Dr. Mamata Singhvi (Khivasara)
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Mobile: +91 9623455950 (India)

Curriculum-Vitae

Summary:

I have 15+ years of research experience in Life sciences / Biotechnology domain from CSIR National Chemical Laboratory (India), Kyushu University, (Japan), Institute of Bioinformatics and Biotechnology(IBB), SP Pune University (India) and Chungbuk National University (South Korea).

Presently, I am working at Department of Biotechnology-IBB, SP Pune University, Pune as DBT-Assistant Professor/Scientist-D.

Educational Qualifications:

Degree	Institute/University	Subject	Period	Percentage
Ph. D.	National Chemical Laboratory (CSIR NCL), Pune, India	Biological Sciences (Life sciences)	2012 - 2015	77.5%
M.Sc.	School of Life Sciences, North Maharashtra University (NMU), Jalgaon, India	Microbiology	2001 - 2003	67.9%
B.Sc.	Jai hind College, Dhule, India	Microbiology	1998 - 2001	75.15% ***(University Topper)***

Research Areas:

Biofuel (Green Hydrogen and Bioethanol) production using green processes, Metabolic / Genetic Engineering, DNA Sequencing (next generation sequencing), Proteomics, Nanobiotechnology, Bioproducts and Bioprocessing, Enzyme Technology, Microbial Fermentation, etc.

Research Experience:

- **Aug 2022 – Till date:** Working as DBT-RLS Assistant professor on DBT, Govt of India funded project, “Development of process for the production of Green Hydrogen using biomass waste using nanotechnology approach”, at Department of Biotechnology-IBB, SP Pune University, Pune (India). (DBT – Department of Biotechnology)
- **Dec 2019 – April 2022:** Worked as post doc researcher on KRF (Korean Research Foundation) funded project, “Hydrogen & Bioethanol production from lignocellulosic biomass using consolidated bioprocessing through nanobiotechnology approach.”, at Biochemical engineering division, Chungbuk National University (CBNU), Cheongju, South Korea.

  Also, simultaneously worked on the development of novel process using nanobiotechnology for the production of pharmaceutically significant compounds such as Genistein, Daidzein, Nicotinamide Mononucleotide which are generally used in the treatment of various diseases such as Alzheimer’s disease, Cancer, diabetes etc.

Dr. Mamata Singhvi (Khivasara) **Mobile:** +91 9623455950 (India)
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- **Oct 2018 - Nov 2019:** Worked as post doc researcher on UGC funded project, "Production of pharmaceutically important isoflavone aglycones compounds from plant-based products using fungal β-glucosidases enzymes", at Institute of Bioinformatics and Biotechnology (IBB), SP Pune University (SPPU), Pune, India.
- **Apr 2016 - Mar 2018:** Worked as post doc researcher on JSPS(Japan) funded research project, "Genetic expression studies using Real Time PCR (RT-PCR) and proteomic studies of industrially significant microbes", at Kyushu University, Fukuoka, Japan. (JSPS - Japan Society for the Promotion of Science)
- **Apr 2015 - Oct 2015:** Worked as Research Associate at 'National Collection of Industrial Microorganisms (NCIM) Resource Center', CSIR-NCL, Pune on the research project - 'Gene expression studies of *Lactobacillus* Strain in various conditions. (CSIR: Council of Scientific & Industrial Research, NCL: National Chemical Laboratory)
- **Apr 2012 - Mar 2015:** Worked as Senior Research Fellow (SRF) at NCIM, CSIR-NCL, Pune on the research topic "Biomass to lactic acid: Cellulases and their application in cellulosic D-lactic acid production, raw material for bioplastic production". Also, Acid tolerant strain has been developed and characterized using various genetic techniques such as RFLP, RAPD, specific Gene sequencing etc.
- **Apr 2007 - Mar 2012:** Worked as Project assistant at NCIM, CSIR-NCL, Pune on CSIR NMITLI research project "L-lactic acid and their possible applications in biomedical field using PLA polymers".
- **Jun 2003 - Dec 2004:** Studied "isolation of *Saccharobacter sp.* from agave plant for ethanol production." at North Maharashtra University, Jalgaon, India.

