

Template for Department Profile

Name of the Department: BIOTECHNOLOGY

1) From the Desk of Head

Greetings,

I feel proud to be a head of Department of Biotechnology which is passionately marching towards academic and research excellence in the new era of Biotechnology. I welcome and thank you all for choosing Department of Biotechnology for the next step in your career path.

Biotechnology department was established in year 2003, and since then it has shown a potential growth and emerged as one of the leading biotechnology institute, as we are consistently ranked in top twenty Biotechnology Institutes in country since 2008. Now, the department is well equipped with the ICT facility, departmental library and

separate labs for M.Sc. and Ph.D. students along with the advance labs and instruments which includes Animal cell culture lab, Plant tissue culture lab with related facilities. All these facilities are supported with experienced and trained faculty

members with a wide range of subject expertise. At present department has a team of competent staff that includes 3 faculties, 1 INSA emeritus scientist, 1 teaching assistant and 1 technical analyst. Department has very high end instrumentation facilities for mass spectroscopic analysis along with technical expertise. This credential of the department makes one of the prominent departments amongst the state universities.

At present, the Department of Biotechnology offers M.Sc. and Ph.D. courses. Currently 15 PhD students and 08 Post-doctoral researchers are working in different

research areas. The two years M. Sc. course is formulated for developing the competent biotechnologists to grab significant research and job opportunities existing globally. The program encourages students to focus on the various research areas which help students to connect with the recent technologies in the field of biotechnology. The alumni are very strong and successful in their career such as entrepreneurial, research, academic and industrial professions on global platform.

The Department of Biotechnology emphasizes on making better quality researchers, entrepreneurs, academic and industrial professionals and above all good human beings who can work with ethics and integrity towards the betterment of society which eventually leads to build a strong nation in these ever changing and challenging times.

Prof. J.P.Jadhav

Head,

Dept. of Biotechnology

2) Brief History of the department along with present focus in academic & research.

The Department of Biotechnology since its inception in 2003 has made visible and remarkable achievements and the department is located in naturally scenic campus of the University and has become a focal point of active research. Foundations and innovations accomplishments by this department have encouraged planning meticulously the road map of progress for this department for the next 25 years. Certain targets such as quality education, synergy between research and its practical application, participation by farmers and entrepreneurs have been pursued vigorously. The staff members have impressive track record in academic and research contributions which have been highly appreciated and recognized. The department has spacious space for M.Sc. class rooms and practical laboratories. Research laboratories for Ph. D. students are well equipped with all modern tools and machines. A separate room for internet access is open for students. All high tech instruments have been installed in a planned de

3) Vision

• Inculcating ideals amongst the budding youths, induce interest in pursuing careers in the era of Biotechnology and nurturing the human resource for national and global desires. •

4) Mission

• Application of different areas of Biotechnology for the development of plant, animal and medical sciences •

5) Core Values of the Departments.

. To launch the academic courses and viable technologies for the benefits of students,

rural and industrial fraternity.

. To create the biotechnologist to help the society to cope up with the new challenges.

. To mould future entrepreneurs to cater the local needs.

6) Academic Programs offered with Intake.

Courses offered : M. Sc. and Ph. D.

Intake capacity for M. Sc. : 30

Intake capacity for Ph. D. : Based on the seats available at respective supervisors

7) Outcome base Education

a. Program Education Objectives

Course M. Sc.

After completing this course, the student should be able to understand and identify

the recent innovation in the area of Biotechnology especially in the genomics and personalized medicine which is now recognized as a emerging era of Biotechnology.

While Advances in Plant Biotechnology is designed for getting the detailed knowledge to the students to get employment at local levels specially plant tissue culture labs and globally for the development of elite clones through plant tissue culture techniques.

Course Ph. D.

