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0000-0002-8499-3331](https://orcid.org/0000-0002-8499-3331)

Name: Dr. P. Hanumantha Rao

Designation: Assistant Professor

Education:

- B.Sc. (University of Madras, 1995)
- M.Sc. (Madurai Kamaraj University, 1997)
- Ph.D. (University of Madras, 2009)

Highlights

Featured Publication

<https://www.sciencedirect.com/science/article/abs/pii/S0960148121005115>

Positions

- Associate Dean of Research (Sciences)

- Coordinator, Entrepreneurship Development Cell

Brief Bio of 200 words:

Dr. P. Hanumantha Rao completed his Ph.D. in Microalgal Biotechnology from the University of Madras in the year 2009. His doctoral research was focused on implementing phycoremediation technology for treating industrial wastewaters at the pilot/industrial scale. His current research interests are mass cultivation and biomass production of freshwater and marine microalgae using both suspended and attached systems, carbon biosequestration using microalgae, and phycoremediation. Dr. Rao has published several research articles in reputed journals, and his recent research was published in the journal 'Renewable Energy'. He teaches Microalgal Biotechnology, Environmental Microbiology and other Applied Microbiology courses at both undergraduate and postgraduate levels. Dr. Rao is a recognised Ph.D. guide from the University of Madras since 2019. He serves as the Member of the Editorial Board in Indian Hydrobiology, and has served as a reviewer for various journals including Scientific Reports (Nature), Electronic Journal of Biotechnology (Elsevier), International Journal of Phytoremediation (Taylor and Francis), Indian Hydrobiology (Krishnamurthy Institute of Algology/UGC CARE), Indian Journal of Experimental Biology (CSIR-NISCAIR), Environmental Science and Pollution Research, 3 Biotech (Springer), and African Journal of Biotechnology (Academic Journals). He also serves as a technical expert (microbiology) for TÜV SÜD Management Service GmbH, Munich, Germany, since 2016.

C V Link

Internal Page with complete CV with following items

1. Name:

Dr. P. Hanumantha Rao

2. Education:

Ph.D.

University : University of Madras

Specialization : Algal Biotechnology

Year : 2009

M.Sc.

University : Madurai Kamaraj University

Year : 1997

B.Sc.

University : University of Madras

Year : 1995

SLET

University : Bharathidasan University

Year : 1997

3. Publications:

Book Chapters

Hanumantha Rao P, Ranjith Kumar R, Mohan N (2019). Phycoremediation: Role of algae in waste management. In *Microorganisms for Sustainability, Vol.14. : Environmental Contaminants: Ecological Implications and Management* [Ed. Ram Naresh Bharagava, Springer Nature, Singapore]. pp. 49-82.

Chinnasamy S, Hanumantha Rao P, Bhaskar S, Rengasamy R, Singh M (2012). Algae – A Novel Biomass Feedstock for Biofuels. In *Microbial Biotechnology: Energy and Environment* [Ed Rajesh Arora, Commonwealth Agriculture Bureaux International (CABI), UK], pp. 224-239.

Journals

Mohan N, Hanumantha Rao P, Baskara Boopathy A, Rengasamy R, Chinnasamy S (2021). A sustainable process train for a marine microalga-mediated biomass production and CO₂ capture: A pilot-scale cultivation of *Nannochloropsis salina* in open raceway ponds and harvesting through electroprecipflocculation. *Renewable Energy*, 173, 263-272.

Zimba S, Sathish Kumar T, Mohan N, Hanumantha Rao P (2021). Evaluation of various waste substrates for biofilm formation and subsequent use in aerobic packed-bed reactor for secondary treatment of domestic wastewater. *World Journal of Microbiology and Biotechnology*, 37(2), 25.

Nithiya A, Hanumantha Rao P, Sathish Kumar T (2016). Bioremediation of aquaculture wastewater using nitrifying bacteria–microalga consortium with special reference to ammoniacal nitrogen. *International Journal of Current Research and Academic Review*, 4(12), 164-177.

