21, 2010, Pg.12.
3. **Kalbande B. B.**, Nandeshwar S. B. & Kothari R. (2007). "Regeneration of *Gymnema sylvestri* by Micropropagation", in 'National Conference on Emerging Trends in Medicinal Plants & Their Biotechnological Advances', organized by Dept. of Botany, Dr. Ambedkar College, Nagpur, during 5th to 6th January, 2007. Pg. 82.

Poster Presentations

1. **Kalbande, B. B. & Yadav, A. M.** (2020). "Biosynthesis of silver nanoparticles from *Ocimum bacilicum* and nanoparticle screening for antimicrobial activity" in "International Conference on Advance Functional Materials", organized by Kamla Nehru Mahavidyalaya, Nagpur in association with Porwal College, Kamptee in association with Association of Chemical Teachers (ACT), during 23rd to 25th January, 2020. Abs. No. PP121, Pg. No. 153. (*International Conference*)
2. **Kalbande, B. B. & Yadav, A. M.** (2019). "Resistance development against fungal pathogen *Colletotrichum gossypii* in transgenic cotton LRK-516 containing *AtNPR1* gene" in "National Conference on Science & Technology: Rural Development", organized by Science College Nagpur in association with The Indian Science Congress Association, Kolkata, during 27th to 28th November, 2019. Abs. Pg. 25.

3. **Kalbande, B. B.** & Yadav, A. M. (2019). “Green Synthesis of Silver Nanoparticles from *Andrographis paniculata* & Screening of Nanoparticles for their Antibacterial Potential” in “11th National Conference on Solid State Chemistry & Allied Areas”, organized by Porwal College, Kamptee in association with Indian Association of Solid-State Chemist & Allied Scientists (ISCAS), Jammu, during 20th to 21st December, 2019. Abs. No. 121.
4. **Kalbande B. B.** & Patil A. S. (2013). “PCR optimization of agronomically important *NPR1* gene from *Arabidopsis thaliana*”, in National Conference on ‘Current Advances in Biotechnology & Annual Meeting of Society for Biotechnology (India)’, organized by Department of Biotechnology, S.G.B. Amravati University, Amravati, November 25-26, 2013. Abst. Pg. 117.
5. **Kalbande B. B.**, Nandeshwar S. B. & Kothari R. (2006). “Regeneration of *Stevia rebaudiana* by Micropropagation”, in “International 2nd Biotech Congress on Innovations in Biotechnology and Their Applications”, organized by Rajiv Gandhi Biotech Centre; RTM Nagpur University, Nagpur, during 18th to 21st Dec. 2006. Abst. Pg. 39.

Conference Abstracts

1. Yadav, A. M. & **Kalbande, B. B.** (2019). “Palaeoenvironmental studies some fossil plants from Central India” in “National Conference on Science & Technology: Rural Development”, organized by Science College Nagpur in association with The Indian Science Congress Association, Kolkata, during 27th to 28th November, 2019. Abs. Pg. 22.
2. Yadav, A. M. & **Kalbande, B. B.** (2019). “A Trilocular fruit *Baccatocarpon Jamsavlii* Gen. et. Sp. nov from the Deccan Intertrappean Beds of Jamsavali, M. P” in “11th National Conference on Solid State Chemistry & Allied Areas”, organized by Porwal College, Kamptee in association with Indian Association of Solid-State Chemist & Allied Scientists (ISCAS), Jammu, during 20th to 21st December, 2019. Abs. Pg. 107.
3. Chakrabarty, P. K., Sable, S. V., Koundal, B. K., **Kalbande, B. B.**, Monga, D., Soni, R. & Pappu, H. R. (2011). “Diversity in Cotton Leaf Curl Virus (CLCuV) isolates prevalent in north western India and analysis of recombinant events in light of breakdown of CLCuV resistance in cotton”. *Phytopathology*, 101:30. APS-IPPC 2011, Joint meeting in Honolulu, Hawaii, August 6-10, 2011.
4. Chakrabarty, P. K., Narwade, A. V., Mohan, K. S., Nandeshwar, S. B., **Kalbande, B. B.** & Bajaj, D. (2011). “Expression of a *Gossypium hirsutum* Chitinase gene (*ChiI*) in diploid cotton (*G. arboreum*) delayed pathogenesis of leaf spot and grey mildew disease”. Florida Phytopathological Society Meeting, Gulf Cost Research and Education Centre, Brandon, Florida, May 1-3, 2011.