PhD (Biotechnology) PhD students get opportunities to pursue cutting-edge research on interesting topics and develop new technologies. The present areas of research

include Bioremediation, Phytoremediation, Plant Biotechnology and Neurodegenerative diseases. PhD thesis results in a number of high quality research publications in reputed journals and conferences. There has also been an increasing trend of patents being filed out of PhD thesis. The training and research experience enables the graduates to successfully lead R&D teams in the industry. Many PhD graduates are successful academicians in various leading institutions and researchers in national research labs. A few past PhD graduates are successful entrepreneurs as well.

b. Programme Outcomes

Conduct investigations of complex problems in the field of Biotechnology: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of produced data to provide valid conclusions

c. CBCS with course Structure

Paper no

Course Title

Teaching hours per week

Credits

CC-401

Advances in Plant Biotechnology

04

04

CCS-402

Advances in Genomics and Proteomics

04

04

DSE-404

Nanobiotechnology

04

04

8) Faculty Details (Details of the faculty in one page)

Name

Prof. Jyoti P. Jadhav

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Designation

Professor and Head

Department of Biochemistry, Biotechnology

Research Areas

Phytoremediation and Neurodegenerative diseases (Parkinson's and Alzheimer disease)

No of Research papers published in last 5 years

57

Research Projects in last 5 years (Give details)

Completed:3

1. DBT-Shivaji University
Kolhapur-Interdisciplinary

Programme on Life
Science for Advanced
Research and education
(IPLS), funded by DBT
New Delhi (6.01 Crore).

2. Biotechnology

Departments Sophisticated
Instrumentation Facilities,
funded by Govt. of
Maharashtra (3.0 Crore).

3. Construction of wetland-A
phytoremediation
treatment process for the
degradation of dyes from

Ongoing : 2

1. Conversion of Traditional
Jaggery Rounds into Free
Flowing Stable Jaggery
Granules, funded by
RGSTC (1.0872 Crore).

2. Integrated eco-
electrogenic system for
efficient and sustainable
treatment of textile
wastewater, funded by
DBT New Delhi (1.3487
Crore).

textile effluent funded by
DBT New Delhi (10.65
Lakh).

Books Published (Details)

2 Book Chapters

1. V.A. Bapat, G.B. Sunil Kumar, J.P. Jadhav, S.P. Govindwar, and T.R Ganapathi (2009) Role of nanoparticles in plant molecular farming. In: Plant Genetic Transformation and Molecular Markers, Eds. Ashwini Kumar, Pointer's Publishers, Jaipur, India, 33-46.(ISBN 13: 978-81-7132-613-6).
2. J. P. Jadhav and S. S. Phugare (2011). Non-Convectional Textile Waste Water Treatment. Chapter-I Textile Dyes - General Information and Environmental Aspects Published by Nova publishers USA (In press).

Patents/ IPR

2 patents

1. Applicants/ Inventers: S.A. Inamdar, V.A. Bapat, J. P. Jadhav; A method for extraction of L-DOPA from Anethum Graveolens leaves. Application no. 3486/MUM/2012; Date of filing: 10 December 2012.
2. Applicants/ Inventers: S. N. Surwase, J. P. Jadhav; A process for increased melanin production Application no. 2941/MUM/2011; Patent granted (2017).

No of Research
papers published in
National/International
Conference

Citation

H-
Index

i10-
index

RG
Score

4226

33

73

37.90

Total no of Ph.D.
Students

Awarded

Working

20 Awarded

6

4 Submitted thesis

Visits Abroad

1

National/International
Awards

National awards-4

1. Women Scientist Award Biotechnology Research Society of India. (2011).
2. Fellow of Maharashtra Academy of Sciences (2011).
3. Member of National Academy of Sciences (2013).
4. Best Teacher Award 2016 Shivaji University Kolhapur (2016).

Selected Publications
(10)

1. Devashree N. Patil, Sushama A. Patil, Srinivas Sistla, Jyoti P. Jadhav Comparative biophysical characterization: A screening tool for acetylcholinesterase inhibitors. (2019) Plos One, May 31, 2019.
2. Parag D Kolekar, Swapnil M Patil, Mangesh V Suryavanshi, Suresh S Suryawanshi, Rahul V Khandare, Sanjay P Govindwar, JP Jadhav (2019) Microcosm study of atrazine bioremediation by indigenous microorganisms and cytotoxicity of biodegraded metabolites. Journal of Hazardous Materials .