Hanumantha Rao P, Sivasubramanian V (2016). Phycoremediation – Present and the future. *Journal of Algal Biomass Utilization*, 7(3), 68–69.

Thomas DG, Minj N, Mohan N, Hanumantha Rao P (2016). Cultivation of Microalgae in Domestic Wastewater for Biofuel Applications – An Upstream Approach. *Journal of Algal Biomass Utilization*, 7(1), 62–70.

Ratha SK, Hanumantha Rao P (Co-first author), Govindaswamy K, Jaswin RS, Lakshmidhevi R, Bhaskar S, Chinnasamy S (2016). A rapid and reliable method for estimating microalgal biomass using a moisture analyser. *Journal of Applied Phycology*, 28(3), 1725-1734.

Ranjith Kumar R, Hanumantha Rao P, Arumugam M (2015). Lipid extraction methods from microalgae – a comprehensive review. *Frontiers in Energy Research*, 2, 1-9.

Ranjith Kumar R, Hanumantha Rao P, Subramanian VV, Sivasubramanian V (2014). Enzymatic and non-enzymatic antioxidant potentials of *Chlorella vulgaris* grown in effluent of a confectionery industry. *Journal of Food Science and Technology*, 51(2), 322-328.

Hanumantha Rao P, Ranjith Kumar R, Raghavan BG, Subramanian VV, Sivasubramanian V (2011). Is phycovolatilization of heavy metals a probable (or possible) physiological phenomenon? – An in situ pilot-scale study at a leather-processing chemical industry. *Water Environment Research*, 83(4), 291-297.

Hanumantha Rao P, Ranjith Kumar R, Raghavan BG, Subramanian VV, Sivasubramanian V (2011). Application of phycoremediation technology in the treatment of wastewater from a leather-processing chemical manufacturing facility. *Water SA*, 37(1), 7-14.

Mohan N, Hanumantha Rao P, Ranjith Kumar R, Sivasubramanian V (2010). Mass cultivation of *Chroococcus turgidus* and *Oscillatoria* sp. and effective harvesting of biomass by low-cost methods. *Nature Precedings*, <http://dx.doi.org/10.1038/npre.2010.4331.1>.

Hanumantha Rao P, Ranjith Kumar R, Subramanian VV, Sivasubramanian V (2010). Environmental impact assessment of *Chlorella vulgaris* employed in phycoremediation of effluent from a leather-processing chemical industry. *Journal of Algal Biomass Utilization*, 1(2), 42–50.

Mohan N, Hanumantha Rao P, Ranjith Kumar R, Sivasankaran S, Sivasubramanian V (2009). Studies on mass cultivation of *Chlorella vulgaris* and effective harvesting of biomass by low-cost methods. *Journal of Algal Biomass Utilization*, 1(1), 29–39.

Vignesh M, Shivasankar S, Hanumantha Rao P, Ranjith Kumar R, Sivasubramanian V (2006). Phycoremediation of effluents from tannery and pharmaceutical industries – a lab study. *Indian Hydrobiology*, 9(1), 51–60.

Proceedings

Ranjith Kumar R, Hanumantha Rao P, Raghavan BG, Subramanian VV, Sivasubramanian V (2005). Studies on the extraction and purification of pigments from the effluent of an alginate industry. *Proceedings of National Symposium on ‘Microbial and Plant Biotechnology’* held at Loyola College, Chennai from 17th to 19th February 2005.

4. Research Interests (Specialisations):

Broad interest:

Algal Biotechnology, Environmental Microbiology

Specific areas:

- i) Microalgae cultivation for biomass production and carbon capture, Algal biofilm/mat production on solid substrates, Production of value-added products from algae, Biofuel production from algae, Marine algae cultivation – Hypersaline microalgae for biofuels.
- ii) Phycoremediation of industrial and domestic effluents and biomass production, Setting up of pilot-scale and industrial-scale bioremediation plants.