Technical Skills:

- **Molecular Biology:** Genomic and Plasmid DNA isolation, DNA sequencing, Gene editing, Gene cloning and expression studies, Phylogenetic analysis, RAPD, RFLP, Restriction digestion, Primer designing, Real-Time PCR (RT-PCR) etc.
- **Enzymology**: Enzyme/protein purification, Protein expression, SDS-PAGE analysis, primary and secondary structure determination, Protein characterization and Spectral analysis etc.
- **Microbiology:** All Basic techniques involved in microbiology (Sterilization, Preparation of different media, Isolation, Cultivation, Selection, Maintenance, Preservation), Antibiotics sensitivity assay and Biochemical characterization, Molecular characterization 16S rRNA sequencing and Biochemical test using Biolog GN III plates, Microbial fermentation etc.
- **Biochemistry:** Biochemical characterization of biopolymer, chemical analysis using HPLC, GC-MS, LC- MS, SEM, FTIR, NMR, XRD, EDX, TGA etc.
- **Bioinformatics and Biostatistics Skills:** Origin software version 9.0, Bioedit, Blast, MEGA 4.1, DNASTAR, Chemdraw, Chem-Biodraw, Design Expert 8.0 for RSM studies, Statistical software used for data analysis like ANOVA and chi square test etc. Microsoft Office, Adobe (Photoshop, Illustrator and Acrobat).
- **Microscopy:** Light, Fluorescence, Scanning and Transmission electron and Atomic force

microscopy for biological sample preparation and analysis.

- **Analytical Instruments Handled:** HPLC, GC, MALDI-TOF, UV-Vis Spectrophotometer, PCR, Gel electrophoresis, Gel documentator, Bio-Clean bench, Freeze dryer, SpeedVac, Ultra Centrifuge, pH-meter, Sonicator, RotaVapour, Nanodrop, Fermenters, FTIR, Centrifuge, Viscometer etc.

Awards/Honors:

1. **Featured in the world's top 2% scientists list:** Listed in the world's top 2% scientists list published by Stanford University in 2024
2. **Featured in the world's top 2% scientists list:** Listed in the world's top 2% scientists list published by Stanford University in 2023
3. **Presentation to Government of India (Sep 2022)**: Was invited by the Hon. Union Minister of Road Transport and Highways, Government of India, to present and discuss an innovative approach on the production of Bioethanol and Green Hydrogen using biomass waste.
4. **'Hall of Fame' Award (Jan 2022)**: Conferred with 'Hall of Fame' award as an Outstanding Researcher for the Year 2021 at Chungbuk National University (CBNU), South Korea.
5. **Best Reviewer Award (Oct 2021):** Awarded as the 'Best Reviewer' for year 2020-2021 by the Journal named 'International Journal of Life Science and Pharma Research'.
6. **On 'Green Chemistry' Cover Page (2021)**: One of my recently published papers on biofuel was selected for the cover page of 'Green Chemistry' journal. ***Achievement was covered in Korean media as one of the best research studies***.
7. **Guest Editor of Energies (MDPI) Journal:** Recently, I have been offered and appointed as Guest Editor for 'Energies, MDPI' journal on the theme "Lignocellulosic biomass conversion".
8. **Best Research Paper Award (Mar 2015):** Awarded "Best Research Paper" in Biological Sciences with highest impact factor for research publication entitled "Lignocellulosic Processing: A Current Challenge" (published in RSc Advances)**.**
9. **Best Research Scholar Award (Mar 2014):** Nominated for Best Research Scholar award at CSIR-NCL, Pune, India.
10. **Best Research Paper Award (Mar 2010):** Awarded "Best Research Paper" in Biological Sciences with highest impact factor for research publication entitled "D- lactic acid production from bagasse derived cellulose and cellobiose using *L. lactis*RM2-24" (published in Green Chemistry).
11. **Guest Lecture (Nov 2018):** Was invited to deliver a guest lecture at Arizona state University, USA on the topic: "Biomass to value added products" for Ph. D. and M. Sc. students (done through Skype).
12. **University Topper in M.Sc. (Microbiology)** at North Maharashtra University, India. (2003).
13. **University Topper in B.Sc. (Microbiology)** at North Maharashtra University, India. (2001).
14. **Chief Minister Scholarship:** Received "Chief Minister's Scholarship" during M.Sc. (2002).

