

DEPARTMENT OF BIOTECHNOLOGY

KAKTIYA UNIVERSITY, WARANGAL
(SAP-DRS Identified Department)



[About the Department](#)

[Courses Offered](#)

[Infrastructure](#)

[Faculty](#)

[Syllabus](#)

[Photogallery](#)



1.About the Department

Biotechnology is an interdisciplinary course which encompasses all basic science subjects. It is a technology with profuse agricultural, medicinal and industrial applications. It was established with an objective to provide teaching and research to young students and equip them to meet the growing need of the state and country. The seeds of this department were sown in the Department of Botany in the form of introducing Plant Tissue Culture as one of the specialization in Botany during 1984-1985 through the assistance of UGC VII plan. Later the same specialization was restructured as Plant Biotechnology. Through inputs of active teaching and research by committed teachers, the specialization has got enough platform to elevate the specialization into a separate course. In the year 2000 under the aegis of Department of Botany, M.Sc. Biotechnology took roots. The course was inaugurated on 23rd August, 2000 by renowned scientist Prof. **Asis Datta**, Former Vice- Chancellor, Jawaharlal University, New Delhi.

OBJECTIVES:

- To train students (from rural areas) in Biotechnology at Post Graduate Level.
- To create intelligent and skilled human resource to cope up with the development of science and industry.
- To motivate students to enter into modern research and technology

ADVISORY COMMITTEE:

The advisory committee was constituted by the University to make suggestions in the development of course curriculum and to evaluate the progress of the student from time to time. The committee meets once in a year. The committee consists of:

- Prof.N Linga Murthy, Vice-Chancellor, Kakatiya University, Warangal
- Prof.D Balasubramanian, Director of Research, L.V.Prasad Eye Institute, Hyderabad.
- Dr.Seyed E Hasnian, Vice-Chancellor, University of Hyderabad, Hyderabad.
- Prof. A R Reddy, Vice-Chancellor, Yogi Vemana University, Kadapa.
- Prof. M V Rajam, University of Delhi, South Campus, New Delhi.
- Dr.K R K Reddy, Managing Director, Sri Biotech, Hyderabad.
- Prof. A Sadanandam, Chairman BOS, Biotechnology, Kakatiya University.
- Prof.N Rama Swamy, Head, Department Of Biotechnology, Kakatiya University

Collaborations/ MoUs of Department:

- Botanical Institute, LMU , Munich ,Germany,
- State Agricultural Biotechnology Centre, Perth, Western Australia
- Institute of Plant Molecular Biology, Groningen University, The Netherlands
- National Centre for Genetic Resources & Biotechnology, CENARGEN/EMBRAPA, Brazil.
- Innovo Biologicals Private Ltd. Hyderabad

ALUMNI:

So far seven batches of students (200 students) have left the portals of the Department with flying colours. As on today there are no backlogs and readmissions. Our alumni are placed in different institutes, laboratories and universities, both in India and abroad. They are doing research in USA, Germany, Australia, UK, Taiwan etc. They have achieved good score in TOEFL & GRE exams. This is possible because our students undergo summer training in Biotech companies like **Shantha Biotech, Bharath Biotech, Reddys Lab, Indian Immunologicals, Biological Evans, Sri Biotech** and in companies under **Biotechnology Consortium India Limited (BCIL)** of the DBT, New Delhi. Most of the students are employed in R & D centers, Biotechnology Industry and in Academic Institutions.

WORKSHOPS, SEMINARS & BIOTECH FESTS:

Since the inception of the course, a number of workshops and seminars were organized to create awareness and popularize the Biotechnology. A Biotech fest (Science fair) had been organized as biennial feature to inculcate scientific temperament and promote interaction among the students of different colleges, affiliated to Kakatiya University .The activities are:

- 2001 : Workshop for Under Graduate Students
- 2002 : Workshop for Under graduate Students
- 2003 : Workshop for Undergraduate Students
- 2004 : Biotech fest
- 2005 : Refresher Course for College Teachers
- 2006 : Biotech fest
- 2006 : Orientation programme in practicals for college teachers
- 2007 : Workshop for Undergraduate Students
- 2007 : Refresher Course for College Teachers
- 2008 : Natl. Con. on Frontiers in Bioinformatics and Biotechnology
- 2008 : International conference on Plant Biotechnology and Molecular Biology