5. Courses taught:

Microalgal Biotechnology
Environmental Microbiology
Microbial Ecology
General Microbiology
Food Microbiology
Analytical Techniques in Biology

6. Awards:

MCC Seed Money Grant 2021

Ph.D. Research Fellowship Grant from Stahl India Pvt. Ltd (A Unit of Stahl International)

M.Sc. Project Grant from TNSCST under Students' Projects Scheme

University First Rank in M.Sc.

University Third Rank in B.Sc.

7. Presentations:

Conferences/Seminars/Symposia

Geethanjali U, Hanumantha Rao P (2020). Enhanced phycoremediation of domestic wastewater using activated algae systems in high-rate algal ponds. Poster presented in the Prof. T.V. Desikachary Birth Centenary International Symposium on "Biodiversity, Biology and Biotechnology of Algae" held at CAS in Botany, University of Madras, Chennai during 8th–10th January 2020.

Divya K, Judah Jacob, Samson Lijoseraj C, Jayandan SA, Ranjith Kumar R, Hanumantha Rao P (2020). Use of liquid seaweed fertilizer as microalgae growth enhancer under outdoor cultivation conditions. Poster presented in the Prof. T.V. Desikachary Birth Centenary International Symposium on "Biodiversity, Biology and Biotechnology of Algae" held at CAS in Botany, University of Madras, Chennai during 8th–10th January 2020.

Rebecca AO, Govindaswamy K, Hanumantha Rao P, Ratha SK, Chinnasamy S (2015). Impact of salinity on the physiological and biochemical traits of *Spirulina platensis*. Presented in the National Conference on 'Biomass, Bioenergy and Bioremediation' held at Madras Christian College, Chennai during 23rd and 24th February 2015.

Kansraj C, Minj N, Hanumantha Rao P (2013). Antioxidant, antibacterial and anticancer activities of *Chlorella* sp. and *Selenastrum* sp. isolated from sewage. Poster presented in the National Conference on 'Frontiers in Algology and Algal Biotechnology' held at Visva-Bharati (A Central University), Santiniketan, West Bengal from 15th to 17th November, 2013.

Chinnasamy S, Bhaskar S, Hanumantha Rao P (2012). Biofuels from Algae: Technology Development Initiatives of an Industry in India. Poster presented in 'Algae Biomass Summit' held at Sheraton Denver Downtown Hotel, Denver, CO, USA from 23th to 27th September, 2012.

Hanumantha Rao P, Chinnasamy S, Bhaskar S, Rengasamy R (2012). Algae Biofuels in India – An Industry Perspective. Presented in the International Algal Summit on "Algae for Sustainable Development" held at TERI University, New Delhi during 21st and 22nd February 2012.

Chinnasamy S, Hanumantha Rao P, Bhaskar S, Walters R (2011). A Rapid and Reliable Method for Estimating Microalgal Biomass Using a Moisture Analyser. Poster presented in 'Algae Biomass Summit' held at Hyatt Regency, Minneapolis, MN, USA from 24th to 27th October, 2011.

Hanumantha Rao P, Ranjith Kumar R, Raghavan BG, Subramanian VV, Sivasubramanian V (2009). Phycoremediation of effluent from a leather-processing chemical industry. Poster presented in the International Conference on 'Algal Biomass – Resources and Utilization' held at Stella Maris College, Chennai from 27th to 30th July 2009.

Mohan, N, Sivasankaran S, Hanumantha Rao P, Ranjith Kumar R, Sivasubramanian V (2009). Studies on mass cultivation of microalgae and effective harvesting of biomass by low-cost methods. Presented in the International Conference on 'Algal Biomass – Resources and Utilization' held at Stella Maris College, Chennai from 27th to 30th July 2009.

Muthukumaran M, Hanumantha Rao P, Ranjith Kumar R, Raghavan BG, Sivasubramanian V (2008). Occurrence of microalgae in wastewaters and industrial effluents. Presented in the National Conference on 'Current Trends in Algal Biodiversity and Biotechnology' held at CAS in Botany, University of Madras, Chennai during 7th and 8th February 2008.

Hanumantha Rao P, Raghavan B G, Subramanian VV, Sivasubramanian V (2006). SKY GEL – Application in micro-algal cultivation and phycoremediation. Presented in the National Symposium on 'Algal Biodiversity and its role in Bioremediation' held at RKM Vivekananda College, Chennai from 23rd to 25th September 2006.

