

OCULAR PHARMACOLOGY & PHARMACY DIVISION

Dr. Rajendra Prasad Centre for Ophthalmic Sciences
All India Institute of Medical Sciences, New Delhi – 110029

In-charge: Dr. T. Velpandian, Professor

Faculty: Dr. Nabanita Halder, Professor

Facilities Established

HPBAF – High Precision Bio-analytical Lab (DST-FIST grant)

MolDyne – Molecular Dynamics Lab

OcuCel – Cell Culture Facility for *in vitro* Drug Screening

NODDL – Novel Ocular Drug Development Lab

ADD-FOND – Advanced Drug Delivery Facility for Ocular Neovascular Diseases

GLP-Disp – Pharmacy (IV-Parenteral dispensing Facility)

Key Research Areas

- Pharmacological relevance of ocular transporters
- Bio-intelligence
- Pharmacovigilance- monitoring and understanding the relevance of environmental pollutants (antibiotics, endocrine disruptors, etc.)
- Omics profiling of ocular disorders- a step towards personalized medicine
- Innovations in technology transfer from bench to bedside

Patient Care

- Dispensing nearly 40 drugs formulations (fortified, extemporaneous preparations, injectables, biologicals) for the patients coming to Dr. R. P. Centre, AIIMS, New Delhi
- Dispensing injectables like **Bevacizumab, Botox and TPA ampules**
- Dispensing customized drugs (preservative free etc.) for other Departments in AIIMS
- **Provision to enable corneal preservation for transplantation (PECPT)** – Free distribution of **MK Media** (Corneal Preservation Medium) and **ExtStorsol** (Extended Corneal Storage Medium) to 180 Govt eye banks, 24 states in India (AIIMS & MHFW Initiative)

Community Services

- Involved in National Security along with DRDO – **Developing antidotes for Chemical warfare**
- Taxane content analysis in *Taxus* species of Himalayan region – **Tribal welfare**
- Toxic dyes in Holi colors revealed – **Malachite toxicity**
- Glaucoma Patient knowledge assessment and awareness program for public
- Two National Bio-analytical workshops promoting Phase I studies in India
- Quality of **spectacle lenses** available in India – **Project ISUVRA (BIS)**
- **Rampur Chemical Spell tragedy** – Revealed
- **TransReCon™** development for sterile pharmaceutical preparations for unstable formulations – under **BIRAC-BIG** Innovation Grant
- Development of high throughput technology to **monitor environmental antibiotic dispersion** and their impact on AMR – Grand Challenges Exploration India, Bill & Melinda Gates Foundation
- **COVID-19 Contribution** – Production of disposable face shields, hand, mask and surface sanitizers, lift-man keys to protect against SARS-CoV-2 from air transmission, human contact and contaminated objects.
- Assessment of safe plasma levels of chloroquine and hydroxychloroquine - **Addressing the HCQ dilemma**

Research/patents that have impacted national policies or practice

- Velpandian T, Halder N, Nath M, Das U, Moksha L, Gowtham L, Batta SP. Un-segregated waste disposal: an alarming threat of antimicrobials in surface and ground water sources in Delhi. *Environ Sci Pollut Res Int.* 2018 Oct;25(29):29518-29528. (Reflected in Rajya Sabha Question (U-749 12/02/2019) sorting remedial actions)
- Developed a newer injectable/topical water soluble natamycin for ocular mycotic infections Indian Patent- Novel topical natamycin formulation for ocular antifungal therapy. Indian Patent: 1950/DEL/2011 (clinical trials confirmed and currently getting commercialized)
- A device, method and kit for the reconstitution of a solid or semi solid pharmaceutical composition (WO2018163201A1 WIPO (PCT) & Chinese patent (granted) Chinese Patent No. ZL 2018900007835 Y/R:FP0171/ca O/R:VU-195029-5955. (under commercialization)

Ph. D. Scholars

S.No.	Name of Scholar	Title of Thesis
1	Mr. Tapas Kumar Roy	Ocular Disposition of Bio-therapeutics and the Role of Peptide Transporters in Blood-Ocular-Barrier
2	Ms. Anannya Tuli	Molecular Mechanisms Involved in the Development of Insulin Resistance by the Environmental Exposure of Phthalates
3	Mr Nihal Singh	Evaluation of the involvement of selected environmental pollutants on neurological disorders
4	Mr Abhishek Tiwari	Developing next generation media for organ preservation

Post Doctoral Fellows

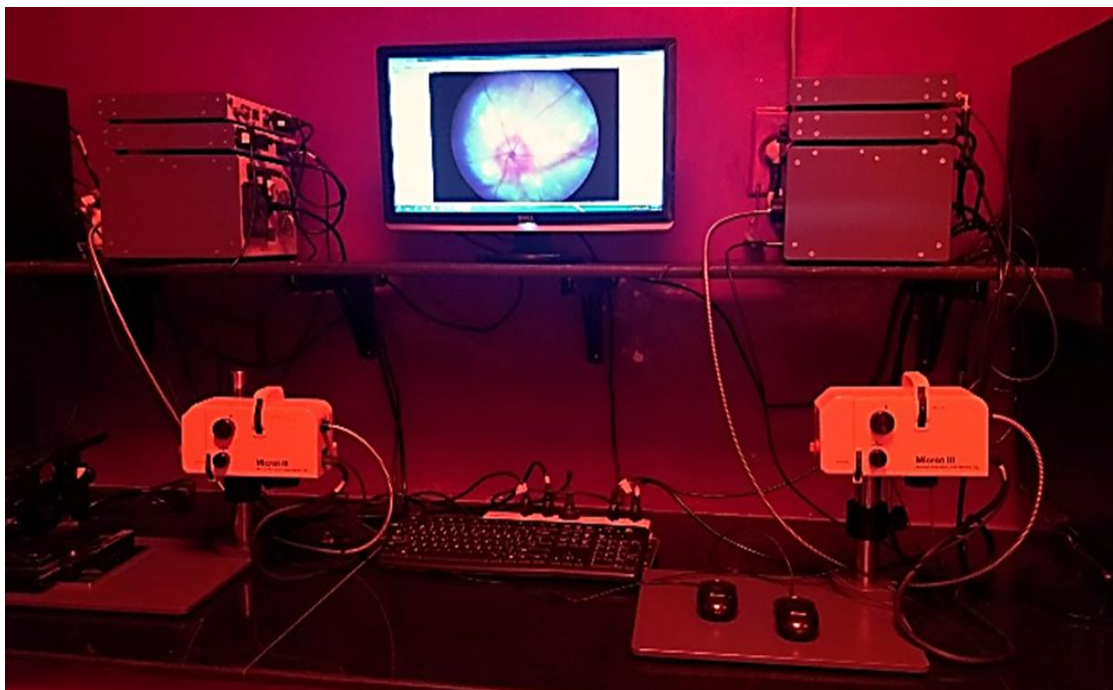
1	Dr Madhu Nath (Ramalingaswami Fellow)
2.	Dr Gayetri Suresh