Patents/Publications:

Patents:

1. Rajak, R. **Singhvi M.** Kim, B.S. (2023) "Method for pretreatment of lignocellulosic biomass using nanoparticles**Patent no. 10-2616471** Granted on 18th December 2023 **(Score:10).**

2. **Singhvi M.,** Deshmukh A. and Kim BS (2024) Nanomaterial having cellulase enzyme mimicking activity and method for increasing bioethanol production from lignocellulosic biomass using the same. **Patent No. 10-2683907** Granted on 8th July 2024 (**Application No.: 10-2020-0186621)**
3. "Method for producing fermentable sugar from lignocellulosic biomass using nanoparticles or a combination of nanoparticles and enzymes". (**Application No. 10-2022-0071557**).
4. Production process of pharmaceutical compound, Nicotinamide Mono Nucleotide (NMN). (In Process).

Book Chapter:

1. **Singhvi, M**. Kim, B.S. (2021): "Integrated Conversion of Cellulose to High-Density Aviation Fuel". *In Advanced Technology for the Conversion of Waste into Fuels and Chemicals* (pp. 355-382). Woodhead Publishing, Elsevier, **United Kingdom**.
2. Khomlaen C, **Singhvi, M,** Kim, B.S (2022): "Conversion of Bio-sugars from Pineapple Liquid Waste to BioPolymers" Chapter 14, UPM Press book, **Thailand**.

Research Paper Reviews:

- Reviewed several research papers for renowned journals like *Energies,* International Journal of Life Science and Pharma Research**,** *ACS, Applied Microbiology and Biotechnology, Process Biochemistry, RSc Advances, Biotechnology* Letters *etc.*

Research Papers:

1. Maharjan A., Singhvi M. and Kim BS (2025) Cell-free biocatalysis for co-production of nicotinamide mononucleotide and ethanol from *Saccharomyces cerevisiae* and recombinant *Escherichia coli.* ***Enzyme and Microbial Technology*** **(SCI IF:3.4)** 110585.
2. CT Padigala, GG Satpati, **Singhvi M.** et al. (2024) Nanotechnological advancement in green hydrogen production from organic waste: Recent developments, techno–economic, and life cycle analyses. ***International Journal of Hydrogen Energy*** **(SCI IF: 8.5)** 92, 672-693.
3. Anjulal H., Singhvi M. and Zinjarde S. (2024) Insights into the biodegradation of polyhydroxyalkanoates by the tropical marine isolate, *Nocardiopsis dassonvillei* NCIM 5124. ***3 Biotech*** **(SCI IF: 2.6)** 14 (10), 240.
4. Koul,S., **Singhvi* M. and** BS Kim (2024): Green Synthesis of Cobalt-Doped CeFe2O5 Nanocomposites Using Waste *Gossypium arboreum* L. Stalk and Its Application in the Removal of Toxic Water Pollutants.***Nanomaterials*** **(SCI IF: 4.5)** 14 (16),3339.
5. **Singhvi, M**. Kim, MS. Kim, B. S. (2022): Bioethanol production using simultaneous pretreatment and saccharification of bio waste through implementation of nanobiotechnology. ***Chemical Engineering Journal (*SCI IF: 17.69*)*** 465, 142879.
6. Maharjan, A. **Singhvi, M**. Kim, B. S. (2022): Improved production of pharmaceutically important nicotinamide mononucleotide by high cell density fed-batch culture of metabolically engineered *Escherichia coli.* ***Proc Biochem (*SCI IF: 4.89)***
7. Khomlaen C, **Singhvi M,** B. S. Kim (2022): Production of polyhrdroxyalkanoates and astaxanthin

from lignocellulosic biomass in high cell density membrane bioreactor. ***Chemical Engineering Journal (*****SCI IF: 16.7*****)*** *451,* 138641