3. Govind Vyavahare, Pooja Jadhav, JP Jadhav, Ravishankar Patil, Chetan Aware, Devashree Patil, Anna Gophane, Yung-Hun Yang, Ranjit Gurav (2019) Strategies for crystal violet dye sorption on biochar derived from mango leaves and evaluation of residual dye toxicity. *Journal of Cleaner Production* 207, 296-305.
4. C Aware, R Patil, G Vyavahare, R Gurav, V Bapat, J Jadhav (2019) Processing Effect on L-DOPA, In Vitro Protein and Starch Digestibility, Proximate Composition, and Biological

- Activities of Promising Legume: *Mucuna macrocarpa*. Journal of the American College of Nutrition. 5, 447-456.
5. GD Vyavahare, RG Gurav, PP Jadhav, RR Patil, CB Aware, JP Jadhav (2018) Response surface methodology optimization for sorption of malachite green dye on sugarcane bagasse biochar and evaluating the residual dye for phyto and cytogenotoxicity. Chemosphere 194, 306-315.
6. T Mulla, S Patil, J Jadhav (2018) Exploration of surface plasmon resonance for yam tyrosinase characterization. International journal of biological macromolecules 109, 399-406.
7. AD Watharkar , SK Kadam, RV Khandare, PD Kolekar, BH Jeon , JP Jadhav, SP Govindwar (2018) *Asparagus densiflorus* in a vertical subsurface flow phytoreactor for treatment of real textile effluent: A lab to land approach for in situ soil remediation. Ecotoxicology and Environmental Safety 161, 70-77.
8. CB Aware, RR Patil, GD Vyavahare, ST Gurme, JP Jadhav (2018) Ultrasound-Assisted Aqueous Extraction of Phenolic, Flavonoid Compounds and Antioxidant Activity of *Mucuna macrocarpa* Beans: Response Surface Methodology Optimization. Journal of the American College of Nutrition, 1-9.
9. A. D. Watharkar, R. V. Khandare, P. R. Waghmare, A.D. Jagadale, S. P. Govindwar, J.P. Jadhav (2014) Treatment of textile effluent in a developed phytoreactor with immobilized bacterial augmentation and subsequent toxicity studies on *Etheostoma olmstedi* fish. J of Hazard Mat 283:698-704
10. M. Rane, S. Suryawanshi, R. Patil, C. Aware, R. Jadhav, S. Gaikwad, P. Singh, S. Yadav, V. Bapat, R. Gurav, J. Jadhav (2019) Exploring the proximate composition, antioxidant, anti-Parkinson's and anti-inflammatory potential of two neglected and underutilized *Mucuna* species from India. South African Journal of Botany 124 (2019) 304-310.

Name

Professor V. A. Bapat

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Designation

NASI, Honorary Scientist

Research Areas

Plant Biotechnology

No of Research papers published in last 5 years

30

Research Projects in last 5 years (Give details)

Completed: NIL

Ongoing NIL

Books Published (Details)

Currently editing one international book

Patents/ IPR

No of Research papers published in National/International Conference

Citation

H-Index

i10-index

RG Score

6344

40

147

36.81

Total no of Ph.D. Students

Awarded 7

Working NIL

Visits Abroad

NIL

National/International Awards

Fellow, Indian National Science Academy, New Delhi

Fellow, National Academy of Sciences, India, Allahabad

Fellow, Maharashtra Academy of Sciences, Pune

Selected Publications (10)