A three day International conference on “Plant Biotechnology & Molecular Biology” was organized during 15-17 August 2008. Prof.KC Reddy, Chairman, Andhra Pradesh State Council of Higher Education (APPSCHE) and Prof.N Linga Murthy Vice Chancellor, Kakatiya University presided over the Inaugural function. Prof. Sudhir K Sopory, ICGEB delivered the inaugural address. Eminent scientists in the field of Biotechnology Prof. RG Herrmann (Germany), Prof. MGK Jones (Australia), Prof.Jacques Hille (The Netherlands), Prof. Manoel Souza (The Netherlands), Prof.JL Aragao (Brazil), Prof. Autar Mattoo (USA), Prof. Jaideep Mathur (Canada) have delivered plenary lectures. About 400 Biotechnologists from Universities, Research Institutes, Laboratories and Biotech Companies have participated in the Conference. This is the first of its kind in Kakatiya University history.

Research Areas

Plant tissue culture, Protoplast Culture, Embryo Rescue, *In Vitro* Mutagenesis, Genetic Engineering, Molecular Biology, Transgenic Technology, Transplastome Technology, Root-knot Nematode interactions, Nitrogen fixation, Telomerase and Cancer Detection, Biomedical Studies, Bidesulphurization and Molecular Markers.

Research Scholars- Fellowships:

- Mr.K.Venugopal Rao...SRF (CSIR),CAS-TWAS
- Mrs.K.Kiranmayee.....SRF (CSIR)
- Mr.A.Mahender..... CAS-TWAS
- Mr.P.Mahendar...SRF (UGC-Rajiv Gandhi Fellowship)
- Mrs.T.Radhika....Young Scientist Fellowship (APCOST)

EMINENT PERSONS VISITED THE DEPARTMENT:

- Padma Sree Prof.Balasubramanian, Director of Research, LV Prasad Eye institute, Hyderabad
- Prof. Ravi Tiwari, Center for Rhizobium Studies, Murdoch University, Perth, Australia.
- Prof. MGK Jones. Director, SABC, Murdoch University, Perth, Western Australia
- Dr.Sabir Hussain, Scientist, US Air Force Academy, USA
- Prof. Arjula R Reddy, Vice-Chancellor, Yogi Vemana University, Kadapa
- Padma Bhushan Dr.Varaprasad Reddy, CEO, Shanta Biotechnic, Hyderabad
- Dr.Karan I. Adams& Dr.Marvis J.Larry, Central Michigan university, USA
- Prof. Gheeredrhanogzi & Prof.Gabrel Ogba, Academic Vice-President of Eritria Institute of Science and Technology & Dean of Social Sciences, Eritria.
- Padma Sree Prof. MV Rao, Former Vice-Chancellor, NG. Ranga Agricultural University, Hyderabad.
- Dr.Uldrich Podewils, Director, DAAD, New Delhi
- Prof. PB Sheshagiri, Indian Institute of Science, Bangalore

- Dr.Rakesh Mishra, CCMB, Hyderabad
- Dr.KV Radha Kishan, GVK Bioscience, Hyderabad
- Dr.Suprasanna, Baba Atomic Research Center, Mumbai
- Prof.SK Sopory, ICGEB, New Delhi
- Prof.RG Herrmann, Botanische Institute, Germany
- Prof. Jacques Hille, Groningen University, The Netherlands
- Prof.Francisco JL Aragao, Embrapa, Brazil
- Prof.Autar K Matoo, Agricultural Research Center, Beltsville, USA
- Prof.Jaideep Mathur, University of Guelph, Canada
- Prof.Manoel deSouza, Wageningen, The Netherlands

2.COURSES OFFERED:

- M.Sc. Biotechnology
- 5 Year Integrated M.Sc.Biotechnology Programme
- PG Diploma in Medical Transcription
- Ph.D Programme in Biotechnology

MODE OF SELECTION: Selection of students through Kakatiya University Common Entrance Test (KUCET).

NUMBER OF SEATS:

Courses	Total No. of Seats
M.Sc. Biotechnology	32
5 Year Integrated M.Sc Biotechnology	30
PG Diploma in Medical Transcription	30
Ph.D.	18

3. Infrastructure:

BUILDING (AREA: 11,600 sft.)

Ground Floor - Two Class Rooms (Previous & Final) cum Seminar Hall, (7000 SFT.) A Computer Lab, A Head Room and two Staff Rooms (Teaching & Non- Teaching).

