

Dr. Swapnil Gaikwad



Designation: Assistant Professor,
Dr. D.Y. Patil Biotechnology & Bioinformatics Institute,
Dr. D.Y. Patil Vidyapeeth, Pune

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EDUCATIONAL QUALIFICATIONS:

- **Ph.D.** in Biotechnology on “*Fusarium*- Mediated Synthesis of Silver Nanoparticles for the Development of Novel Antimicrobials” under supervision of Professor (Dr.) M.K. Raifrom Department of Biotechnology SGB Amravati University, Amravati, India.
- **Post-Graduate** in Biotechnology from SGB Amravati University, Amravati in the year 2008, with 61.18 %.
- **Graduation** with Microbiology, Botany and Chemistry from SGB Amravati University, Amravati in the year 2006, with 54.51%.
- **H.S.C.** from Amravati Board in the year 2003, with 59.00% of marks.
- **S.S.C.** from Amravati Board in the year 2001, with 63.03% of marks.

POSTDOCTORAL TRAINING:

- **Post-Doctoral** fellow at Department of Biotechnology Engineering School of Lorena, University of Sao Paulo (EEL-USP) Brazil.

EMPLOYMENT EXPERIENCE:

- **Assistant Professor**, Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Dr. D Y Patil Vidyapeeth, Tathawade, Pune (2016-2020)
- JRF at Department of Biotechnology, SGB Amravati University funded by RGSTC (Maharashtra Govt.), Mumbai.

FIELD OF SPECIALIZATION:

Nanobiotechnology, Nanoantimicrobials, Green synthesis of nanoparticles

Specific Areas of Research Interest:

- Synthesis and surface modification of Nanoparticles.
- Application of Bioengineered nanoparticles in Medicine

AWARDS/HONOURS/MEMBERSHIP OF VARIOUS ACADEMIC BODIES:

Awards/Achievements:

- International Travel Grant 2012 from DST, New Delhi for presentation in International conference Colloids and Nanomaterials 2012, at Amsterdam, The Netherlands.
- First prize in presentation on “Optimization of Physical Parameters for Large Scale Mycosynthesis of Silver Nanoparticles” in International Conference on Mycology and Plant Pathology Biotechnological approaches (ICMPB 2012). February 27-29, 2012 Organized by Department of Botany, Banaras Hindu University, Varanasi (UP).

Fellowships:

- RGSTC (Maharashtra Govt.), Mumbai

ACADEMIC ACTIVITIES:

Teaching & Research Experience:

- **Assistant Professor**, Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Dr. D Y Patil Vidyapeeth, Tathawade, Pune (4 years)
- **Post-Doctoral** research experience on project “**Nanoparticles Mediated Enzymatic Hydrolysis of Lignocellulosic Residues for Clean Sugar Production**” at Biotechnology Department Engineering School of Lorena, University of Sao Paulo (EEL-USP) Brazil.
- JRF at Department of Biotechnology, SGB Amravati University funded by RGSTC (Maharashtra Govt.), Mumbai.
- **JRF INDO-BRAZIL** Project. The project was sponsored in collaboration with DST-CNPq.

No. of B. Tech, M. Tech. /M.Sc. students Guided:

1. M.Sc, M.Tech and B. Tech: 12

No. of Funded/Non-Funded (as Fellow) Research Projects Completed and in Hand:

(A) Projects awarded as Principal Investigator by DPU:

1. Characterization of Nanostructured polymers to develop scaffold for tissue engineering (Amount sanctioned: 2 lakhs, (2018-2020).

Editorial Board Member

Editorial Board member of International Journal of Applied Nanotechnology

In Charge/Member in Different Internal Committees (Administrative/Research /Academic Committees:

- IQAC Institutional committee - Member
- NAAC Coordinator
- Institute Innovation Cell- IPR Activity Coordinator, Start up Activity Coordinator
- DPU Incubation Centre, working committee- Member
- National Board of Accreditation (NBA) Committee- Member
- National Service Scheme-Member
- Curriculum committee- Member
- Committee for Implementation of Value Added Courses- Member
- Swachata Abhiyan Committee- Co-cordinator

RESEARCH PAPERS IN PEER REVIEWED JOURNALS:

(a) Publications (Original Paper):

Gaikwad, S., Ingle, A., da Silva, S., Rai, M. (2020). A New and Cost-effective Immobilized Nanoparticles-Mediated Enzymatic Hydrolysis of Cellulose for Clean Sugar Production. *Current Nanoscience*. 15 (3), 296-303. (Impact Factor 1.34).