5. Chakrabarty, P. K., Narwade, A. V., Mohan, K. S., Nandeshwar, S. B., **Kalbande, B. B.** & Bajaj, D. (2010). “Cloning of unique Chitinase gene in diploid cotton (*G. arboreum*) showed enhanced expression of Chitinase activity and delayed pathogenesis of *Myrothecium roridum*”. International Cotton Genome Initiative Research Conference. Sept 20-23, 2010, CSIRO Discovery Centre, Canberra, Australia.
6. Chakrabarty, P. K., Sable, S. V., **Kalbande, B. B.**, Monga, D. & Pappu, H. R. (2010). “Diversity in Cotton leaf Curl virus isolates prevalent in North West India and approaches to engineer resistance against the disease”. Conference on Whitefly and Thrips transmitted viruses, University of Delhi, South Campus, New Delhi, India. August 27-28, 2010, p.17.
7. Chakrabarty, P. K., **Kalbande, B. B.**, Chavhan, R. & Narwade, A. (2010). “Genetic engineering of resistance against fungal foliar diseases and leaf curl virus disease in cotton”. Indo-US Bilateral Workshop, Indo-US Science and Technology Forum, February 25-27, 2010. CCSHAU, Hisar.
8. Vyas A. & **Kalbande B. B.** (2008). “Micropropagation, Multiple Shoot Induction & Callus Induction in *Stevia rebaudiana* Bertoni”, in “National Seminar on Biotechnological Approaches in Cleaner Environment”, organized by Sevadal Mahila Mahavidyalaya & Research Academy, Nagpur, during 13th to 15th March 2008.
9. Kadu G. & **Kalbande B. B.** (2008). “Organogenesis in *Bacopa moneri*”, in “National Seminar on Biotechnological Approaches in Cleaner Environment”, organized by Sevadal Mahila Mahavidyalaya & Research Academy, Nagpur, during 13th to 15th March 2008.
10. Wase P. & **Kalbande B. B.** (2008). “*In vitro* Regeneration & Callus Induction in Eucalyptus (*Camaldulensis*)”, in “National Seminar on Biotechnological Approaches in Cleaner Environment”, organized by Sevadal Mahila Mahavidyalaya & Research Academy, Nagpur, during 13th to 15th March 2008.
11. Bonde S. & **Kalbande B. B.** (2008). “*In vitro* Regeneration in Sarpagandha (*Rauvolfia serpentina*)”, in “National Seminar on Biotechnological Approaches in Cleaner Environment”, organized by Sevadal Mahila Mahavidyalaya & Research Academy, Nagpur, during 13th to 15th March 2008.

DISSERTATION PROJECTS GUIDED**17**

1. Screening of *Ocimum* sp. for biological synthesis of Silver nanoparticles.
2. Biological synthesis of Silver nanoparticles from aqueous extract of *Curcuma longiflora*.
3. Green synthesis of Silver nanoparticles using *Morus alba* leaves.
4. Use of *Andrographis paniculate* extract for green synthesis of Silver nanoparticles.

5. Biological synthesis of Silver nanoparticles using plant and microbes.
6. Molecular characterization of *Rhizoctonia bataticola* cotton isolates from Vidarbha fields.
7. Molecular identification and phylogenetic analysis of medicinal plants from *Malvaceae* family.
8. Molecular identification and phylogenetic analysis of medicinal plants from *Mimosaceae* family.
9. Molecular identification and phylogenetic analysis of medicinal plants from *Meliaceae* family.
10. Transformation of *Lycopersicon esculentum* (Tomato: PKM1) by *Agrobacterium* containing *mCryIAc* gene.
11. Transformation of *Solanum melongena* (Brinjal: Jayant) by *Agrobacterium* containing *mCryIAc* gene.
12. Transformation of *Capsicum annum* (Chili: X-235) by *Agrobacterium* containing *mCryIAc* gene.
13. Transformation of *Raphanus sativus* (Radish: Japanese White) by *Agrobacterium* containing *mCryIAc* gene.
14. Micropropagation, Multiple Shoot Induction & Callus Induction in *Stevia rebaudiana* Bertoni.
15. Organogenesis in Brahmi (*Bacopa moneri*).
16. *In vitro* Regeneration & Callus Induction in Eucalyptus (*Camaldulensis*).
17. *In vitro* Regeneration in Sarpagandha (*Rauwolfia serpentina*).

| Refresher Coerces | Induction Program | FDP | Training/ Workshop | Seminars/Webinars/ Conference/Symposia | Awards | Membership | Reviewer/Referee in Journals |
|-------------------|-------------------|-----|--------------------|--|--------|------------|------------------------------|
| 1 | 1 | 4 | 15 | 32 | 03 | 03 | 19 |

| | |
|--------------------------|----------|
| REFRESHER COERCES | 1 |
|--------------------------|----------|

1. Four Month **SWAYAM Arpit Online Course** for Carrier Advancement Scheme (CAS) Promotions on “Skills for New Educational Architecture” under **AICTE-MHRD**, September to December 2019.

| | |
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| FACULTY INDUCTION/ORIENTATION PROGRAM | 4 |
|--|----------|

1. One Month Online *Induction Training/Orientation Program* for faculties in Universities/Colleges/Institutions of Higher Education, organized by Teaching Learning Centre, Ramanujan College, University of Delhi, Supported by **MHRD-PMMMNTT**, June 4th to July 8th, 2020.

FACULTY DEVELOPMENT PROGRAM FDP**4**

1. One Weeks online FDP on “*Open Source Tools for Research*”, organized by Teaching Learning Centre, Ramanujan College, University of Delhi, Supported by **MHRD-PMMMNMTT**, June 8th to 14th, 2020.
2. One Week online FDP on “*Multimedia Enriched e-Content Development*”, organized by Guru Angad Dev Teaching Learning Centre of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, May 21st to 26th, 2020.
3. One Week online FDP on “*ICT Tools for Effective Teaching Learning*”, organized by Swami Ramanand Teertha Marathwada University, Nanded, May 11th to 16th, 2020.
4. Two Weeks online FDP on “*Managing Online Classes & Co-creating MOOCs*”, organized by Teaching Learning Centre of **MHRD-PMMMNMTT**, Ramanujan College, University of Delhi, April 20th to May 6th, 2020.