First Floor - Two Laboratories (Practicals), A Microbial Culture Room, (4600 SFT.) A Plant Tissue Culture Room, A Library and Reading Room, Two Research Labs, An Animal Cell Culture Room, ELISA Room and A Store Room

EQUIPMENTS/INSTRUMENTS AVAILABLE:

Thermocycler (PCR), CO₂ Incubator, Gel Documentation system, Refrigerated Centrifuge, Microplate Reader (ELISA), Deep Freezer (-20°C), Low temperature Freezer (-86°C), Laminar Air Flows, Inverted Microscope, Cold Centrifuge, Trinocular Research Microscope, Ice Flaking Machine, LCD Projectors, Orbital Shaker (cold), Digital Balance, Distillation Apparatus, Electrophoretic Units, Microfuges, Centrifuges and Dry baths

Small equipment and chemicals/consumables

Ovens, pH meters water bath shakers, refrigerators, microwave oven, autoclaves, magnetic stirrers, cyclomixer, incubator, balances, microscopes.

Adequate number of chemicals, consumables, disposables and glassware for conducting practicals in Molecular Biology, Animal Cell Culture, Plant Tissue Culture, Biochemistry and Microbiology are available in the Department. Restriction enzymes, PCR consumables, Cell lines, Diagnostic kits etc have been procured.

Facilities Available:

- Animal Cell Culture Facility
- Plant Tissue Culture Facility
- Microbial Culture Facility

BIOINFORMATICS INFRASTRUCTURE FACILITY (BIF):

The Department of Biotechnology (DBT), Ministry of Science and Technology, Govt. of India, New Delhi has sanctioned (Rs. 43.0 Lakhs) Bioinformatics Infrastructure Facility (BIF) for promotion of Biology teaching through Bioinformatics (BTBI) to Kakatiya University, Warangal, AP under the Biotechnology Information System Network (BTISnet) Programme. We have created a separate lab in the building of Biotechnology, Kakatiya University. Complete equipment hardware and software is procured and BSNL

Broad Band connectivity is obtained. The facility is being utilized by the Faculty, Research Scholars and Student of Biology departments.

SAP-DRS Programme: University Grants Commission (UGC), New Delhi has sanctioned Rs.32.50 lakhs under SAP-DRS scheme for promotion of infrastructural facilities and Research in the department and Prof.N.Rama Swamy has been appointed as Co-ordinator.

LIBRARY:

Books: About 7.5 lakhs worth books (676 Nos) are maintained in our Departmental Library

Journals: Several Research journals are subscribed for departmental library

- CURRENT SCIENCE
- INDIAN JOURNAL OF BIOTECHNOLOGY
- INDIAN JOURNAL OF EXPERIMENTAL BIOLOGY
- DOWN TO EARTH
- CSIR NEWS
- NATURAL PRODUCT RADIANCE
- BIOTECHNIQUES

4.Faculty:

S.No	Name	Designation	Broad of Research Areas
01	Dr.A.Sadanandam	Professor, Chairman, BoS	<ul style="list-style-type: none"> •Genetic engineering •Plastid transformation •Plant tissue culture •Protoplast culture •Root-knot Nematode infestations
02	Dr.N.Rama Swamy	Professor, Head	<ul style="list-style-type: none"> •Genetic engineering •Molecular Biology •Plant tissue culture •Agricultural Biotechnology
03	Dr.T.Christopher	Asst. Professor	<ul style="list-style-type: none"> •Genetic engineering •Molecular Biology Plant tissue culture
04	Dr.A.V. Rao	Lecturer	<ul style="list-style-type: none"> •Genetic engineering •Molecular Biology Plant tissue culture

Guest Faculty:

S.No.	Name of the Faculty	Department/ Institute
1.	Prof.K.Subhash, Rtd.	Department of Botany, Kakatiya University
2.	Prof.G. Raghu Ramulu	Department of Zoology, Kakatiya University
3.	Prof.N.Vijay Kumar	Department of Zoology, Kakatiya University
4.	Prof M.A. Singaracharya	Department of Microbiology, Kakatiya University
5.	Prof. S.Rama Reddy	Department of Microbiology, Kakatiya University
6.	Dr. S.Girisham	Department of Microbiology, Kakatiya University
7.	Prof.V.S.Raju	Department of Botany, Kakatiya University
8.	Dr. Kondal Rao	Kakatiya Medical College
9.	Dr. Anand Kishore	National Institute of Technology
10.	Dr. Komal Reddy	Kakatiya Institute of Technological Sciences
11.	Dr. B.Prolaram	University Arts & Science College
12.	Mr. Muzzammil Hussain	Department of Informatics, Kakatiya University
13.	Mr.Ravi Kumar	Biomind, Hyderabad