Khan, S., Singh, S., Gaikwad, S.*, Nawani N. Junnarkar, M., Pawar S.* (2019). Optimization of process parameters for the synthesis of silver nanoparticles from Piper betle leaf aqueous extract, and evaluation of their antiphytofungic activity. *Environ. Sci. Pollut. Res.* (In Press) DOI: 10.1007/s11356-019-05239-2. (Impact Factor 2.8)

Kratošová, G., Holišová, V., Konvičková, Z., Ingle, A., Gaikwad, S., Škrlová, K., Prokop, A., Rai, M., Plachá, D (2019) From biotechnology principles to functional and low-cost metallic bionanocatalysts. *Biotechnology Advances* 37 (1), 154-176 (Impact Factor 11.4).

Junnarkar, M., Pawar, S., Gaikwad, S., Mandal, A., Jass, J., Nawani, N. (2019). Probiotic potential of lactic acid bacteria from fresh vegetables: Application in food preservation. *Indian Journal of Experimental Biology*, 57, 825-

838. (Impact Factor 0.9)

Shaha, S., Gaikwad, S., Kulshrestha, S., Vaidya, V., Nawani, N., Pawar, S. (2019). Biofilm inhibition and anti-quorum sensing activity of phytosynthesized silver nanoparticles against nosocomial pathogen *Pseudomonas aeruginosa*. *Biofouling*, 35(1), 34-49, DOI: 10.1080/08927014.2018.1563686 (Impact Factor 2.7)

Pandit, R., Gaikwad, S., Rai, M. (2017) Biogenic fabrication of copper nanoparticles, copper bioconjugates and In vitro assessment of antimicrobial and antioxidant activity. *IET Nanobiotechnology*. 10.1049/iet-nbt.2016.0165. (Impact Factor 1.5)

Rai, M., Pandit, R., Gaikwad, S., Kovics, G. (2016) Antimicrobial Peptides as a Natural Bio- preservative to Enhance the Shelf life of Food. *Journal of Food Science Technology*. (Impact Factor 2.2)

Pinjarkar, H., Gaikwad, S., Ingle, A.P., Gade, A.K., Rai, M.K. (2016) Phycofabrication of Silver Nanoparticles and their antibacterial activity against Human Pathogens. *Advanced Materials Letters* 7(12):1010-1014. DOI: 10.5185/amlett.2016.6269.

Rai, M.K., Santos, J.C., Soler, M.F., Marcelino, P.R.F., Brumano, L.P., Ingle, A.P. Gaikwad, S.C., Gade, A.K., Silva, S.S. (2016). Strategic Role of Nanotechnology for Production of Bioethanol and Biodiesel. *Nanotechnology Reviews*. 5(2): 231-250 (Impact factor 1.2).

Bhople, S., Deshmukh, S., Gaikwad, S., Bonde, S., Gade, A., Sen, S., Brezinska, A., Dahm, H., Rai, M. (2016). Myxobacteria -Mediated Synthesis of Silver Nanoparticles and Their Impregnation in Wrapping Paper used for Enhancing Shelf-life of Apple. *IET Nanobiotechnology*. DOI:10.1049/iet-nbt.2015.0111. (Impact Factor 1.5).

Tiwari, N., Pandit, R., Gaikwad, S., Gade, A. Rai M. (2016). Biosynthesis of Zinc Oxide Nanoparticles by petals extract of *Rosa indica* L., its formulation as nail paint and evaluation of antifungal activity against fungi causing onychomycosis. *IET Nanobiotechnology*. (Accepted) (Impact Factor 1.5).

Soares, LCSR., Chandel, A.K., Pagnocca, F.C., Gaikwad, S.C., Rai, M.K., Silva, S.S. (2016). Screening of Yeasts for Selection of Potential Strains and Their Utilization for In Situ Microbial Detoxification (ISMD) of Sugarcane Bagasse Hemicellulosic Hydrolysate. *Indian Journal of Microbiology*. 56(2): 172-181. DOI: 10.1007/s12088-016-0573-9 (Impact Factor 0.9)

Mane, P.N., Moharil, M.P., Satpute, N.S., Thakare, S.M., Giri, G.K., Gaikwad, S.C., Gade, A.K., Rai, M.K. Storage Stability and Performance of Aqueous and Dry Formulations of *Helicoverpa armigera* Nuclear Polyhedrosis Virus. *Journal of Biological Control*, 30(1), 34- 39.