TRAININGS & WORKSHOPS ATTENDED**15**

1. Workshop on “*Assessment & Accreditation Process of NAAC*”, Dhote Bandhu Science College, Gondia in association with Rashtriya Uchchar Shiksha Abhiyan (RUSA) & Department of Higher & Technical Education, Government of Maharashtra, June 15th, 2020.
2. Workshop on “*Innovation, Social Entrepreneurship & Intellectual Property Rights (IPR)*”, J. M. Patel College, Bhandara, May 20th, 2020.
3. International Training on “Workshop on “Standard Precautions: Hand Hygiene”, (WHO) World Health Organization, May 18th, 2020.
4. International Training on “*Infection Prevention & Control (IPC) for Novel Corona Virus (Covid-19)*”, (WHO) World Health Organization, April 18th, 2020.
5. One Day National Workshop on “*Fundamentals of Intellectual Property Rights & Plagiarism*” organized by IQAC & Central Library, Nabira Mahavidyalaya Katol, February 29th, 2020.
6. Integrated Workshop on “*Ancient DNA and Reconstruction of the Past*” conducted by Dept. of Ancient Indian History, Culture & Archaeology, RTMNU, Nagpur, December 23rd & 24th, 2019.
7. Workshop on “*Methods of Scientific Analysis of Archaeological Material*”, conducted by Dept. of Ancient Indian History, Culture & Archaeology, RTMNU, Nagpur, March 14th & 15th, 2019.
8. Patent Awareness Program titled “*Intellectual Property Rights*”, conducted by Rajiv Gandhi National Institute of Intellectual Property Management, Nagpur, February 3rd, 2016.

9. Workshop on “*Radiometric System of Age Determination and Their Role in Archaeology*”, organized by Post Graduate Department of Ancient Indian History, Culture and Archaeology, R.T.M. Nagpur University, Nagpur, January 5th to 7th, 2016.
10. **Guest faculty** at “*International Symposium & Workshop on Molecular Biology*”, organized by Vidarbha Association of Medical Microbiologists & Dhruv Pathology & Molecular DiaLab, Nagpur, January 9th to 10th, 2010.
11. Workshop on “*LAMP & Real Time PCR for Molecular Diagnosis*”, at Biochemistry Research Laboratory, CIIMS, Nagpur, February 17th to 18th, 2010.
12. Indo-US Workshop on “*Epigenetic Regulation and Genome Control (Emphasis on RNAi and miRNA)*”, at Centre for Cellular and Molecular Biology, Hyderabad, December 19-18, 2009.
13. National Training on “*Use of Biotechnology in Agriculture and Awareness Campaign in Bt Cotton*”, at Central Institute for Cotton Research, Nagpur, January 18th, 19th & 20th, 2007.
14. Workshop on “*Methodology in Human Cytogenetic and Molecular Genetics*”, at EUGENICS Nagpur, October 2006.
15. National Seminar-cum-Workshop on “*Up-Gradation of Production Technology for Quality Production of Biological Inputs in Agriculture, Microbes Founding Pillars of Organic Farming*”, held at College of Agriculture, Nagpur, March 2005.

SEMINARS/WEBINARS/CONFERENCES/SYMPOSIUM ATTENDED

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1. Online National e-Conference on “*Interdisciplinary Recent Research Trends*”, organized by Shri R. R. Lahoti Science College, Morshi, July 3rd to 4th, 2020.
2. Online National Conference on “*Impact of Lockdown on Unrecognized Sector*”, organized by Dept. of Commerce, Nabira Mahavidyalaya, Katol with University Professor’s Association, June 12th, 2020.
3. Online Webinar on “*Learn Latex: to Lead the Latest*”, Shri R. R. Lahoti Science College, Morshi, June 18th, 2020.
4. Online National Webinar on “*Women in Higher Education: Issues & Challenges during Corona Pandemic*”, organized by Guru Angad Dev Teaching Learning Centre of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, May 27th, 2020.
5. Online National Webinar on “*NAAC Awareness Program for Affiliated Colleges*”, organized by Shri Shivaji Arts & Science College, Amravati, May 22nd, 2020.

6. Online National Webinar on “*e-Learning & MOOC’s in Higher Education & New Role of Teachers*”, organized by IQAC, Shri GVG Visalakshi College for Women, under UGC Paramarsh scheme, May 18th, 2020.
7. Online National Webinar on “*e-Content development Methodology: Four Quadrant Model, OERs & Copyright Issues*”, organized by Guru Angad Dev Teaching Learning Centre of of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, May 15th, 2020.
8. Online International E-Conference on “*Strategies & Challenges in Higher Education during COVID-19 Lockdown Period in India with reference to the World*”, organized by Government Vidarbha Institute of Science & Humanities, Amravati, India, May 15th to May 17th, 2020.
9. Online International Webinar on “*Covid-19 Consideration for vaccine*”, organized by Mithibai College, Mumbai, May 12th, 2020.
10. Online National Webinar on “*Challenges & Opportunities in higher education in Indian for the 21st Century*”, organized by Guru Angad Dev Teaching Learning Centre of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, (MHRD, PMMMNMTT), May 8th, 2020.
11. Online National Webinar on “*Corona pandemic & economic challenge in India*”, organized by Guru Angad Dev Teaching Learning Centre of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, May 4th, 2020.
12. Online National Webinar on “*Challenges & Opportunities before Indian Higher Education due to Covid-19*”, organized by Guru Angad Dev Teaching Learning Centre of **MHRD-PMMMNMTT**, SGTB Khalsa College, Delhi University, May 2nd, 2020.
13. Online National Conference on “*Sustainable Development and Environment in Current Era*”, organized by Dhanwate National College, Nagpur, April 27th, 2020.
14. Online National Webinar on “*e-content development webinar*”, organized by Research Centre for English Language and Literature, April 10th, 2020.
15. State level Conference on “*Fundamentals of Intellectual Property Rights and Plagiarism*”, organized by IQAC, Nabira Mahavidyalaya, Katol, February 29th, 2020.
16. Interdisciplinary National Conference on “*Recent Innovations in Agri-Biosciences in Strengthening the Indian Economy: Challenges & Prospectus & Farmers Meet*”, organized by

Department of Botany and Department of Commerce, Dr. Ambedkar College, In association with Central Institute for Cotton Research, Nagpur, on February 1st, 2020.