1. Jagtap U.B., Jadhav J.P., Bapat V.A. and Pretorius I.S. (2017). Synthetic biology stretching the realms of possibility in wine yeast research. *International J. Food Microbiology*. 252, 24-34.
2. Patil S, Sistla S., Bapat V.A. and Jadhav J.P. (2018) Melanin mediated synthesis of silver nanoparticles and their affinity towards tyrosinase. *Appl. Biochemistry and Microbiology* 54, No. 2, pp. 163-172.
3. Patil S, Sistla S, Bapat V. A. and Jadhav J.P. (2018) Structure-Function Studies of Fungal Tyrosinase using Surface Plasmon Resonance. *Proceedings of the National Academy of Sciences, India. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.* <https://doi.org/10.1007/s40011-018-1047-0>.
4. Patil R., Aware C., Gaikwad S., Rajbhosale M., Bapat V. Yadav S. and Jadhav J. (2018) RP-HPLC Analysis of Anti-Parkinson's Drug L-DOPA Content in Mucuna Species from Indian Subcontinent. *Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.* <https://doi.org/10.1007/s40011-018-01071-9>.
5. Aware, C., Patil, R., Vyavahare G., Gurav R., Bapat V. and Jadhav J. (2019) Processing Effect on L-DOPA, In Vitro Protein and Starch Digestibility, Proximate Composition, and Biological Activities of Promising Legume: Mucuna macrocarpa. *Journal of the American College of Nutrition*, ISSN: 0731-5724 (Print) 1541-1087.
6. Rane, M.S. Suryawanshi S, Patil R, Aware C, Jadhav R, Gaikwad S, Singh P, S. Yadav S, V. Bapat V, Gurav R. Jadhav J. (2019) Exploring the proximate composition, antioxidant, anti-Parkinson's and anti-inflammatory potential of two neglected and underutilized Mucuna species from India. *South African J Bot.* 124, 304-310
7. Aware C, Patil R, Vyavahare G, Gurav R, Bapat V. and Jadhav J. (2019) Processing effect on L DOPA, in vitro protein, and starch digestibility, proximate composition and biological activities of promising

legume : *Mucuna macrocarpa* J Ame. Col. Nutrition

<https://doi.org/10.1080/07315724.2018.1547230>

8. Jagtap U.B. and Bapat V.A. (2018) Custard apple *Annona squamosa* L. In: Exotic Fruits. (Eds. S. Rodrigues E, de Oliveira Silva and Sousa de Brito) Academic Press, USA, pp. 163-166.

9. Bapat V A, Jagtap U.B, Ghag S.B and Ganapathi T.R. (2019) Molecular approached for the improvement of under researched tropical fruit trees : Jackfruit, Guava and Custard apple Int. J. Fruit Sci. <https://doi.org/10.1080/15538362.2019.1621236>.

10. Kshirsagar P.R, Jagtap U.B., Gaikwad N.B., Bapat V.A. (2019) Ethanopharmacology, phytochemistry, and pharmacology of medicinally potent genus Swertia : an update. South Afri. J. Bot., 124, 444-483.

Name

Dr. Sushama A. Patil

Contact no

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Designation

Asst. Professor

Research Areas

Enzyme inhibition

No of Research papers published in last 5 years

11

Research Projects in last 5 years
(Give details)

Completed: 01

Ongoing NIL

Books Published (Details)

Nil

Patents/ IPR

Nil

No of Research papers published in National/International Conference

Citation

H-Index

i10-index

RG Score

177

08

07

-

Total no of Ph.D. Students

Awarded: NIL

Working: NIL

Visits Abroad

01

National/International Awards

1. DST-PURSE Junior Research Fellowship
2. UGC-SAP-BSR Junior Research Fellowship
3. National Post Doctoral Fellowship (DST-SERB)

Selected Publications (10)

1. Devashree N. Patil, Sushama A. Patil, Srinivas Sistla, Jyoti P. Jadhav Comparative biophysical characterization: A screening tool for acetylcholinesterase inhibitors. (2019) Plos One, May 31, 2019.
2. T Mulla, S Patil, J Jadhav (2018) Exploration of surface plasmon resonance for yam tyrosinase characterization. International journal of biological macromolecules 109, 399-406 .
3. SD Kshirsagar, PR Waghmare, PC Loni, SA Patil, SP Govindwar Dilute acid pretreatment of rice straw, structural characterization and optimization of enzymatic hydrolysis conditions by response surface methodology

RSC Advances 5 (58), 46525-46533.