Potara, M., Bawaskar, M., Simon, T., Gaikwad, S., Licarete, E., Ingle, A., Banciu, M., Vulpoi, A., Astilean, S., Rai, M. (2015) Biosynthesized silver nanoparticles performing as biogenic SERS-nanotags for investigation of C26 colon carcinoma cells. *Colloids and Surfaces B: Biointerfaces*. 133:296-303. (Impact Factor 4.1)

Rai, M.K., Ingle, A.P., Gaikwad, S.C., Padovani, F.H., Alves, M. (2015). The role of nanotechnology in control of human diseases: Perspectives in ocular surface diseases. *Critical Reviews in Biotechnology*. DOI:10.3109/07388551.2015.1036002 (Impact Factor 7.8).

Nagaonkar, D., Gaikwad, S., Rai, M. (2015). *Catharanthus roseus* leaf-extract synthesized chitosan nanoparticles for controlled in vitro release of chloramphenicol and ketoconazole. *Colloids and Polymer Science*. DOI 10.1007/s00396-015-3538-3 (IF- 2.41).

Rai, M., Ingle, A., Gaikwad, S., Gupta, I., Gade, A., da Silva, S. (2015). Nanotechnology Based Anti-infectives to Fight Microbial Intrusions. *Journal of Applied Microbiology*. DOI: 10.1111/jam.13010 (Impact Factor 2.4)

Rai, M.K. Gaikwad, S.C., Nagaonkar, D., and dos Santos, C.A. (2015). Current Advances in Antimicrobial potential of *Ganoderma* spp. against human pathogenic microorganisms. *International Journal of Medicinal Mushroom*. 17(10): 921-932 (Impact Factor 1.1).

- Rai, M., Pandit, R., Gaikwad, S., Yadav, A. and Gade, A. (2015). Potential Applications of Curcumin and Curcumin-nanoparticles: From Traditional Therapeutics to Modern Nanomedicine. *Nanotechnology Reviews*. DOI: 10.1515/hsz-2015-0001 (online published). (Impact Factor 1.2)
- Pandit, R.S., Gaikwad, S.C., Agarkar, G.A., Gade, A.K. and Rai, M.K. (2015). Curcumin Nanoparticles: Physico-chemical Fabrication and its in vitro Efficacy Against Human Pathogens. *3 Biotech*. 5 (6), 991-997.
- Mane, P.N., Satpute, N.S., Moharil, M.P. Thakare, S.M., Gaikwad, S.C., Gade, A.K. Rai, M.K. (2015). Potency of Silver Nanoparticles (SNPs) as UV protectant for HaNPV. *Journal of Biological Control*. 29 (2), 94-97.
- Kuralkar, M., Ingle, A., Gaikwad, S., Gade, A., Rai, M. (2014). Gold nanoparticles: novel catalyst for the preparation of direct methanol fuel cell. *IET Nanobiotechnology*. DOI.10.1049/iet-nbt.2014.0004 (Impact Factor 1.7).
- Wrótniak–Drzewiecka, W., Gaikwad, S., Laskowski, D., Dahm, H., Niedojadło, J., Gade, A. and Rai, M. (2014). Novel Approach towards Synthesis of Silver Nanoparticles from *Myxococcus virescens* and their Lethality on Pathogenic Bacterial Cells. *Austin Journal of Biotechnology and Bioengineering*, 1(1), 7.
- Gaikwad, S., Ingle, A., Gade, A., Rai, M., Falanga, A., Incoronato, N., Russo, L., Galdiero, S. and Galdiero, M. (2013). Antiviral activity of mycosynthesized silver nanoparticles against Herpes Simplex virus and Human Parainfluenza Virus Type 3. *International Journal of Nanomedicine*. 8, 4303–4314 (Impact factor 4.19).
- Gaikwad, S., Birla, S., Ingle, A., Gade, A., Marcato, M., Rai, M. and Duran, N. (2013). Screening of different *Fusarium* species to select potential species for the synthesis of silver nanoparticles. *Journal of Brazilian Chemical Society*. 24 (12), 1974-1982 (Impact Factor 1.34).
- Bansod, S., Bonde, S., Tiwari, V., Bawaskar, M., Deshmukh, S., Gaikwad, S., Gade, A. and Rai, M. (2013). Bioconjugation of gold and silver nanoparticles synthesized by *Fusarium oxysporum* and their use in rapid identification of *Candida* species by using Bioconjugate-Nano-PCR. *Journal of Biomedical Nanotechnology*. 9(12), 1962-1971 (Impact Factor 7.5).
- Birla, S., Gaikwad, S., Gade, A., Rai, M. (2013). Rapid synthesis of silver nanoparticles from *Fusarium oxysporum* by optimizing Physico-cultural conditions. *The Scientific World Journal*, Volume 2013, Article ID 796018, 12 pages <http://dx.doi.org/10.1155/2013/796018> (Impact Factor 1.2).
- Gade, A., Gaikwad, S., Duran, N. and Rai, M. (2014). Green Synthesis of silver nanoparticles by *Phoma glomerata*. *Micron*. 59, 52-59 (Impact Factor 2).
- Gade, A., Gaikwad, S., Durán, N., Rai, M. (2013). Screening of different species of *Phoma* for Synthesis of Silver nanoparticles. *Biotechnology and Applied Biochemistry*, 60(5), 482-493 (Impact Factor 1.3).
- Kanhed, P., Birla, S., Gaikwad, S., Gade, A., Seabra, A., Rubilar, O., Duran, N. and Rai, M. (2013). In vitro antifungal efficacy of copper nanoparticles against selected crop pathogenic fungi. *Material Letters*, 115, 13-17 (Impact Factor 2.26).
- Gupta, A., Bonde, S., Gaikwad, S., Ingle, A., Gade, A. and Rai, M. (2013). Lawsonia inermis-mediated Synthesis of Silver Nanoparticles: Activity against human pathogenic Fungi and bacteria with special reference to formulation of antimicrobial nanogel. *IET Nanobiotechnology*, 8(3), 172 – 178, doi.10.1049/iet-nbt.2013.0015 (Impact Factor 1.7).
- Joshi, P., Bonde, S., Gaikwad, S., Gade, A., Abd-Elsalam, K. and Rai, M. (2013). Comparative Studies on Synthesis of Silver Nanoparticles by *Fusarium oxysporum* and *Macrophomina phaseolina* and Its Efficacy Against Bacteria and *Malassezia furfur*. *Journal of Bionanoscience*, 7(4), 378-385.
- Rai, M., Gade, A., Gaikwad, S., Marcato, P. and Duran, N. (2012). Biomedical applications of Nanobiosensors: The state-of-the-art. *Journal of Brazilian Chemical Society* 23(1): 14-24 (Impact Factor 1.34).
- Sable, S., Gaikwad, S., Bonde, S., Gade, A. and Rai, M. (2012). Phytofabrication of Silver Nanoparticles By Using Aquatic Plant *Hydrilla verticillata*. *NUSANTARA Bioscience*, 6: 45-49.