PROF. A SADANANDAM ABBAGANI, Ph.D

Chairman, BoS, Department of Biotechnology
Kakatiya University, Warangal-506 009

Address:

**H.No. : 5-5-15, Lashkar Bazar, Hanamkonda, A.P., 506 001,
Phone:+91-870-2571049.Mobile: +91-0-98491-46811,
E-mail: nandamas@rediffmail.com.**

Area of specialization: Plant Biotechnology

Research Supervision:

No. of Ph.Ds guided :10

No. of Ph.Ds now guiding : 6

No. of articles published in National Research journals: 28

No. of articles published in International Research journals: 20

No. of papers presented in National Seminars/workshops/Conferences: 15

No. of papers presented inter National Seminars/workshops/Conferences: 02

No. of National seminars/Conferences attended: 08

No. of International Conferences attended: 02

*Supervised research work of Dr. T. Jayasree, DST Woman Scientist Awardee, 2003-2006.

** Jointly supervised research work of Mr. Pavan with Prof.R.G. Hermann , Botanical Institute, LMU, Munich, Germany, under DAAD Sandwich Fellowship scheme.

Areas of Research.

- Genetic engineering
- Plastid transformation
- Plant tissue culture
- Protoplast culture
- Root-knot Nematode infestations
- Nitrogen fixation studies

Major projects:

1991-1993 Selection of biochemical mutants in *Solanum melongena*, scheme for young scientists ,DST, Govt. of India, Principal Investigator

1995-1996 Selection and characterization of antibiotic resistant mutants, TWAS , Italy, Principal Investigator.

1998-2001 Mulberry Improvement through somatic fusion, DBT, Govt. of India, Principal Investigator.

1998-2001 Developing protocols for micro propagation and genetic transformation in *Terminatia tomentosa*, DBT, Govt. of India, Principal co Investigator.

1999-2002 Plastid transformation in higher plants, national UGC research award, Govt. of India, Principal Investigator

1999-2002 Engineering Abiotic stress resistance using HVA1 gene in cultivated tomato, AICTE, Govt. of India, Co-Principal Investigator.

2009-2012 Developing Plastid Transformation system for expression of Mustard Annexin gene in tomato for engineering abiotic stress tolerance, funded by University Grants Commission, New Delhi

International collaboration:

- Prof. R.G. Hermann, Botanical Institute , LMU , Munich ,Germany, under DAAD Sandwich Programme.
- Prof.R.Bassi, Verona University, Italy under Indo-Italian cultural cooperation
- Prof. Zhen Zhu , Institute of Genetics & Developmental Biology, CASD, China under CAS-TWASD Programme.
- Prof. M.G.K. Jones State Agricultural Biotechnology centre, Perth Western Australia
- Prof Nara Gavini , Department of Biological sciences, Mississippi State University, USA

Visit to foreign countries:

Country visited	Purpose	Financial assistance
Germany	Research	DAAD
Australia	Research	ACU, London
Hungary	Research	UNESCO- BAC, France
Germany	Research	DAAD Revisit
Netherlands	Conference	Max Planck Society
Germany	Research	DAAD Mentor visit

International fellowships/Awards/Honours:

- DAAD fellowship
- DST Young Scientist Project
- Association of common wealth universities(ACU, London) fellowship in biotechnology
- UNESCO biotechnology Action Council (France) fellowship
- National UGC Research Award
- Third World Academy of Sciences (TWAS) associate
- Visiting Research Professor Murdoch University , Australia
- Honorary Advisor to DAAD, New Delhi
- Andhra Pradesh Scientist award-2008 by APCOST