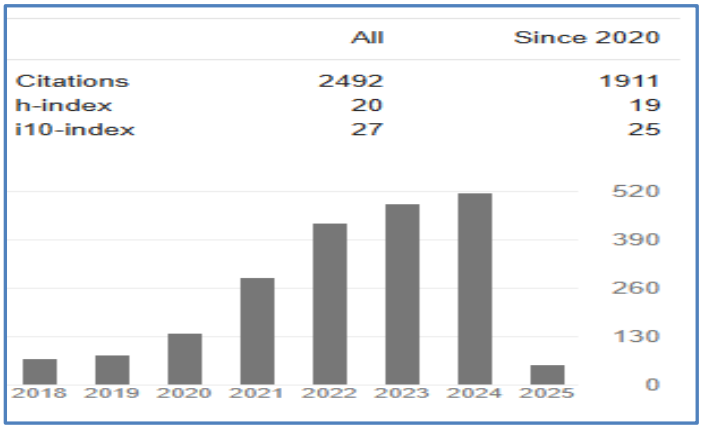
8. **Singhvi M**., Zinjarde S., Kim B.S. (2022): Sustainable strategies for the conversion of lignocellulosic materials into biohydrogen: Challenges and solutions towards carbon neutrality. ***Energies*** **(SCI IF: 3.25)** *15,*8987.
9. Kushawaha A., Goswami L., **Singhvi M.**, Kim B.S. (2022): Biodegradation of Poly(ethylene terephthalate): Mechanistic insights, advances and future innovative strategies. ***Chemical Engineering Journal (*****SCI IF: 16.7**) 457, 141230.
10. **Singhvi M.**, Kim B.S. (2022): Green hydrogen production through consolidated bioprocessing of lignocellulosic biomass using nanobiotechnology approach. ***Bioresour Technol (*****SCI IF: 11.89*****)*** 128108
11. **Singhvi, M**. Kim, MS. Kim, B. S. (2022): Production of pharmaceutical compounds used in cancer treatment from organic glycosides using magnetic nanocatalyst: A green economical option. **Catalysts (SCI IF: 4.5)** 12,1107
12. **Singhvi M**, Maharjan A, Thapa A, Jun HB, Kim BS.(2021): Nanoparticle-associated single step hydrogen fermentation for the conversion of starch potato waste biomass by thermophilic *Parageobacillus thermoglucosidasius*. ***Bioresour Technol (SCI IF: 11.89)*** 337:2021125490.
13. Rajak, R. Saha, P. **Singhvi M.** *et al.* (2021): Lignin depolymerization from corn cob biomass using enzyme mimicking nanoparticles: an eco-friendly biomass pretreatment strategy for biofuel production. ***Green Chem*** **(SCI IF: 11.04)** 23, 5584-5599.
14. **Singhvi, M.** Deshmukh A. Kim, B.S. (2021): Cellulase mimicking graphene oxide-assisted cellulose hydrolysis for enhanced bioethanol fermentation: a sustainable approach. ***Green Chem*** **(SCI IF: 11.04)** 23, 5064-5081. ***[This research work has got coverage in Korean media]***
15. Kiet, T. **Singhvi, M.** et al. (2021): Production of 7,10-dihydroxy-8(E)-octadecenoic acid using cell-free supernatant of *Pseudomonas aeruginosa*. ***Enz Microbial Technol*** **(SCI IF: 3.71)** 150:109892.
16. **Singhvi, M.** Kim, B.S. (2020): Current developments in lignocellulosic biomass conversion into biofuels using nanobiotechnology approach. ***Energies*** (**SCI IF: 3.25)** 13:5300.
17. Maharjan, A. **Singhvi, M**. Kim, B. S. (2021) Biosynthesis of therapeutically important nicotinamide mononucleotide through phosphoribosyl pyrophosphate synthetase 1 and 2 engineered strain of *Escherichia coli*. ***ACS Synthetic biology*** **(SCI IF: 5.25).**
18. Jeong, J. **Singhvi, M.** Kim, B. S. (2021) Improved extracellular enzyme-mediated production of 7,10-dihydroxy-8(E)-octadecenoic acid by *Pseudomonas aeruginosa.* ***Biotechnol Bioprocess Eng (*****SCI IF: 3.39*****).***
19. **Singhvi, M.** Kim, B.S. (2020): Lignin valorization using biological approach. ***Biotechnol Appl Biochem*** (**SCI IF: 2.72)** 68:459-468.
20. **Singhvi, M.** Zinjarde, S. (2020): Production of pharmaceutically important genistein and daidzein from soybean flour extract by using β-glucosidase derived from *Penicillium janthinellum* NCIM 1171. ***Proc Biochem*** (**SCI IF: 4.89)** 97:183–190.

