Dr. Shikha Singh

Designation: Associate Professor

Qualification: M.Sc, Ph.D.

Date of Birth: 08.01.1979

Date of Joining: 02.06.2018

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ORCID: https://orcid.org/0000-0001-7949-5293
VIDWAN: https://vidwan.inflibnet.ac.in/myprofile
WOS: https://www.webofscience.com/wos/author/search

Area of Interest

Immunology, Microbiology, Analysis of Immune Gene Expression, development of antibody based diagnostic easy to use kits for various human and plant diseases, evaluation of anti-cancerous, antioxidant, antimicrobial, anti-inflammatory and immunomodulatory effects of important medicinal plants and their products.

Courses taught

Immunology, Microbiology, Pharmaceutical Biotechnology, Human Diseases.

Career

1. 2018- Present: Associate Professor, Department of Life Sciences, Rama Devi Women's University, Bhubaneswar, Odisha, India
2. 2008-2018: Assistant Professor, Centre for Biotechnology, SOA University, Bhubaneswar, Odisha, India.
3. 2005-2008: Research Assistant, IMGENEX INDIA Pvt.Ltd, Bhubaneswar, Odisha, India.

Teaching Experience

15 years

Research Experience

18 years

Administrative/Executive Experience

Serving as Director Student's Welfare from 2019 to till now.

Serving as Syndicate members from 2020 to till now

Served as the Head of the Department of Life Sciences from 2020-2022

Served as Superintendent of Ananya Hostel from 2019-2021.

Served as Coordinator of IPR cell of University from 2019-2022
Serving as IQAC member from 2020 to till now

Serving as representative of University level Committee for MO College Abhijaan

SRC member of Dept. of Life Science, RDWU

Member of conducting board of Dept. of Life Science, RDWU

Board of studies member of Dept. of Life Science, RDWU

Awards & Honors

1. Received Young scientist award from, Dept. of Science and Technology, Govt. of India in 2012.

2. Excellence Award in Teaching and Research by Society of Ecological Sustainability in 2022.
3. Research excellence award by Society of Ecological Sustainability in 2023 in an International Conference.

Research Guidance

- ✓ PhD thesis supervised : **02 (Two)**
- ✓ M Tech/M.Phil thesis supervised : **06 (Six) (3-M.Phil. 2-M.Pharm., 1-M.Tech)**
- ✓ M.Sc thesis supervised : **32 (Thirty Two)**

Research Grants (All research grants including seed funds)

➢ **RESEARCH PROJECTS Grants: (TOTAL: 06) Total Cost: 1.61Crores**

No. of sponsored projects as principal Investigator: **04**

No. of sponsored Projects as Co-Investigator: **02**

Serial No	Govt. of India Sanctioned Research Projects	Funding agency	Position	Amount & year
1.	Development of rapid diagnostic kit for early detection of rhizome rot in turmeric and ginger.	DST, Govt. of India	Principal Investigator	47 Lakhs, 2022-2025
2.	Evaluation of immunomodulatory activity of essential oil of some underexplored medicinal plants with emphasis on the role of different cytokines	DST, Govt. of India	Principal Investigator	22.7 Lakhs 2013-2016

3.	Development of diagnostic ELISA kit for detection of *Pythium* infection causing rhizome rot in turmeric	MSME, Govt. Of India	Principal Investigator	4.8 Lakhs 2013-2014
4.	Rapid detection of *Plasmodium falciparum* and *Plasmodium vivax* in human urine and saliva samples: a non invasive approach for malaria diagnosis	DST, Govt. of India	Principal Investigator	34 Lakhs 2014-2017
5.	Development of biosensors for rapid endotoxin detection in fluid systems used for the production of clinically applicable compounds.	DST, Govt. of India	Co-Investigator	16.5 Lakhs 2012-2014
6.	Development of instrumentation methodology for rapid and non invasive endotoxin detection in Urinary Tract Infection	DST Govt. of India	Co-Investigator	35 Lakhs 2014-2016

Publications

- **RESEARCH PUBLICATIONS: (TOTAL: 52)**
- Cumulative Impact factor: 64.91
- Journal publication: 28 (indexed in Scopus and SCI)
- As Corresponding/first author: 49

List of Scopus published papers

1. Benya, A., Mohanty, S., Hota, S., Das, A.P., Rath, C.C., Achary, K.G. and **Singh, S**., 2023. Endangered Curcuma caesia Roxb.: Qualitative and quantitative analysis for identification of industrially important elite genotypes. *Industrial Crops and Products*, *195*, p.116363. (IF: 6.5, SCOPUS).
2. Mishra, S., Ghosh, S., van Hullebusch, E.D., **Singh, S**. and Das, A.P., 2023. A Critical Review on the Recovery of Base and Critical Elements from Electronic Waste-Contaminated Streams Using Microbial Biotechnology. *Applied Biochemistry and Biotechnology*, pp.1-30.