Rai, M., Karwa, A. and Gaikwad, S. (2011). Mycosynthesis of silvernanoparticles using *Ganoderma lucidum* Karst. *International journal of medical mushrooms*, 13(5): 483– 491 (Impact Factor 0.9).

Gudadhe, J., Bonde, S., Gaikwad, S., Gade, A. and Rai, M. (2011). Phomoglomerata: A novel agent for fabrication of iron oxide nanoparticles. *Journal of Bionanoscience*, 5: 138–142.

Gade, A., Gaikwad, S., Tiwari, V., Yadav, A., Ingle, A. and Mahendra Rai. (2010). Biofabrication of Silver Nanoparticles by *Opuntia ficus-indica*: In vitro Antibacterial Activity and Study of the Mechanism Involved in the Synthesis. *Current Nanoscience*, 6: 370-375 (Impact Factor 1.8).

Bawaskar, M., Gaikwad, S., Ingle, A., Rathod, D., Gade, A., Duran, N., Marcato, P. and Rai, M. (2010). A New Report on Mycosynthesis of Silver Nanoparticles by *Fusarium culmorum*. *Current Nanoscience*, 6: 376-380 (Impact Factor 1.8).

(b) Book Chapter:

Rai, M., Ingle, A., Gupta, I., Gaikwad, S., Gade, A., Rubilar, O., Duran, N. Cyto-Geno and Ecotoxicity of Copper Nanoparticles. *Nanotoxicology: In Nanotoxicology Nanomedicine and Nanotoxicology* (Eds. Duran, N., Guterres, S., Alves, O) Springer, New York, 2014, pp 325- 345.

Rai, M., Ingle, A., Gaikwad, S., Gupta, I., Yadav, A., Gade, A. and Duran, N. Fungi: Myconanofactory, Mycoremediation and Medicine: In *Fungi: Applications and Management Strategies* (Eds. S.K. Deshmukh) CRC press, 2015, pp 201-219.

Gupta, I., Gaikwad, S., Ingle, A., Kon, K., Duran, N., Rai, M. Nanotoxicity: a Mechanistic Approach. In *Biological and Pharmaceutical Applications of Nanomaterials* (Ed Prokopovich P.) CRC Press 2015, Pages 393–410.