21. **Singhvi, M.** Gokhale, D. (2019): Lignocellulosic biomass: Hurdles and challenges in its valorization. ***App Microbiol Biotechnol*** (**SCI IF: 5.56)** 103:9305–9320.
22. **Singhvi, M,** Zinjarde, S., Gokhale D. (2019): Poly-Lactic acid (PLA): synthesis and biomedical applications. ***J App Microbiol*** (**SCI IF: 4.06)** 27:1612-1626.
23. **Singhvi, M**, Zendo, T., Gokhale, D., Sonomoto, K. (2018): Greener L-lactic acid production through in situ extractive fermentation by an acid-tolerant *Lactobacillus* strain. ***App Microbiol Biotechnol*** (**SCI IF: 5.56)** 102:6425–6435.
24. **Singhvi, M,** Zendo, T., Sonomoto, K. (2018): Free lactic acid production under acidic conditions by lactic acid bacteria strains: challenges and future prospects. ***App Microbiol Biotechnol*** (**SCI IF: 5.56)** 102:5911-5924.
25. **Singhvi, M.,** Zendo, T., Iida, H., Gokhale, D., Sonomoto, K. (2017): Stimulation of D- and L-LDH transcriptional levels in presence of diammonium hydrogen phosphate resulting to enhanced lactic acid production by Lactobacillus strain. ***J Biosci Bioeng*** **(SCI IF: 3.19)** 124:674-679.
26. **Singhvi, M**., Gokhale, D. V. (2015). Biomass exploitation: finding its way to reality. ***Current Science*** (**SCI IF: 1.17)** 108:1593-1594.
27. **Singhvi, M**., Gujar, G., Gupta, V., Gokhale, D. V. (2015): Biocatalyst development leading to green technology for lactic acid fermentation using genome shuffling approach. ***RSC Adv*** (**SCI IF: 4.04)** 5:2024-2031.
28. Nagraj, A., **Singhvi, M**., Ravikumar, V., Gokhale D.V. (2014): Optimisation studies for enhancing cellulase production by *Penicillium janthinellum* EU2D-21 using Response Surface Methodology. ***Bioresources*** (**SCI IF: 1.75)** 9:1914-1923.
29. **Singhvi, M**.,Chaudhari, S., Gokhale, D.V. (2014): Lignocellulose processing: a current challenge. ***RSC Adv*** **(SCI IF: 4.04)** 4:8271-8277.
30. **Singhvi, M**., Gokhale, D. V. (2013): Biomass to biodegradable polymer (PLA). ***RSC Adv*** **(SCI IF: 4.04)** 3:13558-13568.
31. **Singhvi, M**., Jadhav, A., Gokhale, D.V. (2013): Supplementation of medium with diammonium hydrogen phosphate enhanced the D-lactate dehydrogenase levels leading to increased D-lactic acid productivity. ***BioresourTechnol (SCI IF: 11.89) 146:536-739.***
32. **Singhvi, M.**, Gailaiwari, S. A., Gokhale, D.V. (2013): Protoplast formation and regeneration in *AcetobacterPasteurianus*. ***American J Bioeng Biotech*** 1:37-43.
33. Adsul M. G, **Singhvi, M**.., Gaikaiwari, S.A., Gokhale, D.V. (2011): Development of biocatalysts for production of commodity chemicals from lignocellulosic biomass. ***BioresourTechnol*** **(SCI IF: *11.89*)** 102:4304-4312.
34. **Singhvi, M**., Adsul, M.G., Gokhale, D. V. (2011): Comparative production of cellulases by mutants of *Penicillium janthinellum* NCIM 1171 and its application in hydrolysis of Avicel and cellulose. ***BioresourTechnol (SCI IF: 11.89)*** *102:6569-6572.*
35. Joshi, D.S. 3., **Singhvi, M**., Khire, J. M., Gokhale, D. V. (2010): Strain improvement of *Lactobacillus lactis* for D-lactic acid production. ***Biotechnol. Lett*** **(SCI IF: 2.72)** 32:517-520.
36. **Singhvi, M.,** Joshi, D. S., Adsul, M. G., Varma, A. J., Gokhale, D.V. (2010): D-(-)-Lactic acid

production from cellobiose and cellulose by *Lactobacillus lactis* mutant RM2-24. ***Green Chem* (SCI IF: 11.04)** 12:1106-1109.