10 Best Publications:

1. Pavan Umate, Christine Fellerer, Serena Schwenkert, Mikael Zoryan, Lutz Eichacker, **Sadanandam Abbagani**, Itzhak Ohad, Reinhold G. Herrmann, and Jörg Meurer (2008) Impact of PsbTc on electron flow, assembly and phosphorylation patterns of photosystem II in tobacco, *Plant Physiol* **148** (1342-1353)
2. K. Venugopal Rao, K. Kiranmayee, U. Pavan, T. JayaSree, A.V.Rao and **A. Sadanandam** (2005). Induction of multiple shoots from leaf segments, *in vitro*-flowering and fruiting of a dwarf tomato (*Lycopersicon esculentum*) *J. Plant Physiol*, **162**:959-962.
3. T. JayaSree, U. Pavan, M. Ramesh, A.V. Rao, K. Jagan Mohan Reddy and **A. Sadanandam** (2001). Somatic embryogenesis from leaf cultures of potato (*Solanum tuberosum* L.) *Plant Cell Tissue & Organ Culture*, **64**(1): 13-17.
4. U. Pavan, K. Venugopal Rao, K. Kiranmayee, T. JayaSree and **A. Sadanandam** (2005). Plant regeneration of mulberry (*Morus indica* L.) from mesophyll-derived protoplasts. *Plant Cell Tissue & Organ Culture*.**82** (3): 289-293.
5. T. JayaSree, U. Pavan, M. Ramesh, A.V. Rao, K. Jagan Mohan Reddy and **A. Sadanandam** (2001). Somatic embryogenesis from leaf cultures of potato (*Solanum tuberosum* L.) *Plant Cell Tissue & Organ Culture*, **64**(1): 13-17.
6. M. A. Farooqui, A. V. Rao, T. JayaSree and **A. Sadanandam** (1997). Induction of atrazine resistance and somatic embryogenesis in *Solanum melongena*. *Theor. Appl. Genet.*, **95**: 702-705.
7. A.V. Rao, M.A. Farooqui and **A. Sadanandam** (1997). Induction of lincomycin and streptomycin resistance by nitrosomethylurea and ethyl methanesulphonate in *Capsicum annuum* L. *Plant Cell Rep.* **16**: 865-868.
8. A.V. Rao, M.A. Farooqui, T. JayaSree, R.V. Ramana and **A. Sadanandam** (1993). EMS-induced streptomycin resistance in *Solanum melongena*. *Theor. Appl. Genet.* **87**: 527-530.
9. **A. Sadanandam** (1991). Induced synaptic mutant from mesophyll cell protoclonal lines of dihaploid *Solanum tuberosum*. *J. Plant Physiol.* **138**: 107-110.
10. **A. Sadanandam** and M.A. Farooqui (1991). Induction and selection of lincomycin-resistant plants in *Solanum melongena*. *Plant Sci.*, **79**: 237-239.



PROF. RAMASWAMY, NANNA, Ph.D

Professor & Head, Department of Biotechnology
Kakatiya University, Warangal-506 009

Address: 2-5-428, Behind Adalath, Hanamkonda, Warangal- 506 001
Phone: 0091-0870 2461455 (O), 0870-2567137 (R)
Fax: 0091-0870-2438800, 09390101665 (M);
E.mail: swamynr.dr@gmail.com

Area of specialization: Plant Biotechnology
Teaching Experience: 24 years
Research Experience: 30 years

Publications: 70 (In National and International)

Research Career:

No. of Ph.Ds guided :08
No. of Ph.Ds now guiding : 06
No. of articles published in National Research journals : 50
No. of articles published in International Research journals: 20
No. of papers presented in National Seminars/Workshops/Conferences: 24
No. of papers presented in International Seminars/workshops/Conferences: 04
*Jointly supervised Research work of Mr.M.Praveen with Prof. Zhang Hongxia, Shanghai, Institute of Biological sciences, Shanghai, China.

Areas Of research:

- Genetic engineering
- Molecular Biology
- Plant tissue culture
- Agricultural Biotechnology

Major Research Projects:

- 1998-2001** Developing protocols for micropropagation and genetic transformation in *Terminalia tomentosa*, Funded by DBT, Govt. of India
- 1998-2001** Mulberry improvement through somatic fusion, Funded by DBT, Govt. of India

1999-2002 Engineering Abiotic stress resistance using HVa1 gene in cultivated Tomato, Funded by AICTE, Govt. of India.

2002-2005 Developing protocols fro Micro propagation of an endangered forest tree *Givotia rottleriformis*, Funded by Ministry of Environment & Forests, Govt. of India.

2007-2010 Conservation and RAPD analysis of an endangered forest tree *Wrightia tinctoria* , funded by UGC, Govt. of India.

International Collaboration:

- Prof. Jacques Hille, Institute of Plant molecular Biology, Groningen University, The Netherlands
- Prof. Francisco JL Aragao, National centre for Genetic Resources & Biotechnology, CENARGEN/EMBRAPA, Brazil.
- Prof. Zhang Hongxia, Shanghai, Institute of Biological sciences, Shanghai, China. Under CAS-TWAS Programme
- Prof. Laszlo Szabados, Biological Research Centre, Szeged, Hungary

Foreign Visits:

<u>Country visited</u>	<u>purpose</u>	<u>year</u>	<u>financial assistance</u>
The Netherlands	Research	1997	UGC, New Delhi
Brazil	Research	2002	TWAS-UNESCO
Brazil	Research	2004	TWAS-UNESCO
Hungary	Research	2008	UGC, New Delhi

