



Madurai Kamaraj University

(University with Potential for Excellence)

SCHOOL OF BIOTECHNOLOGY

School Profile

The School of Biotechnology which was earlier known as the Department of Biotechnology under the School of Biological Sciences was elevated to the level of School of Biotechnology in 1994. The School, with its strength of thirteen faculty members, is teaching a National level course, which is very competitive and rated at a very high level. The School has an excellent reputation in Biotechnology teaching. The school has National Research Facilities such as Bioinformatics Centre, Centre for Genetic Engineering and Strain Manipulation, Centre for Plant Molecular Biology and National Facility for High Resolution Graphics. The major research strength of the faculty is in deploying recombinant DNA methods for genetic engineering of microorganisms and plants, molecular diagnosis of genetic disorders, development of vaccine candidates for infectious diseases, studying the plant microbe interaction at epigenetic level production of biofuels, Nutraceuticals and molecular cardiology. The School has established an excellent infrastructure needed to carry out challenging experiments in emerging areas of genetic engineering.

Constituent Departments

- Department of Genetic engineering
 - 1) Centre for Genetic Engineering and Strain Manipulation
 - 2) Centre for Bioinformatics
- Department of Molecular Microbiology
- Department of Plant Biotechnology
 - 1) Centre for Plant Molecular Biology
 - 2) Centre for excellence in Innovative Biotechnology

Courses Offered:

- M.Sc. Biotechnology
- M.Sc. Computational Biology
- M.Phil. Biotechnology
- M.Phil. Nanoscience & Nanotechnology
- Ph.D. Biotechnology

International / National Awards Recipients

Prof. K. Dharmalingam: Shanthi Swarup Bhatnagar Prize for the year 1992 - Biological Sciences.

Prof. K.Veluthambi: Todla Ekambaram Award 1993-1994 (Madras University).

Prof.T.Anitha Sironmani: Young Scientist Award from (Late) Prime Minister Shri Rajiv Gandhi. 74th Session of Indian Science Congress at Bangalore (1987)

Prof.N.Sankar- American Heart Association (AHA) – Ambassador to India in 2017

Dr. B. Ashokkumar: ICMR-International Fellow Award for Young Biomedical Scientists (2016-2017).

Young Investigator Award from Bharathiar University, Coimbatore (2011).

Dr.S.B.Anand: UGC Raman fellowship to visit USA (2013-2014), Tamilnadu young scientist fellowship (2012), World Life Sciences Travel Award by Chinese Academy of Sciences (2016).

Dr.P.Varalakshmi: Young Scientist Award by DST (2012): Applied Microbiologist Award from Indian Association of Applied Microbiologists (IAAM), Chennai (2015).

Dr.N.Sivakumar:DBT-RGYI-2011, DST-Young Scientist 2014

Dr.M.Pandi: Best Young Scientist Award by Pearl foundation in 2016.

Dr.D.Ganesh: Dr. C.S. Venkatram Memorial Award.

Dr.P.Gopal: SERB young scientist award-2012/ RAMAN PDF Fellowship from UGC, India-2016.

Dr.N.D.Kannan: SERB young scientist award.

Mr. JawaharRaj K: C/o.Dr.P.Varalakshmi DBT (B-ACER) fellowship 2017.

Bibritha Bhar: II M.Sc., Biotechnology Student - Khorana Programme 2017, University of Cincinnati-May – July 2017.

Infrastructure Facilities

DST – FIST

The following facilities were created in the year 2000 by the generous funding from DST.

- DNA sequencing Facility
- Gel Documentation Facility & Computational Lab Facility
- Confocal Microscopy

UGC – SAP

- Real Time PCR
- Protein Purification System – AKTA Prime

UGC – CPSGS

- 2D Proteomics Workstation
- MALDI-ToF Mass Spectrometer
- Green house for Transgenic Plants
- Fluorescence Spectrophotometer