17. International Conference on “*Advance Functional Materials*” (AFM-2020), organized by Kamla Nehru Mahavidyalaya, Nagpur in association with Association of Chemistry Teachers (ACT), during 23rd to 25th January, 2020.
18. 11th National Conference on “*Solid State Chemistry & Allied Areas*”, organized by Porwal College, Kamptee in association with Indian Association of Solid-State Chemist & Allied Scientists (ISCAS), Jammu, during 20th to 21st December, 2019.
19. National Conference on “*Science & Technology: Rural Development*” (NCSTRD-2019), organized by Science College Nagpur in association with The Indian Science Congress Association, Kolkata, during 27th to 28th November, 2019.
20. International Conference on “*Multifunctional Advanced Materials ICMAM-2018*”, at Nagpur jointly organized by Kamla Nehru Mahavidyalaya, Nagpur and Dharampeth Science College, Nagpur, on 5th to 7th October, 2018.
21. National seminar on “*Recent Trends In Biosciences: Panacea For Sustainable Development (RTBPSD-2018)*”, organized by Department of Botany, RTM Nagpur University, Nagpur, on 29th September, 2018.
22. National Conference on “*Current Advances in Biotechnology & Annual Meeting of Society for Biotechnology (India)*”, at Department of Biotechnology, SGB Amravati University, Amravati, on 25th & 26th November, 2013.
23. National Seminar on “*Trends in Nanobiotechnology, at Department of Biotechnology*”, SGB Amravati University, Amravati, 4th January, 2013.
24. “*World Cotton Research Conference-5*”, Mumbai, 7th to 11th November, 2011.
25. UGC sponsored National Conference on “*Green Chemistry for Environment & Human Health*”, organized by Department of Chemistry, Kamla Nehru Mahavidyalaya & Society for Promotion of Material Science, Nagpur, 20th January, 2011.
26. National Seminar on “*Biotechnology for Agriculture, Health, Industry & Environment*”, organized by College of Agriculture, Nagpur, 20th to 21st February, 2010.
27. National Symposium on “*Bt-Cotton: Opportunities and Prospects*” at Central Institute for Cotton Research, Nagpur, November 17-19, 2009.

28. UGC sponsored National Conference on “*Biodiversity and Environment: Problems & Solutions*”, organized by Department of Botany & Zoology, SSES Science College, Nagpur, 4th to 5th January, 2008.
29. National Conference on “*Emerging Trends in Medicinal Plants & Their Biotechnological Advances*”, at Dr. Ambedkar College, R.T.M.N.U., Nagpur, January 5th to 6th, 2007.
30. “*International 2nd Biotech Congress on Innovations in Biotechnology and Their Applications*”, at RGB-Centre, Rajiv Gandhi Biotechnology Centre, R. T. M. Nagpur University, Nagpur, December 18th to 21st, 2006.
31. “*Biotalk-3, 2005, a symposium on CANCER*” on January 2005 at Hislop School of Biotechnology, Nagpur.
32. “*An approach from Academic to Industry via Synergy*”, at G. H. Rasoni Institute of Information Technology, Nagpur, October 2004.

AWARDS RECEIVED**03**

1. Third Prize for Poster Presentation in “*International Conference on Advance Functional Materials*”, organized by Kamla Nehru Mahavidyalaya, Nagpur in association with Association of Chemistry Teachers (ACT), during 23rd to 25th January, 2020.
2. Third Prize for Poster Presentation in “*National Conference on Science & Technology: Rural Development*”, organized by Science College Nagpur in association with The Indian Science Congress Association, Kolkata, during 27th to 28th November, 2019.
3. First award in Science Exhibition organized by Nabira Mahavidyalaya Katol, on 31st January, 2003.

MEMBERSHIP**03**

1. Life Time member of ‘Society for Biotechnology (India)’ [Membership No.: L-670].
2. Life Time member of ‘Indian Society for Cotton Improvement’.
3. Life Time member of ‘Indian Science Congress Association’ [ID: A424].
4. Regular Member of ‘Paleontological Society’.

1. Annual Research & Review in Biology [ISSN: 2347-565X]; Science Domain International.
2. Asian Journal of Advances in Agricultural Research [ISSN: 2456-8864]; Science Domain International.
3. Asian Journal of Biology [ISSN: 2456-7124]; Science Domain International.
4. Biotechnology Journal International [ISSN: 2456-7051]; Science Domain International.
5. Cogent Food & Agriculture [ISSN: 2331-1932]; Cogent oa Series.
6. Current Journal of Applied Science and Technology [ISSN: 2457-1024]; Science Domain International.
7. Current Journal of Applied Science and Technology [ISSN: 2457-1024]; Science Domain International.
8. Current Journal of Applied Science and Technology [ISSN: 2457-1024].
9. Genomics & Gene Therapy International [ISSN :2642-1194]; Medwin Publishers.
10. Information Processing in Agriculture, The Journal of the China Agricultural University, Elsevier Journal [ISSN: 2214-3173].
11. International Journal of Pathogen Research [ISSN: 2582-3876]; Science Domain International.
12. International Journal of Plant & Soil Science [ISSN: 2320-7035]; Science Domain International.
13. Journal of Advances in Biology & Biotechnology [ISSN: 2394-1081]; Science Domain International.
14. Journal of Agricultural Science and Technology (JAST) [ISSN: 2345-3737].
15. Journal of Experimental Agriculture International [ISSN: 2231-0606]; Science Domain International.
16. Journal of Genetic Engineering and Biotechnology [ISSN: 1687-157X]; Science Direct, Elsevier Journal.
17. Journal of Plant Science: Current Research [ISSN:2639-3743].
18. Plant Cell Biotechnology & Biotechnology [ISSN: 0972-2025]; International Knowledge Press.
19. Physiology & Molecular Biology of Plants [ISSN: 0974-0430]; Springer Link.

