Dr. Rachana Sharma

Post-Doctoral fellow (GRG EYUVA Centre)

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Highly motivated biochemist and researcher with a passion for translating scientific expertise into real-world solutions for health and environmental challenges. Proven track record of research and teaching excellence, seeking a faculty position to contribute to academic growth, mentor future generations, and advance the field of biosciences.

Professional Experience

RESEARCH

Dec 2022 - present	**BIRAC EYUVA Innovation Fellow (Postdoctoral)** *PSGR Krishnammal College, Coimbatore, Tamil Nadu, India*
Jan 2018 - Dec 2018	**Postdoctoral Research Associate (DBT-RA)** *IIT Madras, Chennai, Tamilnadu, India*

TEACHING

May 2022 – Nov 2022	**Assistant Professor** *Dr. N. G. P Arts & Science College, Coimbatore, Tamil Nadu, India*
Feb 2019 - Sep 2021	**Assistant Professor** *Amity University, Mumbai, Maharashtra, India*
June 2016 - March 2017	**Assistant Professor** *Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu.*

Education

2012 – 2016	**Ph.D. Biochemistry** *University of Mysore, Mysore, Karnataka, India*
2008 – 2010	**M.Sc. Biochemistry** *University of Mysore, Mysore, Karnataka, India*
2005 – 2008	**B.Sc. Chemistry, Botany, Zoology** *Mount Carmel College (Autonomous), Affiliated to Bangalore University, Bengaluru, Karnataka, India*

Selected Journal Publications

1. **Rachana D Sharma**, Katkar GD, Sundaram MS, et al. (2015). Oxidative stress-induced methemoglobinemia is the silent killer during snakebite: a novel and strategic neutralization by melatonin. *Journal of Pineal Research,* 59, 240-254 (**IF: 15.22**).
2. Katkar GD, Sundaram MS, **Rachana D Sharma**, et al. (2016). NETosis and lack of DNase activity are key factors in Echis carinatus venom-induced tissue destruction. *Nature Communication* 19, 11361 (**IF: 17.69**).
3. Katkar GD, Sundaram MS, **Rachana D Sharma**, et al. (2014). Melatonin alleviates Echis carinatus venom-induced toxicities by modulating inflammatory mediators and oxidative stress. *Journal of Pineal Research*, 56 (3), 295-312 (**IF: 15.22**).
4. **Rachana D Sharma**, Gajanan D. Katkar, Mahalingam S, et al. (2017). Melatonin inhibits snake venom and antivenom induced oxidative stress and augments treatment efficacy. *ActaTropica* 169, 14-25 (**IF: 3.11**).
5. Katkar GD, **Rachana D Sharma**, Vishalakshi GJ, et al. (2015). Lupeol derivative mitigates Echis carinatus venom-induced tissue destruction by neutralizing venom toxins and protecting collagen and angiogenic receptors on inflammatory cells. *Biochim Biophys Acta*, 1850, 2393-2409. (**IF: 3.8**)
6. **Rachana Sharma** and Prabhu Thangadurai (2023). Palladium-based catalytic treatment and a rhizobacterial-assisted detoxification for the enhanced removal of lindane. *Nature Environment and Pollution Technology*, vol. 22 (4), pp 1881-1890.
7. **Rachana Sharma** and Prabhu Thangadurai (2024). Circular bioeconomy: Transforming black soldier fly (BSF) larval and pupal exuviae to functional chitooligosaccharides with multifaceted bioactivity. *Resources, Conservation and Recycling*, Under revision (**IF: 13.2**).

Selected Conference Presentations

1. **Rachana Sharma** and Prabhu Thangadurai. Chitin from *Hermetia illucens* exoskeletons: A sustainable biopolymer and its derivative chitooligosaccharides for mitigating oxidative stress. *3rd International conference on Material Science and Engineering* held on 23rd to 25th November 2023 (oral presentation), **NIT Jalandhar**, Punjab, India.
2. **Rachana Sharma** and Prabhu Thangadurai. Development of a low-cost biopod for the valorization of food waste using black soldier fly: Design optimization, bioconversion performance and nutritional evaluation, *4th International Conference on Waste Management* held on 18th to 19th May 2023 (oral presentation), **IIT Guwahati**, Assam, India.
3. **Rachan Sharma** and Kemparaju K. Comparative efficacy of monovalent verses polyvalent antivenom raised against Big 4 snakes of India. *National conference on Snakebite Management* held on 10th to 12th December 2012 (poster presentation), **University of Mysore**, Mysore, Karnataka, India.

Book Chapter(s)

1. Prabhu Thangadurai and **Rachana Sharma** (2024). Emerging trends of extremozymes in industrial biotechnology. IIP Book Series "Futuristic Trends in Biotechnology", Volume 3, 2024. (Accepted)

Achievements and Awards

Awards:

- Qualified **CSIR-JRF-NET** joint exam (Junior Research Fellow + National Eligibility Test for lectureship) held by CSIR-UGC, All India Rank, **(AIR) 83**, (**2010**)
- Awarded **BIRAC EYUVA Innovation fellow** from BIRAC with research grant amount of 7.5 lakh rupees (**2022**).
- Awarded **DBT-RA** (Research Associateship granted by Department of Biotechnology) (**2018**).
- Qualified **GATE 2010** exam.
- Qualified **GATE 2011** exam.

Consultancy & Collaboration:

- Industrial partners: **Kovai BSF**
  - Optimize BSF insect rearing protocols; Characterize and utilize BSF-derived valuable bioproducts such as chitin and insect oil.
- Industrial partners: **VT Ecogreen Technologies Pvt Ltd**
  - Charecterization of phytochemicals from Indian spices.
- Academic partners: **PSG College of Pharmacy (MoU signed)**
  - Screening of compounds for anti-ophidian properties.

Achievements:

- Amity **Campus Mentor** 2020 for esteemed UN Millennium Fellowship program.
- Amity **Campus Mentor** 2021 for esteemed UN Millennium Fellowship program.

Project(s)

1. **Current on-going project**:
   - **Scheme**: BIRAC EYUVA (Innovation fellow grant), Funding Agency: BIRAC
     Proposal Title: Development of pilot scale production of Thermostable Alkaline Protease enzyme.
     Duration: 18 months
     Grant amount: 7.5 Lakh Rupees
     Application reference number: BT/IF0036/01/22

Patent: In progress

2. **Projects applied**:

- **Scheme**: SERB POWER, Funding Agency: SERB
  Proposal Title: Sustainable Extraction of Chitin and Melanin from Black Soldier Fly Exuviae: Towards Innovative Biomaterials and Therapeutic.
  Duration: 3 years
  Grant amount: 30 Lakh Rupees
  Application reference number: 162024002238
  Status: Under Scrutiny

- **Scheme**: ICMR Task Force Project, Funding Agency: ICMR
  Proposal Title: Mitigation of mortality and morbidity caused by 'Big 4' in India by: Development of LIFA (Lateral Flow Immuno Assay) based kit for venom detection and formulation of first-aid therapy.
  Duration: 3 years
  Grant amount: 149 Lakh Rupees
  Application reference number: 2022-18043/F1
  Status: Under Scrutiny

Professional Affiliations

- Member, Indian Science Congress.
- Member, Society of Biological Chemists (India).
- Member, Society for Applied Microbiology

References

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