3. Khatun, R., **Singh, S.,** Dubey, N.K. and Das, A.P., 2023. A review on marine-based phytochemicals and their application in biomedical research. *Recent Frontiers of Phytochemicals*, pp.383-395.
4. Mohanty, S., Benya, A., Hota, S., Kumar, M.S. and **Singh, S**., 2023. Eco-toxicity of hexavalent chromium and its adverse impact on environment and human health in Sukinda Valley of India: A review on pollution and prevention strategies. *Environmental Chemistry and Ecotoxicology*.
5. Tripathy, S., **Singh, S.** and Das, S.K., 2022. Cryopreservation of mesenchymal stem cells (MSCs) derived from bone marrow with carbohydrate additive sucrose and dimethyl sulfoxide (DMSO). In *Contemporary Medical Biotechnology Research for Human Health* (pp. 177-186). Academic Press.
6. Tripathy, S., **Singh, S**. and Das, S.K., 2019. Potential of breastmilk in stem cell research. *Cell and Tissue Banking*, *20*(4), pp.467-488.
7. Sahoo, P.P., **Singh, S**., Rout, P.K., Mishra, S. and Das, A.P., 2022. Microbial remediation of plastic pollutants generated from discarded and abandoned marine fishing nets. *Biotechnology and Genetic Engineering Reviews*, pp.1-16.
8. Ray, M., Achary, K.G., Nayak, S. and **Singh, S**., 2019. Development of a colloidal gold strip-based immunochromatographic assay for rapid detection of Fusarium oxysporum in ginger. *Journal of the Science of Food and Agriculture*, *99*(14), pp.6155-6166.
9. Sahoo, S., Kar, B., Dash, S., Ray, M., Acharya, K.G., **Singh, S.** and Nayak, S., 2018. Anticancerous and Immunomodulatory Activities of Alpinia nigra (Gaertn.) Burtt. *Journal of Essential Oil Bearing Plants*, *21*(4), pp.869-875.
10. Shahbazi, S., Kaur, J., **Singh, S.,** Achary, K.G., Wani, S., Jema, S., Akhtar, J. and Sobti, R.C., 2018. Impact of novel N-aryl piperamide NO donors on NF-κB translocation in neuroinflammation: rational drug-designing synthesis and biological evaluation. *Innate Immunity*, *24*(1), pp.24-39.
11. Ray, M., Ray, A., Dash, S., Mishra, A., Achary, K.G., Nayak, S. and **Singh, S**., 2017. Fungal disease detection in plants: Traditional assays, novel diagnostic techniques and biosensors. *Biosensors and Bioelectronics*, *87*, pp.708-723.
12. Dash, S., Ray, M., Parida, R., Achary, K.G., Nayak, S. and **Singh, S**., 2018. Edible plant-derived essential oils synergistically enhance the Th1, Th2 and anti-inflammatory cytokines in neonatal cord blood monocytic cell line. *Food and Agricultural Immunology*, *29*(1), pp.346-357.
13. Ray, M., Dash, S., Shahbazi, S., Achary, K.G., Nayak, S. and **Singh, S**., 2016. Development and validation of ELISA technique for early detection of rhizome rot in

golden spice turmeric from different agroclimatic zones. *LWT-Food Science and Technology*, *66*, pp.546-552.