TECHNICAL PROFICIENCY

- ✓ Plant Tissue Culture, embryo rescue, anther culture.
- ✓ Transgenic Plant Development by *Agrobacterium* Mediated Gene Transformation and *In-Planta* Transformation.
- ✓ DNA, RNA & Protein isolation.
- ✓ PCR, Q-PCR/RT-PCR, cDNA preparation.
- ✓ Primer designing.
- ✓ Gene Cloning and Characterization.
- ✓ Southern Blotting, Northern Blotting and Western Blotting.
- ✓ Flanking sequence analysis for transgenic events.
- ✓ Viral Genome Sequencing.
- ✓ Paper, Column and Thin Layer Chromatography.
- ✓ Basic Microbial Techniques.
- ✓ I have experience in handling sophisticated equipment like Gradient PCR, Real Time PCR, Spectrophotometers, Plant growth chamber, ELISA, HPLC and all other small regular equipment in a research lab.

CERTIFICATE COURSES

- ✓ “*Advanced Training on Tissue Culture Technique*”, sponsored by Maharashtra State Seed Corporation Limited, Akola and organized by Mahabeej Biotechnology Centre, Nagpur, from 16th June to 15th January, 2007.
- ✓ “*Certificate Course on Computer Concepts*”, in 2001, by DOEACC Society, an Autonomous body of Ministry of Information Technology, Government of India.
- ✓ “*Certificate Course in Computer Applications*”, in 1999, by Centre for Electronics Design & Technology of India, CEDTI, Aurangabad.

COMPUTER AWARENESS

- ✓ Windows Operating System, MS Office, Plasmid designing and Sequence analyzing software.

EXTRA-CURRICULAR ACTIVITIES

- ✓ Member of the team given training to agriculture officers and farmers from all over India on ‘*Techniques for Bt crop detection*’.
- ✓ Active participant in organizing committees of seminars and science exhibitions.
- ✓ Participated in science exhibitions and number of singing competitions.
- ✓ Lead the team of cricket, volleyball, table tennis at school and college level.

OTHER RESPONSIBILITIES & CONTRIBUTIONS

- ✓ Team Member of Internal Quality Assurance Cell.
- ✓ Green Audit Committee Member.
- ✓ Coordinator of “*Certificate Course in Plant Tissue Culture Techniques*” under Department of Life Long Learning & Extension, RTM Nagpur University.
- ✓ **Student Development Officer (Technology)**, under Rural Entrepreneurship Development Cell, Nabira Mahavidyalaya Katol.

(Bipinchandra B. Kalbande)

DNA Sequences deposited in GenBank at NCBI (www.ncbi.nlm.nih.gov)

| Sr. No. | Description of gene | GenBank Accession |
|----------------|---|--------------------------|
| 1. | <i>Arabidopsis thaliana</i> ecotype Col-0 non-expressor of PR1 (NPR1) gene, complete cds. | KF564649 |
| 2. | <i>Alternaria alternata</i> isolate Aalt-1 small subunit ribosomal RNA gene, partial sequence ... | MH040863 |
| 3. | <i>Lasiodiplodia theobromae</i> isolate Lt-1 small subunit ribosomal RNA gene, partial sequence ... | MH040864 |
| 4. | <i>Fusarium oxysporum</i> isolate Fu-1 small subunit ribosomal RNA gene, partial sequence ... | MH040865 |
| 5. | <i>Curvularia spicifera</i> isolate Cu-1 small subunit ribosomal RNA gene, partial sequence ... | MH040866 |
| 6. | <i>Macrophomina phaseolina</i> isolate Rb-1 internal transcribed spacer 1, partial sequence ... | MH040867 |
| 7. | <i>Fusarium oxysporum</i> isolate Fo-S small subunit ribosomal RNA gene, partial sequence... | KX270346 |
| 8. | <i>Aspergillus parasiticus</i> isolate Ap-S small subunit ribosomal RNA gene, partial sequence... | KX270347 |
| 9. | <i>Aspergillus flavus</i> isolate Afl-S small subunit ribosomal RNA gene, partial sequence... | KX270348 |
| 10. | <i>Aspergillus fumigatus</i> isolate Afu-S small subunit ribosomal RNA gene, partial sequence... | KX270349 |
| 11. | <i>Alternaria alternata</i> isolate Aalt-S small subunit ribosomal RNA gene, partial sequence... | KX270350 |
| 12. | <i>Fusarium dimerum</i> isolate Fd-S small subunit ribosomal RNA gene, partial sequence... | KX270351 |
| 13. | <i>Rhizoctonia bataticola</i> isolate RB-1 small subunit ribosomal RNA gene, partial sequence... | KX270352 |
| 14. | <i>Rhizoctonia bataticola</i> isolate RB-2 small subunit ribosomal RNA gene, partial sequence... | KX270353 |
| 15. | <i>Rhizoctonia bataticola</i> isolate RB-3 small subunit ribosomal RNA gene, partial sequence... | KX270354 |
| 16. | <i>Rhizoctonia bataticola</i> isolate RB-4 small subunit ribosomal RNA gene, partial sequence... | KX270355 |
| 17. | <i>Rhizoctonia bataticola</i> isolate RB-5 small subunit ribosomal RNA gene, partial sequence... | KX270356 |
| 18. | <i>Azadirachta indica</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX426056 |
| 19. | <i>Chloroxylon faho</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX426057 |
| 20. | <i>Swietenia mahogani</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX426058 |
| 21. | <i>Melia azedarach</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX426059 |
| 22. | <i>Walsura trifoliata</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX426060 |
| 23. | <i>Thespesia populnea</i> 18S ribosomal RNA gene, partial sequence; ... | KX452503 |
| 24. | <i>Malvastrum coromandelianum</i> 18S ribosomal RNA gene, partial sequence; ... | KX452504 |
| 25. | <i>Hibiscus schizopetalus</i> 18S ribosomal RNA gene, partial sequence; ... | KX452505 |
| 26. | <i>Vachellia nilotica</i> maturase K (<i>matK</i>) gene, partial sequence; chloroplast. | KX518638 |