4. SV Surwase, SA Patil, S Srinivas, JP Jadhav Interaction of small molecules with fungal laccase: a surface plasmon resonance based study, Enzyme and microbial technology 82, 110-114.
5. Sushama Patil, Srinivas Sistla, Jyoti Jadhav Interaction of small molecules with human tyrosinase: A Surface Plasmon Resonance and molecular docking study

International Journal of Biological Macromolecules

6. S Patil, S Sistla, J Jadhav Screening of inhibitors for mushroom tyrosinase using surface plasmon resonance

Journal of agricultural and food chemistry 62 (47),
11594-11601

7. S Patil, S Srinivas, J Jadhav Evaluation of crocin and curcumin affinity on mushroom tyrosinase using surface

plasmon resonance International journal of biological macromolecules 65, 163-166

8. Bhumika N. Bhalkar, Priyanka A. Bedekar, Swapnil M. Patil, Sushama A. Patil, Sanjay P. Govindwar
Production of camptothecin using whey by an endophytic fungus: standardization using response surface methodology

RSC Advances, 62828-62835

9. S. Patil, S. Sistla, V. Bapat, J. Jadhav Melanin-Mediated Synthesis of Silver Nanoparticles and Their Affinity Towards Tyrosinase, Applied Biochemistry and Microbiology 54 (2), 163-172

10. PP Kamble, MV Kore, SA Patil, JP Jadhav, YC Attar
Statistical optimization of process parameters for inulinase production from Tithonia weed by Arthrobacter mysorens strain no. 1 Journal of microbiological methods 149, 55-66

Name

Dr. Amit G. Sonawane

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Designation

Assistant Professor

Research Areas

Efflux Transporters, Multi-Drug resistance (MDR), Cancer Pharmacology and Drug Delivery

No of Research papers published in last 5 years

3 in process of publication

Research Projects in last 5 years (Give details)

Completed: -

Ongoing: -

Books Published (Details)

-

Patents/ IPR

-

No of Research papers
published in
National/International
Conference

Citation

H-Index

i10-index

RG Score

-

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Total no of Ph.D. Students

Awarded

Working

-

-

-

-

Visits Abroad

United Kingdom (For PhD Degree)

National/International Awards

- Fellowship Received from Govt. of Maharashtra for PhD course (2012-2015)
- Received funding for PhD project from UK-China Science Bridge at University of Bradford, UK (2012-2015)
- Worked on a project funded by Nature's Lab to study cytotoxicity and anticancer activity of co-crystals at University of Bradford, UK (2013)

Selected Publications (10)

-

9) Details of Research Laboratories & infrastructure with photographs.

Research Laboratories and Infrastructure (1)

Research Laboratories and Infrastructure (2)

Research Laboratories and Infrastructure (3)

Research Laboratories and Infrastructure (4)

10) SET/NET Qualified Students.

Year

2014-15

2015-16

2016-17

2017-18

2018-19

Number

0

1

2

0

2

11) Details of Students Placements.

M. Sc. Students

Sr.

No.

Name of the student

Year

Name of the employer

1.

Mr. Gruhesh Sulegaon

2015

Reliance Life Sciences,
Mumbai

2.

Mr. Uttam More

2015

Venkyos, Pune.

3.

Ms. Dipti Kelkar

2016

Springer Nature, Pune

4.

Mr. Shailesh Desai

2016

Mylan Laboratories
limited, Pune

5.

Ms. Jyoti Chavan

2016

Lupin Biotech, Wakad,
Pune

6.

Mr. Sourabh Bhujbal

2016

Agri Biotech College
Sangulwadi.

7.

Mr. Ganesh Zombade

2017

URDIP NCL, Pune

8.

Mr. Ranjit Kadam

2017

Sci-Fi Biologicals, Pune

9.

Mr. Raj Shinde

2018

Genova Biotech Pvt. Ltd ,
Pune

10.

Mr. Shrivardhan Digraje

2018

Genova Biotech Pvt. Ltd ,
Pune

11.