14. Shahbazi, S., Sahrawat, T.R., Ray, M., Dash, S., Kar, D. and **Singh, S.,** 2016. Drug targets for cardiovascular-safe anti-inflammatory: In silico rational drug studies. *PloS one*, *11*(6), p.e0156156.
15. Nayak, S.A.N.G.H.A.M.I.T.R.A. and **Singh, S.H.I.K.H.A**., 2016. Zerumbone, a natural plant dietary compound induces expression of interleukin-12P70 cytokine in human peripheral blood mononuclear cells. *Asian J Pharm Clin Res*, *9*(3), pp.312-5.
16. **Singh, S.,** Sahoo, S., Dash, S. and Nayak, S., 2014. Association of growth and yield parameters with bioactive phytoconstituents in selection of promising turmeric genotypes. *Industrial Crops and Products*, *62*, pp.373-379.
17. Sahoo, S., Parida, R., **Singh, S**., Padhy, R.N. and Nayak, S., 2014. Evaluation of yield, quality and antioxidant activity of essential oil of in vitro propagated Kaempferia galanga Linn. *Journal of Acute Disease*, *3*(2), pp.124-130.
18. Kar, B., Kuanar, A., **Singh, S**., Mohanty, S., Joshi, R.K., Subudhi, E. and Nayak, S., 2014. In vitro induction, screening and detection of high essential oil yielding somaclones in turmeric (Curcuma longa L.). *Plant growth regulation*, *72*, pp.59-66.
19. **Singh, S**., Panda, M.K. and Nayak, S., 2012. Evaluation of genetic diversity in turmeric (Curcuma longa L.) using RAPD and ISSR markers. *Industrial Crops and Products*, *37*(1), pp.284-291.
20. **Singh, S.,** Joshi, R.K. and Nayak, S., 2013. Identification of elite genotypes of turmeric through agroclimatic zone based evaluation of important drug yielding traits. *Industrial Crops and Products*, *43*, pp.165-171.
21. **Singh, S**., Sankar, B., Rajesh, S., Sahoo, K., Subudhi, E. and Nayak, S., 2011. Chemical composition of turmeric oil (Curcuma longa L. cv. Roma) and its antimicrobial activity against eye infecting pathogens. *Journal of Essential Oil Research*, *23*(6), pp.11-18.
22. Mohanty, S., Parida, R., **Singh, S**., Joshi, R.K., Subudhi, E. and Nayak, S., 2011. Biochemical and molecular profiling of micropropagated and conventionally grown Kaempferia galanga. *Plant Cell, Tissue and Organ Culture (PCTOC)*, *106*, pp.39-46.
23. **Singh, S**., Sathpathy, B.S., Sahoo, R.K., Subudhi, E. and Nayak, S., 2011. In vitro Validation and Phyto-constituent Analysis of Turmeric Extract: An Ethnological Alternative for Eye Treatment. *Research Journal of Medicinal Plant*, *5*(3), pp.330-337.
24. **Singh, S**., Sankar, B., Rajesh, S., Sahoo, K., Subudhi, E. and Nayak, S., 2011. Chemical composition of turmeric oil (Curcuma longa L. cv. Roma) and its antimicrobial activity against eye infecting pathogens. *Journal of Essential Oil Research*, *23*(6), pp.11-18.

25. **Singh, S**., Kuanar, A., Mohanty, S., Subudhi, E. and Nayak, S., 2011. Evaluation of phytomedicinal yield potential and molecular profiling of micropropagated and conventionally grown turmeric (Curcuma longa L.). *Plant Cell, Tissue and Organ Culture (PCTOC)*, *104*(2), pp.263-269.
26. **Shikha, S**., Panda, M.K., Enketeswar, S. and Sanghamitra, N., 2010. Chemical composition of leaf and rhizome oil of an elite genotype Curcuma longa L. from south eastern ghats of Orissa. *Journal of Pharmacy Research*, *3*(7), pp.1630-1633.
27. Rath, C.C., **Singh, S**., Dash, S. and Mishra, R.K., 2007. In Vitro Vibriocidal Activity of Coriander (Coriandrum sativum L.) and Aniseed (Pimpinella anisum L.) Essential Oils. *Food*, *1*(2), pp.216-219.
28. Das, A.P. and **Singh, S**., 2011. Occupational health assessment of chromite toxicity among Indian miners. *Indian journal of occupational and environmental medicine*, *15*(1), p.6.

Patents (Entire list of patents/copyrights etc.)

PATENT: Indian Patent Published (02)

1. A KIT FOR RAPID DIAGNOSIS OF MALARIA FROM HUMAN URINE AND METHOD OF DETECTING THE SAME. Publication no/date: 201731031201/2017.
2. METHOD OF DETECTING RHIZOME ROT IN TURMERIC CROP AND ICT KIT FOR EARLY DIAGNOSIS OF THE SAME. Publication no/date: 06/2018/5170/09.02.2018.