International Fellowships:

- Indo-Netherlands Fellowship, 1997
- TWAS-UNESCO Visiting Associate, 2002
- TWAS-UNESCO Visiting Associate, 2004
- Indo-Hungarian academy of Sciences Fellowship, 2008
- TWAS-UNESCO Visiting Associate, 2009 & 2010

Awards:

- Received the **Academy of Plant Sciences India Award-2005**, honoured with Gold Medal & Citation at the National Conference held at Gurukul Kangri University, Haridwar.
- Received the **Andhra Pradesh Scientist Award-2007** by the Andhra Pradesh Council of Science & Technology (APCOST), Govt. of AP.
- Honorary Advisory Body Member for TWAS-UNESCO Research Grants, Italy

10 BEST PUBLICATIONS:

1. M.Rambabu, M. Upender, D. Ujjwala, T. Ugandhar, M. Praveen, and N.Ramaswamy(2006). *In vitro* zygotic embryo culture of an endangered forest tree *givotia rottleriformis* and factors affecting its germination and seedling growth. *In vitro Cell. Dev. Biol - Plant.* 42(5): 418-421
2. Rama Swamy N, Ugandhar T, Praveen M and Subhash K (2006) "Efficient plant regeneration for rapid *in vitro* multiplication of Indian Solanum- A report. *Indian J Genet & Plant Breeding.* 66:159-160
3. Rama Swamy N., Ugandhar T., Praveen M, Lakshman A, Rambabu M. and Upender M. (2005) Induction of streptomycin-resistant plantlets in *Solanum surattense* through *in vitro* mutagenesis. *Plant Cell Tissue Org. Cult.* 80: 201-207
4. Rama Swamy N, Ugandhar T, Praveen M, Venkataiah P, Rambabu M, Upender M and Subhash K (2004) Somatic embryogenesis and Plantlet formation from cotyledon and leaf explants of *Solanum surattense*. *Indian J Biotech.* 4: 414-418.
5. Praveen M, Lakshman A and Rama Swamy N (2003). *In vitro* multiplication of *Strychnos potatorum* Linn F from root explants - A medicinally important plant. *Journal of Non Timber forest products* 10(3/4): 230-234.
6. U. Pavan, A.V. Rao, V. Yashodhara, N. Rama Swamy and A. Sadanandam (2000). Evaluation of specific parameters in the isolation of protoplasts from mesophyll cells of three mulberry cultivars. *Sericologia*, 40(3): 469-474.
7. U. Pavan, A.V. Rao, V. Yashodhara, N. Rama Swamy and A. Sadanandam (2000). A Simple protocol for rapid and efficient isolation of protoplast from callus cultures of mulberry (*Morus indica* L.) cv S₁₃. *Sericologia*, 40(4): 647-651.
8. N. Rama Swamy and Bir Bahadur (1984). Pollen flow in dimorphic *Turnera subulata* J.E.Smith New Phytologist 98:205-209.
9. N. Rama Swamy and Bir Bahadur (1998). Inheritance of seedling handedness in Triticale and its parents. *Cereal Research Communications.*27:91-97.
10. N. Rama Swamy and Bir Bahadur (1985). Seedling handedness in Triticale and its parents. *Acta Agronomica* 34:117-122.



DR. T. CHRISTOPHER, Ph.D

Department of Biotechnology, Kakatiya University,
Warangal 506009, AP.

Email: tammidala@yahoo.co.in

Tel : 09963311057; 0091-0870-2568077

Present Designation : Assistant Professor
Teaching experience : 7 years
Ph.D :1990, Kakatiya University

Thesis title: Mutation breeding and tissue culture studies in *Capsicum*

Post Doctoral Study: 1990-1995 : University Delhi, South Campus , New Delhi.