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| 27. | <i>Vachellia leucophloea</i> (Roxb.) Willd, maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518639 |
| 28. | <i>Senegalia ferruginea</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518640 |
| 29. | <i>Acacia campbelli</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518641 |
| 30. | <i>Senegalia catechu</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518642 |
| 31. | <i>Leucaena leucocephala</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518643 |
| 32. | <i>Acacia auriculiformis</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518644 |
| 33. | <i>Hibiscus panduriformis</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518645 |
| 34. | <i>Hibiscus schizopetalus</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518646 |
| 35. | <i>Malvastrum coromandelianum</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518647 |
| 36. | <i>Thespesia populnea</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518648 |
| 37. | <i>Hibiscus rosa-sinensis</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518649 |
| 38. | <i>Hibiscus panduriformis</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518650 |
| 39. | <i>Hibiscus schizopetalus</i> maturase K (<i>matK</i>) gene, partial cds; chloroplast. | KX518651 |
| 40. | Cotton Leaf Curl Virus isolate Sirsa (Haryana) segment DNA-A, complete sequence. | HM037923 |
| 41. | Cotton Leaf Curl Virus isolate Sirsa (Haryana) segment beta-DNA, complete sequence. | HM037922 |
| 42. | CLCuV "Severe strain" isolate Sri Ganganagar (Rajasthan) segment DNA-A, complete sequence | HM037920 |
| 43. | CLCuV "Severe strain" isolate Sri Ganganagar (Rajasthan) segment beta-DNA, complete seq. | HM037921 |
| 44. | Cotton Leaf Curl Virus isolate Mohanpura (Rajasthan) segment DNA-A, complete sequence. | HQ158010 |
| 45. | Cotton Leaf Curl Virus isolate Mohanpura (Rajasthan) segment beta-DNA, complete sequence. | HM146307 |
| 46. | Cotton Leaf Curl Virus isolate Sirsa (Haryana) segment DNA-A, complete sequence. | HQ158011 |
| 47. | Cotton Leaf Curl Virus isolate Sirsa (Haryana) segment beta-DNA, complete sequence. | HM146308 |
| 48. | Cotton Leaf Curl Virus isolate Naruana (Punjab) segment DNA-A, complete sequence. | HM235774 |
| 49. | Cotton Leaf Curl Virus isolate Naruana (Punjab) segment segment beta-DNA, complete seq. | HQ343201 |
| 50. | Cotton Leaf Curl Virus 'Severe' isolate Ganganagar (Rajasthan) segment DNA-A, complete seq. | HQ158009 |
| 51. | Cotton Leaf Curl Virus 'Severe' isolate Ganganagar (Rajasthan) segment beta-DNA, comp. seq. | HQ158008 |
| 52. | Cotton leaf curl virus beta-satellite, complete genome. | NC_017829 |
| 53. | <i>Gossypium hirsutum</i> Class I Chitinase gene, complete sequence. | HM125506 |
| 54. | RNA interference vector <i>pBSK-Intron</i> , to create inverted repeat of a given sequence. | HQ343203 |
| 55. | RNA interference vector <i>pBSK-Gus</i> , to create inverted repeat of a given sequence. | HQ343202 |
| 56. | pBSK-MP-Sense-Intron-Antisense inverted repeat construct. | HQ681274 |