Book/book chapter Publications (entire list of books/book chapters)

1. Book: Sanghamitra Nayak, Suprava Sahoo, **Shikha Singh** Medicinal plants: towards optimization and prediction of drug yield. 2019, 978-613-9-91206-3, LAP Lambert Academic Publishing.
2. Khatun, R., **Singh, S**., Dubey, N.K. and Das, A.P., 2023. A review on marine-based phytochemicals and their application in biomedical research. Recent Frontiers of Phytochemicals, pp.383-395.
3. Book Chapter: K Gopinath Achary; Monalisa Ray, Swagatika Dash, Sanghamitra Nayak, **Shikha Singh2**, Development of Antibody Reagents against Stem Cell Markers: Expression Pattern of Human Pluripotent Stem Cell Marker Nanog and Germ Cell Marker Fragilis by Rat Testis, 2017, Advances in Biotechnology, Chapter 2. www.openexcessbooks.com.

4. Book Chapter: Seema Tripathy and **Shikha Singh**, Characteristics Features of Mesenchymal Stem Cells, Biotechnology for Sustainable Utilization of Bioresources, 2019, Daya Publishing House®Astral International Pvt. Ltd.
5. Tripathy, S., **Singh, S**. and Das, S.K., 2022. Cryopreservation of mesenchymal stem cells (MSCs) derived from bone marrow with carbohydrate additive sucrose and dimethyl sulfoxide (DMSO). In *Contemporary Medical Biotechnology Research for Human Health* (pp. 177-186). Academic Press.

Participation in Conferences & Seminars (as invited/plenary/chair)

1. Delivered Invited Talk as Resource person at "Invited Speaker, National conference on Recent Advances in Biological Research (RABR 2020), National conference, 8-10th August, 2020
2. Delivered Invited talk Panel discussion on " IPR Protection in Cyber World"", TNTDPC, August, 2020
3. Invited Speaker, in the International level Skill Based Training Programme (Virtual) at Rama Devi Women's University, 10th-19th Feb, 2022
4. Invited Speaker, at the 8th International Conference on Agricultural and Biological Sciences (ABS 2022), Shenzen University, China June 29-30, 2020, Digital rhizome rot diagnosis on to the field: an effortless approach for the farmers.
5. Delivered Invited Talk as Resource person at National level seminar Dept. of Botany, Awdhoot Bhagwan Ramji College, Kashi Vidyapith, 21st and 22nd May, 2022
6. International webinar on "Understanding the COVID 19 Pandemic: Challenges and Opportunities" June 29-30, 2020, RDWU, Organising Secretary.
7. International Virtual Workshop on "Fundamentals of Bio-informatics, January, 29-30, 2021, RDWU, Organising Secretary.
8. Delivered Invited Talk as Resource person at International Conference on Innovative Research in "Chemical, Bioprocess, Textile, Mining, Aeronautics, Nanotechnology, Material Science and Metallurgical Engineering" (CBMT-2018), 22nd December 2018.
9. Delivered Invited Talk as Resource person at International conference on science and Arts of Holistic Health. Jawaharlal Nehru University, New Delhi, 29th April, 2018.
10. Delivered Invited Talk as Resource person at International conference on Nanomedicine in diagnostics & theranostics in Cancer, School of pharmaceutical Sciences, SOA University, 2018.

International conference paper

1. **Shikha Singh**, Javed Akhtar, K.Gopinath Achary, Lalita Behera, A.V.V. Vidyanand, Prasant K Maiti, Bipulendu Jena and Sujay Singh. (2005) Development of Antibody reagents against cell surface markers for embryonic stem cell identification; 1st International Symposium on Stem Cells: From Laboratory to treatment of Diseases, at Bhubaneswar, India.
2. Seema Tripathy, **Shikha Singh**, Stem cells: a paradiagm, 2017, MECH, Multidisciplinary application in knowledge economy, International conference on the emerging global scenario, Siksha O Anusandhan (deemed to be university).
3. Amrita Masanta, Sanghamitra Nayak, **Shikha Singh**, Rapid detection of tuberculosis from urine samples: a non-invasive approach, 2017 MECH, Multidisciplinary application in knowledge economy, International conference on the emerging global scenario Siksha O Anusandhan (deemed to be university).
4. Prabin Kumar Sahoo, Amrita Masanta, **Shikha Singh**, "Isolation and characterization of Botrytis antigen from Allium cepa L. and its role in rapid diagnosis of neckrot, 2017, National Conference on "Biotechnological Interventions for Environmental Stress Management in Plants and Microbes" Bhubaneswar, Odisha.
5. K. Gopinath Achary, AVV Vidyanand, Debashree Sahu, **Shikha Singh**, Prasanta K. Maiti and Sujay Singh: Development and characterization of monoclonal antibodies against FOXP3Δ2 splice variant isoforms: (2007) 34th at IIS conference at National Aids Research Institute, Pune.
6. K. Gopinath Achary, Sadique Mahammed, **Shikha Singh**, Sanjay Panda, Krupa S Panda, Gita Singh and Prasanta K Maiti (2007) Aberrant Expression of Psoriasin in Human Breast Tumor: *26th IACR conference* at Bhubaneswar. India.
7. Alok Prasad Das, Susmita Mishra and **Shikha Singh**. (2010). Microbial remediation of the chemical carcinogen Hexavalent chromium Cr (VI) by an indigenously isolated strain of *Brevebacterium casei* International symposium on Cancer at Reliance Life Sciences, Mumbai.
8. Swagatika Dash, Monalisa Ray, Sanghamitra Nayak, **Shikha Singh** (2015), Essential oil of *Hedychium coronarium* enhances level of IFN-γ and down regulates the level of IL-10 cytokine in inflamed human PBMC; 2nd International Conference on Frontiers in Biological Sciences, 22nd-14th Jan., NIT Rourkela, Odisha.
9. Monalisa Ray, Swagatika Dash, Sanghamitra Nayak, **Shikha Singh** (2015), Production and characterization of polyclonal antibodies raised against surface