Areas of Teaching and Research : Mutation breeding, Genetics, Cell
Biology, Plant tissue culture, Plant
Biotechnology

Publications: :21
Conferences attended :15
Awards :CSIR (SRF& RA)

10 Best Publications:

1. Christopher T, Prolaram B, Rajam MV, and Subhash K (1986) Plantlet formation in embryo cultures of *Capsicum annuum* L. var. G4. *Curr.Sci.*55 (20): 1036-1037
2. Christopher T, Prolaram B, Rajam MV and Subhash K (1987) *In vitro* response of excised embryos from red pepper (*Capsicum annuum* L.) on hydroxylamine treatment. *Ind.J. Exp. Biol.* 25: 349-350
3. Christopher T, Prolaram B, Sadanandam A and Subhash K (1990) Shoot formation by hydroxylamine treatment in tissue cultures of Red pepper. *SABRAO J.* 22(2): 143-145
4. Christopher T, Prolaram B, and Subhash K (1991) Differential *in vitro* morphogenetic response in hypocotyls segments of *Capsicum annuum*. *Ind.J.Exp.Biol.* 29: 68-69
5. Christopher T and Rajam MV (1994) *In vitro* clonal propagation of *Capsicum* spp. *Plant Cell, Tissue and Organ Culture.* 38: 25-29

6. Christopher T and Rajam MV (1996) Effect of genotype, explant and medium on *in vitro* regeneration of red pepper. *Plant Cell, Tissue and Organ Culture*. 46: 245-250
7. Venkataiah P, Christopher T and Subhash K (2001) Plant regeneration and Agrobacterium-mediated genetic transformation in four *Capsicum* species. *Capsicum and Egg Plant Newsletter* 20: 68-71
8. Venkataiah P, Christopher T and Subhash K (2003) Thidiazuron induced high frequency shoot formation and plant regeneration in *Capsicum annum* L. *Journal of Plant Biotechnology* 5(4) :245-250
9. Venkataiah P, Christopher T and Subhash K (2005) Induction and characterization of Streptomycin-resistant mutants in *Capsicum praetermissum*. *Journal of Applied Genetics* 46(1):19-24
10. Venkataiah P, Christopher T and Subhash K (2006) In vitro shoot multiplication and plant regeneration in four *Capsicum* species using thidiazuron. *Scientia Horticulturae*,107,117-122



DR.A.VENKATESHWAR RAO,Ph.D

Department of Biotechnology, Kakatiya University,
Warangal 506 009, AP,

Email: vrao_allinin@yahoo.com

Tel: 09246894577,0091-0870-2461455

Present Designation : Lecturer

Teaching Experience: 9 years

Ph.D : 1997, Kakatiya University

Thesis Title : Selection and Characterization of antibiotic resistant markers in certain members of Solanaceae

Post Doctoral Study : 1998-2002- Kakatiya University

Areas of teaching and Research : Molecular Biology, Genetic Engineering, Plant tissue culture, Plant Biotechnology.

Publications : 19

Conferences attended : 10

Awards : CSIR (SRF & RA)

10 BEST PUBLICATIONS:

1. A.V. Rao, M.A. Farooqui, T. JayaSree, R.V. Ramana and A. Sadanandam (1993). EMS-induced streptomycin resistance in *Solanum melongena*. *Theor. Appl. Genet.* **87**: 527-530.
2. A.V. Rao, M.A. Farooqui and A. Sadanandam (1997). Induction of linomycine and streptomycin resistance by nitrosomethylurea and ethyl methanesulphonate in *Capsicum annuum* L. *Plant Cell Rep.* **16**: 865-868.
3. M. A. Farooqui, A. V. Rao, T. JayaSree and A. Sadanandam (1997). Induction of atrazine resistance and somatic embryogenesis in *Solanum melongena*. *Theor. Appl. Genet.*, **95**: 702-705.
4. U. Pavan, A.V. Rao, V. Yashodhara, N. Rama Swamy and A. Sadanandam (2000). Evaluation of specific parameters in the isolation of protoplasts from mesophyll cells of three mulberry cultivars. *Sericologia*, **40(3)**: 469-474.
5. T. JayaSree, U. Pavan, M. Ramesh, A.V. Rao, K. Jagan Mohan Reddy and A. Sadanandam (2001). Somatic embryogenesis from leaf cultures of potato (*Solanum tuberosum* L.) *Plant Cell Tissue & Organ Culture*, **64(1)**: 13-17.
6. K. Venugopal Rao, K. Kiranmayee, U. Pavan, T. JayaSree, A.V.Rao and A. Sadanandam (2005). Induction of multiple shoots from leaf segments, *in vitro*-flowering and fruiting of a dwarf tomato (*Lycopersicon esculentum*) *J. Plant Physiol*, **162**:959-962.
7. P. Mahendar, V. Uday, T. Radhika, A.V.Rao T. Christopher, D. Rama Krishna and A. Sadanandam (2008) Plant and Human Telomeres and Telomerases : An over veiew. *Int. J Pharmacol. and Biol. Sci.* **2(3)**:1-16.
8. Mahender, K. Venugopal Rao, K. Srinivas Reddy, T. JayaSree, A.V.Rao and A. Sadanandam (2008). Efficient *in vitro* regeneration from mature leaf segments of *Scoparia dulcis* L. - A ethno medicinal plant. *Journal of Herbs, Spices & Medicinal Plants*, **14:3-4**:200-207
9. A.V. Rao, Ch. Venu and A. Sadanandam (1997). Selection of streptomycin and kanamycin resistance using nitrosomethylurea and *Agrobacterium* in *Solanum sisymbriifolium*. *Ind. J. Expt. Biol.* **35**: 188-192.
10. A.V. Rao, T. JayaSree, M. Ramesh, U. Pavan and A. Sadanandam (2000). Nitrosomethylurea induced streptomycin resistance in *Lycopersicon esculentum* Mill. *Ind. J. Expt. Biol.* **38**: 617-620.