Antunes, FAF., Santos, J.C., Cunha, MAA., Sarrouh, B., Brumano, L.P., Milessi, TSS., Terán- Hilares, R., Peres, GFD., Dussán, KJ., Silva, DBV., Dalli, SS., Gaikwad, S., da Silva, SS. Biotechnological Production of Xylitol from Biomass: In *Biofuels and Biorefineries* (Eds. Profs. Fang, Smith and Qi). Springer International Publishing, 2017.

Rai, M. K., Ingle, A.P., Gaikwad, S., Dussán K.M, and da Silva, S.S. Role of Nanoparticles in Enzymatic Hydrolysis of Lignocellulose in Ethanol: In *Nanotechnology for Bioenergy and Biofuel Production* (Eds Rai, Mahendra and da Silva, Silvio Silvério) Springer International Publishing 2017.

Antunes, FAF., Gaikwad, S. C., Ingle, A.P., Pandit, R., dos Santos, J.C., Rai, M.K and da Silva, S.S. Bioenergy and Biofuels: Nanotechnological solutions for sustainable production: In *Nanotechnology for Bioenergy and Biofuel Production* (Eds Rai, Mahendra and da Silva, Silvio Silvério) Springer International Publishing 2017. (Accepted)

(c) Conferences/Workshops attended/poster presented:

1. Seminar on Recent Advances in Separation Technology, 24th -25th January 2019, organized by Sinhgad College of Engineering, Pune.
2. Conference on Trend in Interdisciplinary Research in Health Sciences, 27th August 2019, organized by Dr. D.Y. Patil Vidyapeeth Pune (Deemed to be University).
3. Workshop on Hydroponics Vegetable Cultivation, 14th to 15th September 2019, organized by APG Learning and Sakal Media, Pune.
4. TOT Workshop on Curriculum Mapping, 22nd October 2018 organized by Dr. D.Y. Patil Vidyapeeth Pune (Deemed to be University).
5. II Workshop on Bioenergy, Renewable Energy and Green Building March 17th 2016 organized by Instituto de Pesquisa em Bioenergia (IPBEN) and Universidade Estadual Paulista (unesp), Guaratingueta, Brazil. Title- From Biomass to Bioproducts: The use of Nanotechnology.

6. Two week Training Course on Techniques in Biotechnology. Biotechnology in Laboratory Theory and Practice, March 3-16, 2008. Organized by Department of Biotechnology SGB Amravati University, Amravati India.
7. National Seminar on Trends in Nanobiotechnology, January 4th 2013 organized by Department of Biotechnology SGB Amravati University, Amravati India. Presentation topic- Mycofabrication of silver nanoparticles: Novel antimicrobials against human pathogens.
8. National Conference on Current Advances in Biotechnology and Annual Meeting of Society for Biotechnologist (India), November 25-26, 2013 organized by Department of Biotechnology SGB Amravati University, Amravati and Society for Biotechnologist (India). Presentation topic- Preparation of Direct Methanol fuel cell (DMFC) by using Gold Nanoparticles as catalyst.
9. International Conference on Colloids and Nanomaterials, 15th– 17th July 2012, organized by Elsevier at Amsterdam, The Netherlands. PresentationTitle- Mycosynthesized Silver Nanoparticles as Novel Antimicrobials against Human Pathogens.
10. International Conference on Mycology and Plant Pathology Biotechnological approaches (ICMPB 2012) February 27th-29th, 2012 Organized by Department of Botany, Banaras Hindu University, Varanasi (UP) India. Presentation Title- Optimization of Physical Parameters for Large Scale Mycosynthesis of Silver Nanoparticles (First prize for Poster).
11. International Workshop on Advances in Disinfection Technologies February 9th, 2011 organized by National Environmental Engineering Research Institute, Nagpur (MS) India. PresentationTitle- Mycosynthesis of Silver Nanoparticles for management of water born diseases.
12. International Conference on Nanotechnology & Medical Science (ICNAMS-2010) October 21-23, 2010 organized by D.Y.Patil University, Kolhapur (MS)India.PresentationTitle- Mycosynthesis of Silver Nanoparticles by Phomabetae.
13. Indo–Italian Workshop on Bacteria & Fungi For Environmental Sustainability November 29-30 & December 1, 2010 organized by Amity Institute of Microbial Technology Amity University, Noida (UP) India. Presentation Title- Mycosynthesis of Silver Nanoparticles and there Interaction with Human Pathogenic Bacteria.