DST – PURSE

- Chemiluminescence Imaging System
- Nanoparticle Analyzer

School Major Events

- Three days National Level CME Seminar on "Basics of Immunology and its clinical applications" Accredited by 35 credit points by Tamilnadu Dr.M.G.R.University. Sponsored by INSA, Immunology Foundation, Indian Immunology Society, TNSCST on 8th to 10th March 2017.
- World Immunology Day Celebration on every April 29.
- "Meet the Scientists" Programme on 22nd September, 2017. Two eminent scientists Padma Bhushan Prof. G. P. Talwar, Founder Director, Talwar Research Foundation & Prof. D. N. Rao Former Professor & Head, Department of Biochemistry, AIIMS, New Delhi interacted with all MKU Life science students and constituent College students.
- A National conference on Biotechnology- New Horizons and Hopes (BNHH), 20th and 21st October 2016.
- A 15 days Science Academies Refresher Course on 'Modern Biotechnology: concepts and practice' on May 15-29, 2013.
- One day seminar on Immuno Diagnostics & Therapeutics on 05/10/2015. Project Team leader Dr.Gowrisanker, CDC,USA.
- Immunocon – 2015 was organised jointly by SBS,MKU on December 2015
- CME- Immunology Sponsored by DBT and IIS on October 11-12, 2012
- Structural and Functional Genomics March 27th 2012
- Two days lecture-workshop on 'Recent Advances in Biotechnology of Health and Disease' sponsored by Indian Academy of Sciences, Bangalore on October 7-8, 2011.
- National Level Symposium on "Emerging Trends in Plant Biotechnology" along with National Centre for Biological Sciences, Bangalore on July 12-13 at Pandian Hotel, Madurai, Tamil Nadu, India. 2013

Faculty Profile

Department of Genetic Engineering



Dr. T. Anitha Sironmani

Professor & Chairperson

Specialization- Nanoscience and Nanotechnology
asironmani.biotech@mkuniversity.org

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
3 (as in-charge)	22	13	3	25	9



Dr.N. Sankar, Professor

Specialization: Molecular Cardiology/Molecular Biology, sankar.mku.mailbox@gmail.com
sankar.biotech@mkuniversity.org,

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
0/1	-	-	-	10	9



Dr. B. Ashokkumar, Assistant Professor

Specialization: Nutrient transport and metabolism associated congenital disorders & Microbial bioremediation of xenobiotics.
E.mail: rbashokkumar@yahoo.com
ashok.biotech@mkuniversity.org

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
5/2	7	6	6	53	13



Dr S.B. Anand, Assistant Professor

Specialization: Helminthic parasites
anand.biotech@mkuniversity.org
settyanand@gmail.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
1/2	3	3 (DDE)	1	16	6

Department of Molecular Microbiology



Dr. H. Shakila, Associate Professor & Head,

Specialization: Immunology of Infectious diseases & Vaccine studies.
mohanshakila@yahoo.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
2/5	7	-	-	22	6



Dr. P. Varalakshmi, Assistant Professor
Specialization: Algal Biotechnology & Biofuel production
 vara5277@gmail.com
 pvlakshmi.biotech@mkuniversity.org

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
3/5	4	-	6	36	7



Dr. A. Jayachitra, Assistant Professor,
Specialization: Antioxidant & Anticancer study Nanoscience, Fungal Biology & Biosensor
 jaya.biotech@mkuniversity.org,
 jchitra21@gmail.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
2/6	6	2(DDE)	2	40	7



Dr. N. Sivakumar, Assistant Professor
Specialization: Aquaculture probiotics, Fish Immunology; Microbial Bioprospection
 microshivaak@gmail.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
3/4	4	3	6	24	06



Dr. N.D. Kannan, Assistant Professor
Specialization: Plant secondary metabolites & Anti Cancer Drugs from Medicinal Plants.
 kannan.biotech@mkuniversity.org
 kannannd@yahoo.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
0/2	2	-	3	13	5



Dr. M. Pandi, Assistant Professor
Specialization: Fungal Diversity, Microbiology & Cancer Biology
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 an_pandi@rediffmail.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
1/5	5	-	1	22	7



Dr. P. Gopal, Assistant Professor
Specialization: Epigenetics & Plant Molecular Biology,
 pgopal.biotech@mkuniversity.org
 pgp79@yahoo.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
0/5	05	-	1	11	6