Raghavan B G, Ranjith Kumar R, Hanumantha Rao P, Muthukumaran, M, Subramanian VV, Sivasubramanian V (2006). Phycoremediation of effluent from a chemical industry. Presented in the National Symposium on 'Algae, Man and Biosphere' held at AVVM Sri Pushpam College, Poondi, Tamil Nadu during 24th and 25th February 2006.

Vignesh M, Shivasankar S, Hanumantha Rao P, Ranjith Kumar R, Sivasubramanian V (2006). Phycoremediation of effluents from tannery and pharmaceutical industries – a lab study. Presented in the National Symposium on 'Algae and Environment' held at RKM Vivekananda College, Chennai during 24th and 25th September 2005.

Ranjith Kumar R, Hanumantha Rao P, Raghavan BG, Subramanian VV, Sivasubramanian V (2005). Studies on the extraction and purification of pigments from the effluent of an alginate industry. Presented in the National Symposium on 'Microbial and Plant Biotechnology' held at Loyola College, Chennai from Feb 17th to 19th 2005.

Raghavan BG, Subramanian VV, Ranjith Kumar R, Hanumantha Rao P, Sivasubramanian V (2004). Phycoremediation of industrial effluent. Presented in the National Symposium on 'Algal Biology and Industrial Applications' held at RKM Vivekananda College, Chennai during 25th and 26th September 2004.

8. Resource Persons:

- i) Serving as a Technical Expert (Microbiology) for TÜV SÜD Management Service GmbH, Munich, Germany, since 2016.
- ii) Served as a resource person in the Online Workshop on "Pitfalls and Pathways in Research: A Guided Workshop" organized by MCC Research Colloquium, Deanery (R&D) and Centre for Teaching & Learning of Madras Christian College held through 21-25 June, 2021.
- iii) Served as a resource person in a Webinar on "Algal Biotechnology: Opportunities, Challenges and Sustainability" conducted by Nehru Arts & Science College, Coimbatore, on 17th of October 2020.
- iv) Served as a resource person in the seven-day Virtual Workshop on "First principles of scholarly writing in drafting manuscripts" held through 10th-17th of August, 2020, organized for college faculty by St. Christopher's College of Education, Chennai, under UGC-PARAMARSH scheme.
- v) Served as a resource person in the TNSCST-funded Workshop on "Dynamic programme on extraction of natural colourant as value-added products from Spirulina biomass for socio- and economic empowerment of final year graduate students" conducted by Department of Botany, Madras Christian College, Chennai during February 2019.

- vi) Co-chaired a session in the National Conference on “Vistas in biodiversity, biology, biotechnology and nanotechnology of algae” conducted by the Department of Botany, Madras Christian College, Chennai/Seaweed Research and Utilization Association/Krishnamurthy Institute of Algology during September 2018.
- vii) Delivered a talk on the topic “Significance of biological Sciences in Industry/Research” in Adhiparasakthi College of Arts and Science, Kalavai, Vellore District, during August 2016.
- viii) Inaugurated Science Club in DAV Boys Senior Secondary School, Gopalapuram, Chennai, during June 2015 and delivered a talk on “Avenues for research in Biology”.
- ix) Served as a chief guest for Microbiology Association and delivered an invited talk on the topic “Role of Microbiology/Life Science graduates in Industry/Research” in SRM Arts and Science College, Chennai, during March 2015.
- x) Chaired a session in the National Conference on “Biomass, bioenergy and bioremediation” conducted by the Department of Microbiology, Madras Christian College, Chennai during February 2015.

9. Administrative Positions:

Associate Dean of Research (Sciences), MCC – Since July 2021

Coordinator, Entrepreneurship Development Cell, MCC – Since September 2020

Coordinator, PG Journal Club, Department of Microbiology, MCC – Jan 2016–May 2017

Coordinator, Environment Health and Sanitation Club, Department of Microbiology, MCC – 2016–19