Mr. Akshay Gujar

2019

Bharat Biotech, Hyderabad

Ph. D. Students

Sr. No.

Name of the student

Name of the employer

1.

Dr. Parag Kolekar
Lupin Biotech, Pune

2.

Dr. Swati Surwase
Venkyos, Pune.

3.

Dr. Siddeshwar Kshirsagar
HPCL, Bangalore

4.

Dr. Anuprita Watharkar
Amity University, Panvel

12) Details of MOUs and Linkages.

Sr.
No.

Institute

Topic

MOUs

1

PERD, Ahmedabad

Alzheimer's Disease

Linkages

1

Banaras Hindu University, Varanasi

Parkinson's Disease

2

Institute of Chemical Technology,
Mumbai

Jaggery Research

3

University of Pune

Phytoremediation

4

NCCS Pune

ATC facility for Parkinson's Research

5

BharatiVidyapeeth IRSHA, Pune

Parkinson's Disease

6

Bhabha Atomic Research Centre,
Mumbai

Analysis of wine

7

Karnataka University, Dharwad

Bioreactor Design

13) Extra-curricular and Extension activities.

- . Celebration of Biotechnology Day
- . Seminars and Debates
- . Sports day
- . Visit to Old age home and school
- . Parents Meet
- . Alumini Meet
- . Industrial Visits
- . Academic visits to different research organizations and industries
- . Swachh Bharat Aabhiyan

14) List of Distinguished Alumni.

Sr
No.

Name

Current Designation

Research

1

Dr. Gururaj Shivange

Post-doc fellow in Virginia, USA

2

Dr. Anirudha Karavande

Post-doc fellow in Philadelphia,
USA

3

Dr. Amit Sonawane

Asst. Professor, SUK (PhD in
Cancer Therapeutics at University
of Bradford, UK)

4

Dr.Sushama Patil

Asst. Professor, SUK (Research in
Enzyme inhibition, Label-free
interactions using SPR technology)

5

Dr. Ranjeet G. Gurav

Research Professor at Konkuk
University, Seoul, South Korea

6

Miss. Shivali Duduskar

Doctoral student at University of
Jena, Thuringen, Germany

Entrepreneur

7

Mr. Akhay Patil

Mr. Sudarshan Chavan

Owner at Callus Biotech, Kolhapur

8

Dr. Onkar Apine

Kalpottam Agrisearch LLP.
Mumbai

Biosensor Healthcare Pvt Ltd,
Kolhapur

Industry

9

Mr. Ajinkya Jadhav

Serum Institute of India

10

Dr. Parag Kolekar

Lupin Biotech, Wakad, Pune

11

Mr. Rajendra Hogade

Wockhardt Pharmaceuticals,
Aurangabad

12

Mr. Shrikant Palkar

Syngene International, Bangalore

Academic

13

Dr. Umesh B. Jagtap

Assistant Professor, Govt. Vidarbha
Institute of Science and
Humanities, Amaravati

14

Dr. Anuprita Watharkar
Faculty at Amity University
Administrative Services

15

Miss. Amruta G. Patil
Excise Inspector

16

Miss. Monali Meshram
ISRO, India

17

Mr. Saurabh Watve
Advocate, IPR- Miraj Court

15) Future roadmap of the department.

- . Attracting talent to life Science and Biotechnology
- . Creating science & technology leaders for the industry
- . To enhance the teaching and workforce training capabilities in order to meet the challenges of Biotechnology and establish University as a preeminent international location for research and development.

. Micropropagation of fruit trees, rare plants and medicinal plants, molecular marker systems, development of bio controls, biosensors and bio fertilizers packages and diagnostics kits.

16) Media coverage of the Department.

Scientific Talks on Kolhapur Akashvani at 102.7 FM

By

1. Prof. J. P. Jadhav: Biotechnology Carrier Opportunity
2. Prof. V. A. Bapat: Plant Tissue Culture
3. Dr. Onkar Apine: Food Security and Analysis

Media coverage

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