37. **Singhvi, M.,** Joshi, D. S., Gailaiwari, S. A., Gokhale, D.V. (2010): Protoplast formation and regeneration in *Lactobacillus delbrueckii.* ***Ind J Microbiol* (SCI IF: 1.54)** 50, 97-100.

Google scholar profile:



Grants Availed:

1. DBT-RLS Funding: Funding of INR 12.5 million has been awarded by Department of Biotechnology, New Delhi, **India** for 5 years (Aug 2022-2027).
2. NRF Funding: Funding of ~INR 6 million was awarded by National Research foundation (NRF) by Korean Government in **South Korea** for 2 years (March 2021-2023).
3. KRF Funding: Awarded Korean Research Fellowship of ~INR 21.25 million awarded by Korean government, **South Korea** for period of 4 years (Dec 2019-2024).
4. UGC Funding: Received D. S. Kothari post doctorate fellowship of INR 1 million sponsored by University Grant Commission (UGC), **India** for 1 year (Oct 2018-Oct 2019)
5. JSPS Funding: Availed JSPS (Japan Society for the Promotion of Science) funding of ~INR 7.5 million by Japanese Government, **Japan** for 2 years (April 2016-April 2018).

Fellowships/Fundings Awarded:

1. Ramalingaswami Re-entry Fellowship (RLS) (Jul 2022 – 2027): Prestigious RLS fellowship was awarded by Dept of Biotechnology(DBT), Govt of India at SP Pune University, **India**.
2. National Research Foundation (NRF) Funding (Jun 2021-Mar 2024): Awarded National Research Foundation funding by Government of Korea at Chungbuk National University, **South Korea.**
3. Korean Research Foundation (KRF) Post-Doctoral Fellowship (Dec 2019-2023): Awarded Korean Research Foundation post-doctoral fellowship by Government of Korea at Chungbuk National University, **South Korea.**
4. UGC Post-Doctoral Fellowship (Oct 2018-2021): Awarded post-doctoral fellowship by University Grant Commission (UGC), **India.**
5. Open Post-Doctoral Position (Oct 2018-2020): Received an offer for post-doctoral position from

Jiangsu University, **China**.

6. JSPS Post-Doctoral Fellowship (Apr 2016-2018): Awarded prestigious JSPS post-doctoral fellowship by the Japan Society for the Promotion of Science (JSPS), **Japan.**
7. Open Post-Doctoral Position (Oct 2017): Received an offer for post-doctoral position from Arizona state university, Tempe, **USA**.
8. ARO Post-Doctoral Fellowship (Aug 2015): Received post-doctoral fellowship offer from Agricultural Research Organization (ARO), **Israel.**
9. Senior Research Fellowship (Apr 2012-2015): Awarded Senior Research Fellowship by the Council of Scientific and Industrial Research (CSIR), **India.**

Mentoring/Supervising and Assessment activities:

- **Mentoring Bachelors, Masters and PhD students:** Have mentored and supervised number of Post doc, PhD, M.Sc and B.Sc students in South Korea, Japan and India.
- **Judge for the National Level Science Competition:** Judged the national level science competition held at Pune twice.

Membership:

- Life Member of Japan Society for the Promotion of Science (JSPS)
- Life Member of Biotech Research Society of India (BRSI)
- Life Member of Association of Microbiologists of India (AMI)
- Life Member of Korean Society for Biotechnology and Bioengineering (KSBB)

References:

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Dr. D.V. Gokhale (Retired Scientist G)

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I hereby solemnly declare that all statements made above are true and correct to the best of my knowledge and belief.

Dr. Mamata Singhvi (Khivasara)
(Applicant)

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