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| 57. | pBSK-CP-Sense-Intron-Antisense inverted repeat construct. | HQ681275 |
| 58. | pBSK-AC2-Sense-Intron-Antisense inverted repeat construct. | HQ681276 |
| 59. | pBSK-BV4-Sense-Intron-Antisense inverted repeat construct. | HQ681277 |
| 60. | pBSK-BC4-Sense-Intron-Antisense inverted repeat construct. | HQ681278 |
| 61. | pBSK-mBC4-Sense-GUS-Antisense, inverted repeat construct. | HQ680380 |
| 62. | <i>Bacillus cereus</i> strain CICR-X1 16S ribosomal RNA gene, partial sequence. | JN579711 |
| 63. | <i>Bacillus cereus</i> strain CICR-X2 16S ribosomal RNA gene, partial sequence. | JN579712 |
| 64. | <i>Bacillus cereus</i> strain CICR-D6 16S ribosomal RNA gene, partial sequence. | JQ284035 |
| 65. | <i>Bacillus nealsonii</i> strain CICR-PKV 16S ribosomal RNA gene, partial sequence. | JQ319066 |
| 66. | <i>Bacillus subtilis</i> strain CICR-Sn 16S ribosomal RNA gene, partial sequence. | KC438379 |
| 67. | <i>Bacillus subtilis</i> strain CICR-SB 16S ribosomal RNA gene, partial sequence. | KC438380 |
| 68. | <i>Bacillus subtilis</i> strain CICR-NG 16S ribosomal RNA gene, partial sequence. | KC438378 |
| 69. | <i>Xenorhabdus indica</i> strain CICR-WG 16S ribosomal RNA gene, partial sequence. | JQ284033 |
| 70. | <i>Xenorhabdus poinarii</i> strain CICR-WR 16S ribosomal RNA gene, partial sequence. | JQ284032 |
| 71. | <i>Xenorhabdus indica</i> strain CICR-WG 16S ribosomal RNA gene, partial sequence. | JN558595 |
| 72. | <i>Fusarium incarnatum</i> isolate Sirsa 18S ribosomal RNA gene, partial sequence. | JN206645 |
| 73. | <i>Metarhizium anisopliae</i> isolate Ma4 18S ribosomal RNA gene, partial sequence. | JN206646 |
| 74. | <i>Lecanicillium lecanii</i> isolate V1-5 18S ribosomal RNA gene, partial sequence. | JN206647 |
| 75. | <i>Brevibacterium epidermidis</i> strain CICR-G1 16S ribosomal RNA gene, partial sequence. | JQ284034 |
| 76. | <i>Heterorhabditis indica</i> isolate CICR-SUB 18S ribosomal RNA gene, partial sequence. | JQ319065 |
| 77. | <i>Enterobacteriaceae bacterium</i> CICR-WR 16S ribosomal RNA gene, partial sequence. | JN558594 |
| 78. | <i>Alternaria alternata</i> isolate Aalt-A small subunit ribosomal RNA gene, partial sequence... | KX270357 |
| 79. | <i>Rhizoctonia bataticola</i> isolate Rb-A internal transcribed spacer 1, partial sequence... | KX270358 |
| 80. | <i>Curvularia spicifera</i> isolate Cs-A small subunit ribosomal RNA gene, partial sequence... | KX270359 |
| 81. | <i>Fusarium oxysporum</i> isolate Fo-A small subunit ribosomal RNA gene, partial sequence... | KX270360 |
| 82. | <i>Lasiodiplodia theobromae</i> isolate Lt-A1 small subunit ribosomal RNA gene, partial sequence... | KX270361 |
| 83. | <i>Lasiodiplodia theobromae</i> isolate Lt-A2 small subunit ribosomal RNA gene, partial sequence... | KX270362 |
| 84. | <i>Aspergillus niger</i> isolate CICR CBE 18S ribosomal RNA gene, partial sequence... | KX290301 |
| 85. | <i>Meloidogyne incognita</i> isolate CICR-Ngp putative esophageal gland cell secretory protein 23... | KX290302 |
| 86. | <i>Meloidogyne incognita</i> isolate CICR-Ngp 14-3-3 like protein mRNA, Clone-3, complete cds. | KX426063 |

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| 87. | <i>Meloidogyne incognita</i> isolate CICR-Ngp 14-3-3 like protein mRNA, Clone-2, complete cds. | KX426062 |
| 88. | <i>Meloidogyne incognita</i> isolate CICR-Ngp 14-3-3 like protein mRNA, Clone-1, complete cds. | KX426061 |

Protein Sequences deposited in GenBank at NCBI (www.ncbi.nlm.nih.gov)

| Sr. No. | Description of gene | GenBank Accession |
|----------------|---|--------------------------|
| 1. | Non-expressor of PR1 [<i>Arabidopsis thaliana</i>] | AIK27558 |
| 2. | <i>Maturase K</i> , partial (chloroplast) [<i>Azadirachta indica</i>] | APO36905 |
| 3. | <i>Maturase K</i> , partial (chloroplast) [<i>Chloroxylon faho</i>] | APO36906 |
| 4. | <i>Maturase K</i> , partial (chloroplast) [<i>Swietenia mahagoni</i>] | APO36907 |
| 5. | <i>Maturase K</i> , partial (chloroplast) [<i>Melia azedarach</i>] | APO36908 |
| 6. | <i>Maturase K</i> , partial (chloroplast) [<i>Walsura trifoliolata</i>] | APO36909 |
| 7. | <i>Maturase K</i> , partial (chloroplast) [<i>Vachellia nilotica</i>] | APY27042 |
| 8. | <i>Maturase K</i> , partial (chloroplast) [<i>Vachellia leucophloea</i>] | APY27043 |
| 9. | <i>Maturase K</i> , partial (chloroplast) [<i>Senegalia ferruginea</i>] | APY27044 |
| 10. | <i>Maturase K</i> , partial (chloroplast) [<i>Acacia campbellii</i>] | APY27045 |
| 11. | <i>Maturase K</i> , partial (chloroplast) [<i>Senegalia catechu</i>] | APY27046 |
| 12. | <i>Maturase K</i> , partial (chloroplast) [<i>Leucaena leucocephala</i>] | APY27047 |
| 13. | <i>Maturase K</i> , partial (chloroplast) [<i>Acacia auriculiformis</i>] | APY27048 |
| 14. | <i>Maturase K</i> , partial (chloroplast) [<i>Hibiscus panduriformis</i>] | APY27049 |
| 15. | <i>Maturase K</i> , partial (chloroplast) [<i>Hibiscus schizopetalus</i>] | APY27050 |
| 16. | <i>Maturase K</i> , partial (chloroplast) [<i>Malvastrum coromandelianum</i>] | APY27051 |
| 17. | <i>Maturase K</i> , partial (chloroplast) [<i>Thespesia populnea</i>] | APY27052 |
| 18. | <i>Maturase K</i> , partial (chloroplast) [<i>Hibiscus rosa-sinensis</i>] | APY27053 |
| 19. | <i>Maturase K</i> , partial (chloroplast) [<i>Hibiscus panduriformis</i>] | APY27054 |
| 20. | <i>Maturase K</i> , partial (chloroplast) [<i>Hibiscus schizopetalus</i>] | APY27055 |
| 21. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52856 |
| 22. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52855 |
| 23. | Replication initiator protein [Cotton leaf curl virus] | AEI52854 |
| 24. | Transcription activator protein [Cotton leaf curl virus] | AEI52853 |
| 25. | Replication enhancer protein [Cotton leaf curl virus] | AEI52852 |