5. Syllabus

M. Sc. BIOTECHNOLOGY
(Credit based SEMESTER SYSTEM)
(Effective from 2008 -2009)

COURSE PATTERN AND SCHEME OF EXAMINATION

TITLE OF THE PAPER	PAPER	WORK LOAD PER WEEK	NO. OF CREDITS	INTERNAL ASSIGNMENTS MARKS	DURATION (HOURS)	EXAMINATION	
						Max. Marks	Min. Marks
SEMESTER I							
THEORY							
BT-101: Biomolecules	I	4	4	20	3	80	32
BT-102: Microbiology and Biodiversity	II	4	4	20	3	80	32
BT-103: Cell Biology and Genetics	III	4	4	20	3	80	32
BT-104: Biophysical and Biochemical Techniques	IV	4	4	20	3	80	32
PRACTICALS							
BTP-101: Biomolecules, Microbiology and Biodiversity	I	6	4	--	4	100	40
BTP-102: Cell Biology, Genetics, Biophysical and Biochemical Techniques	II	6	4	--	4	100	40
SEMESTER II							
THEORY							
BT-201: Biochemistry and Enzymology	V	4	4	20	3	80	32
BT-202: Immunology and Immunotechnology	VI	4	4	20	3	80	32
BT-203: Molecular Biology	VII	4	4	20	3	80	32

BT-204: Bioinformatics and Biostatistics	VIII	4	4	20	3	80	32
PRACTICALS							
BTP-201: Biochemistry, Enzymology and Immunotechnology	III	6	4	--	4	100	40
BTP-202: Molecular Biology, Bioinformatics and Biostatistics	IV	6	4	--	4	100	40

TITLE OF THE PAPER	PAPER	WORK LOAD PER WEEK	NO. OF CREDITS	INTERNAL ASSIGNMENTS MARKS	DURATION (HOURS)	EXAMINATION	
						Max. Marks	Min. Marks
SEMESTER III							
THEORY							
BT -301 Genetic Engineering	IX	4	4	20	3	80	32
BT-302 Plant Biotechnology	X	4	4	20	3	80	32
BT-303 Animal Biotechnology	XI	4	4	20	3	80	32
BT-304 Microbial and Environmental Biotechnology	XII	4	4	20	3	80	32
PRACTICALS							
BT P-301 Genetic Engineering and Plant Biotechnology	V	6	4	--	4	100	40
BT P-302 Animal, Microbial and Environmental Biotechnology	VI	6	4	--	4	100	40
SEMESTER IV							
Project		3 months	18	--	--	150	60
Viva-voce						50	20

Theory Papers	- 12 (12x4)	48 credits
Practical papers	- 6 (6x4)	24 credits
Project	- 18 credits}	
Viva Voce	- 6 credits}	24 credits

	Total	96 Credits

PROJECT REPORT OR INDUSTRIAL TRAINING:

Apart from their regular lectures, they will undergo following:

Research Project: Learning of Research Methodology under the supervision of faculty members.

Research Methodology (Internal Project): The student will be assigned a small research project (includes all methodologies of Biotechnology) in the beginning of the second year and the report will be submitted at the end of second year.

Industrial Training: The student will undergo training in any Biotechnology Industry/Institute for 2 months during last semester. The report will be submitted at the end of second year. The project report will be evaluated by the External and Internal (Chairperson, BOS, Biotechnology) examiners. A seminar will, be conducted on the project by the same examiners.

Student Seminars: Students deliver two seminars during the course. The topics are selected from their syllabus.

Essays: Each student submits four essays. These essays are chosen from their syllabus

Quiz: Each student answer 4 quiz tests during the course.

6. Photogallery