antigens isolated from rhizome rot in turmeric; 2nd International Conference on Frontiers in Biological Sciences, 22nd-14th Jan., NIT Rourkela, Odisha.

10. Monalisa Ray, Swagatika Dash, Abtar Mishra, Sanghamitra Nayak, **Shikha Singh** (2016), Immunological detection of *Pythium aphanidermatum,* a fungal pathogen found in Rhizome rot disease in Turmeric; 3rd International Conference on Biotechnology and Bioinformatics (ICBB-2016) 5th – 7th Feb, International Center for Stem Cells, Cancer and Biotechnology (ICSCCB), Pune.

11. Swagatika Dash, Monalisa Ray, Abtar Mishra, Sanghamitra Nayak, **Shikha Singh** (2016), Aromatic oil supplementation modulates immune response of TH1 and TH2 cytokines in neonates; 3rd International Conference on Biotechnology and Bioinformatics (ICBB-2016) 5th – 7th Feb, International Center for Stem Cells, Cancer and Biotechnology (ICSCCB), Pune.

National Conference Paper

12. Swagatika Dash, Monalisa Ray, Sanghamitra Nayak, **Shikha Singh** (2014), Essential oil of *Zingiber zerumbet* enhances level of IFN-γ and down regulates the level of IL10 cytokine in inflamed human PBMC. National Seminar organised on the occasion of the 17th Odisha Bigyan Congress held by The Indian Science Congress Association, Siksha O Anusandhan University, Bhubaneswar.
13. Monalisa Ray, Swagatika Dash, Sanghamitra Nayak, **Shikha Singh** (2014), A method of early diagnosis using ELISA to detect rhizome rot in turmeric. National Seminar organised on the occasion of the 17th Odisha Bigyan Congress held by The Indian Science Congress Association, Siksha O Anusandhan University, Bhubaneswar.
14. Subodh Chand, **Shikha Singh**, Pabitra Mohan Behera, In silico docking studies of curcumin on selective few targets of alzheimer's disease, National seminar, Orissa Bigyan Society, 2013.
15. Swagatika Dash, Suprava Sahoo, Sanghamitra Nayak, **Shikha Singh**, Essential oil of *Kaempferia galanga* acts as immunostimulant-Scientific paradigm or myth? National Seminar on "Exploration of Microbes for social welfare" 25th Dec, 2013.
16. **Shikha Singh**, K.Gopinath Achary, Sanghamitra Nayak, Chemical composition of essential oil of *Curcuma longa* L. cultivar Lakadong and its antimicrobial activities

against *Vibrio cholerae* strains, National Seminar on “Exploration of Microbes for social welfare” 25th Dec, 2013.

17. K. Gopinath Achary, Sadique Mahammed, **Shikha Singh**, Sanjay Panda, Krupa S Panda, Gita Singh and Prasanta K Maiti (2007) Aberrant Expression of Psoriasin in Human Breast Tumor: *26th IACR conference* at Bhubaneswar. India.
18. **Shikha Singh,** Ananya Kuanar, Rajesh Kumar Sahoo, Manoj Kumar Panda, Enketeswara Subudhi and Sanghamitra Nayak. (2010), Metabolic profiling of four promising cultivars of turmeric (*Curcuma longa*) from south eastern India. National conference on Sustainable Production and Utilization of Medicinal and Aromatic Plants: Current Trends and Future Prospects, Bhubaneswar,