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| 26. | Coat protein [Cotton leaf curl virus] | AEI52851 |
| 27. | Precoat/movement protein [Cotton leaf curl virus] | AEI52850 |
| 28. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52886 |
| 29. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52849 |
| 30. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52848 |
| 31. | Replication initiator protein [Cotton leaf curl virus] | AEI52847 |
| 32. | Transcription activator protein [Cotton leaf curl virus] | AEI52846 |
| 33. | Replication enhancer protein [Cotton leaf curl virus] | AEI52845 |
| 34. | Coat protein [Cotton leaf curl virus] | AEI52844 |
| 35. | Precoat/movement protein [Cotton leaf curl virus] | AEI52843 |
| 36. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52885 |
| 37. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52877 |
| 38. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52876 |
| 39. | Replication initiator protein [Cotton leaf curl virus] | AEI52875 |
| 40. | Transcription activator protein [Cotton leaf curl virus] | AEI52874 |
| 41. | Replication enhancer protein [Cotton leaf curl virus] | AEI52873 |
| 42. | Coat protein [Cotton leaf curl virus] | AEI52872 |
| 43. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52887 |
| 44. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52884 |
| 45. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52883 |
| 46. | Replication initiator protein [Cotton leaf curl virus] | AEI52882 |
| 47. | Transcription activator protein [Cotton leaf curl virus] | AEI52881 |
| 48. | Replication enhancer protein [Cotton leaf curl virus] | AEI52880 |
| 49. | Coat protein [Cotton leaf curl virus] | AEI52879 |
| 50. | Precoat/movement protein [Cotton leaf curl virus] | AEI52878 |
| 51. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52888 |
| 52. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52863 |
| 53. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52862 |
| 54. | Replication initiator protein [Cotton leaf curl virus] | AEI52861 |
| 55. | Transcription activator protein [Cotton leaf curl virus] | AEI52860 |

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| 56. | Replication enhancer protein [Cotton leaf curl virus] | AEI52859 |
| 57. | Coat protein [Cotton leaf curl virus] | AEI52858 |
| 58. | Precoat/movement protein [Cotton leaf curl virus] | AEI52857 |
| 59. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52890 |
| 60. | <i>ac5</i> protein [Cotton leaf curl virus] | AEI52870 |
| 61. | <i>ac4</i> protein [Cotton leaf curl virus] | AEI52869 |
| 62. | Replication initiator protein [Cotton leaf curl virus] | AEI52868 |
| 63. | Transcription activator protein [Cotton leaf curl virus] | AEI52867 |
| 64. | Replication enhancer protein [Cotton leaf curl virus] | AEI52866 |
| 65. | Coat protein [Cotton leaf curl virus] | AEI52865 |
| 66. | Precoat/movement protein [Cotton leaf curl virus] | AEI52864 |
| 67. | <i>beta C1</i> protein [Cotton leaf curl virus betasatellite] | AEI52889 |
| 68. | <i>beta C1</i> gene product [Cotton leaf curl virus betasatellite] | YP_006273072 |
| 69. | <i>beta-lactamase</i> [RNA interference vector pBSK-Intron] | ADR82072 |
| 70. | <i>beta-lactamase</i> [RNA interference vector pBSK-Gus] | ADR82071 |
| 71. | <i>beta-lactamase</i> [Cloning vector pBSK-MP] | ADV31343 |
| 72. | <i>beta-lactamase</i> [Cloning vector pBSK-CP] | ADV31344 |
| 73. | <i>beta-lactamase</i> [Cloning vector pBSk-AC2] | ADV31345 |
| 74. | <i>beta-lactamase</i> [Cloning vector pBSk-BV4] | ADV31346 |
| 75. | <i>beta-lactamase</i> [Cloning vector pBSk-BC4] | ADV31347 |
| 76. | <i>beta-lactamase</i> [Cloning vector pBSK-mBC4-Sense-GUS-Antisense] | AEM60379 |
| 77. | putative esophageal gland cell secretory protein 23 [<i>Meloidogyne incognita</i>] | APU94132 |
| 78. | <i>14-3-3</i> protein [<i>Meloidogyne incognita</i>] | APO36912 |
| 79. | <i>14-3-3</i> protein [<i>Meloidogyne incognita</i>] | APO36911 |
| 80. | <i>14-3-3</i> protein [<i>Meloidogyne incognita</i>] | APO36910 |