Department of Plant Biotechnology



Dr. D. Ganesh, Associate Professor & Head;
Specialization: Conservation and molecular genetics of plant genetic resources
 ganeshdsneha@yahoo.co.in

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
1/3	10	-	-	48	8



Dr. G. Sridevi, Assistant Professor
Specialization: Plant Functional Genomics & RNA silencing.
 sridevi.biotech@mkuniversity.org
 ganathisridevi@yahoo.com

Completed/ongoing		Book		Publications	
PhD	M.Phil	Books	Chapters	No. of Publications	H-index
1/2	3	1	4	8	7

On Going Projects					
Sl. No	Name of the faculty	Title of the Project	Funding Agency	Cost (in Lakhs)	Period
1	Dr. N. Sankar	Inositol 1,4,5-triphosphate Signaling Mediated activation of CaMKII During Cardiac Remodeling PI	DST-SERB	76.26	2016-19
2	Dr. B. Ashok Kumar	Metabolically versatile <i>Paracoccus</i> sp., for the bioremediation of toxic and harmful xenobiotics from waste water – a prospect of genomic exploitation PI	DBT	56.46	2017-20
		Exploration of biological potential of phlorotannins: a lead compound from marine brown algae for non communicable diseases (Co-PI)	DBT	47.19	2017-20
3	Dr.S.B.Anand	Profiling of circulating microRNA in Serum – Plasma of the filarial infected secondary lymphedema subject for identification of potential biomarkers	TNSCST	5.0	2017-19
4	Dr. P. Varalakshmi	Exopolysaccharide (EPS) production from soil bacteria: media optimization compound characterization and its application activity (Mentor)	DST	20.00,	2016-19
		Exploration of biological potential of phlorotannins: a lead compound from marine brown Algae for non communicable diseases PI	DBT	47.19	2017-20
		Genetic transformation of Microalgae for improved lipid biosynthesis for biofuel Production. (Mentor)	CSIR	4.52	2017-18
5	Dr. A. Jayachitra	Designing of label free multiflex electrochemical assay for detection of pathogens CO-PI	DST	36.4	2016-19
6	Dr. P. Gopal & Dr. G. Sridevi	Center for Excellence in Innovative Biotechnology (CEIB) project on “Development of sheath blight disease resistant.... to MKU and DRR, Hyderabad. Team leader is Prof. K. Veluthambi. Principal Investigators: MKU, Dr. K.Veluthambi, Dr. G. Sridevi , Dr. P. Gopal and DRR part: S. M. Balachandran, and S. K. Mangrauthia. JOINT PI	DBT	194.36	2014-19

Seminar / Symposium conducted by the School



Details of Completed Projects

Sl.No	Faculty Name	Funding agency	Amount(In Lakhs)
1.	Dr.B.Ashok Kumar	DST	22.70
		DBT RGYI	27.73
		DBT	31.00
		UGC	10.80
2.	Dr.S.B.Anand	UGC	10.80
		DBT RGYI	30.98
		TNSCST	02.00
3.	Dr.H.Shakila	CSIR	14.93
		UGC	11.24
4.	Dr.P.Varalakshmi	CSIR	26.00
		SERB	40.78
		BioExtract	08.73
		SERB	19.42
		UGC	11.17
5.	Dr. N.Sivakumar	SERB	25.00
		DBT	28.16
		UGC	13.59
6.	Dr.M.Pandi	SERB	21.95
		UGC	10.25
7.	Dr.D.Ganesh	UGC	12.18
8.	Dr.A.Jayachitra	UGC	09.95
9.	Dr.G.Sridevi	UGC	10.34
10.	Dr.N.D.Kannan	UGC	10.31
		SERB	25.00
11.	Dr.P.Gopal	SERB	52.16
		DBT	44.20
		SERB	18.00