Lab pictures

High Precision Bio-analytical Facility (HPBAF-DST)



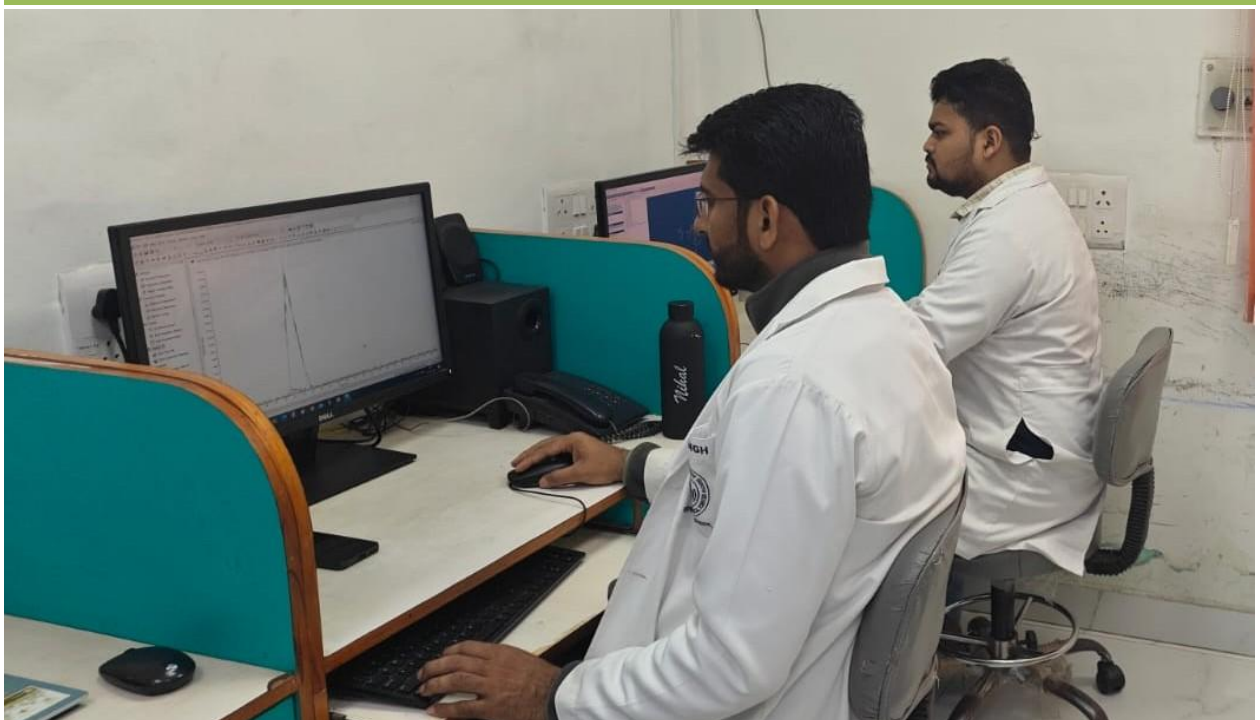
Electrophysiology Lab



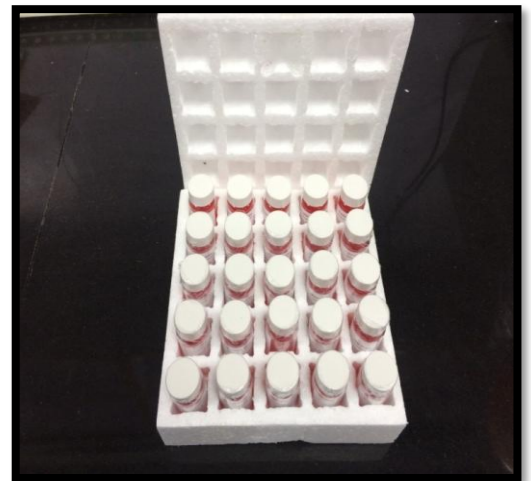
Pharmaceutics Lab



Molecular Dynamics lab



GLP Compliant Facility for Preparation of Corneal Preservation Media (ExtStorsol)



GLP Compliant Extemporaneous compounding facility



Topical Formulations

- Antimicrobials
- Artificial Tear
- Mydriatics
- Cycloplegics

Injectables

- Bevacizumab
- Botox

Biologicals

- Autologous serum
- Platelet rich plasma (PRP)



Cell Culture Facility



Experimental Pharmacology Lab



Analytical lab



Molecular Pharmacology Lab