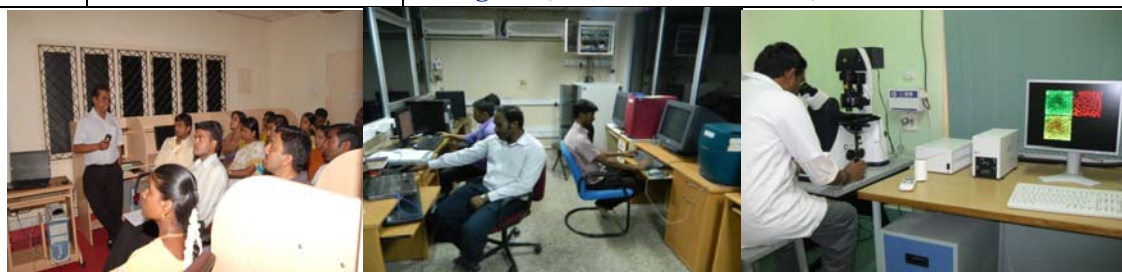
Former VC Dr.Karpagakumaravel, Siddha Doctors and visitors Herbal Exhibition 2010



Technology Transfer- Former VC Dr.Kalyani releasing products for field trail phase III 2013

Patent Details

S.No	Faculty Name	Patent Title
1	Dr. K. Dharmalingam	Genes regulated by UV No. J2050 © Application No. 1179/MUM/2001
		Genes regulated by UV No. J2050 © Application No. 1180/MUM/2001
2	Dr. R. Usha	Genetic engineering of chillies with the coat protein gene of chilli leaf curl virus (applied in 2002 jointly with Rallis India Ltd.)
3	Dr. K. Veluthambi	Genetic engineering of chillies with the replicase gene of chilli leaf curl virus (applied in 2003 jointly with Rallis India Ltd.)
4	Dr.T.Anitha Sironmani	Metal Nanoparticles for all Effluent Treatment , Patent Filed Application No: 3776/CHE/2011
		Nanoformulations as curative and protective agent for fish diseases . Patent Filed Application No: 2267/CHE/2012
		Antimicrobial paper/fabrics using nanopreparation as curative and protective agent for all infectious diseases particularly for respiratory diseases. Patent Filed Application No: 2268/CHE/2012
		Silver Nano formulations for diagnostics and therapeutics of foot-and-mouth disease in animals. Patent Filed Application No: 4337/CHE/2012
		Immuno- functionalized Silver Nanoparticles for therapeutic, diagnostic and prophylactic purposes (Rabies infection), Patent Filed Application No: 4795/CHE/2012.
		Silver Nano formulations for therapeutics of Lymphatic filariasis (Elephantiasis –Nematode) infection in Human 2015 4100/Che/2015
		Green synthesized Nano formulations for Cancer therapeutics in Human 2016.
		Simple SPR based Nanosolar cells with enhanced photocurrent and conversion efficiency. E-101/47537/2016-CHE/ 2016
		Method of early identification of pebrine disease of silkworm Bombyx mori 2000
A multifunctional protein from microsporidian Nosema bombycis2000		
5	Dr. P. Varalakshmi, Ms.Shakambari G, Dr.B.Ashokkumar	Novel compound from class of phlorotannins extracted from Turbinaria ornata with potential to inhibits Advanced glycation End products (AGE's) confirmed in hyperglycemic C. elegans as animal model. DOCKET NO:54297. (Application Number 201641043641) 2016.
		A novel compound of phlorotannins class, extracted from Padina pavonica with potential to mitigate advanced glycation end products (AGE's) formation in hyperglycaemic C.elegans. (DOCKET NO:595840) 2017.



Academic interactions and facilities

M.Sc.(TNGov. supported) Inauguration -2017



Seminar / Symposium conducted by the School



PadmaBhusan Prof.G.P.Talwar and Dr.D.N.Rao, Conference on "Biotechnological Innovations AIIMS Professor at the Meet The Scientist 2017 in Agriculture, Health & Environment" 2017



MoU is signed between MKU and Algoma Algal Biotechnology Ltd., UN, Oshkosh, USA for a joint Research on algal biofuels.

Scholars with School students

Community Development Activities



Free Medical Camp for Animals by MKU & Animal Disease Intelligence Unit, Madurai at MKU adopted Village – Kannanoor - 2010



Swachhta Pakhwada organized in Panniyan Village, Madurai – 2017