

# Shivay Parihar

+91-86195 92898 | shivayp03@gmail.com | [Portfolio website](#) | [Linkedin](#)

## ACADEMIC QUALIFICATIONS

---

### Dr. Sampurnanand Medical College

*Bachelor of Medicine and Bachelor of Surgery*

Aug. 2017 – Mar. 2023

Jodhpur

- Aggregate: 67%, Top five percent in 250 students

### TOEFL

Oct. 23, 2022

- Score: **117**, Reading(30), Listening(29), Speaking(28), Writing(30)

## PUBLICATIONS AND CONFERENCE PRESENTATIONS

---

**Parihar S**, Verma M, Sharma S, Meena R. *Prevalence of premature hair greying, its associated factors and impact on quality of life in medical students from Rajasthan, India*. 2023. Journal of Medical Evidence(available ahead of print).

**Parihar S**, Kaur RJ, Singh S. *Flashback and lessons learnt from history of pandemics before COVID-19*. Jul. 2021. J Family Med Prim Care.

**Parihar S**, Singh SK, Jain S, Vankayala R. *Review on the role of nanomaterials in aging related therapeutics*. 2023. (under preparation)

**Parihar S**, Singh SK, Vankayala R. *NIR activable mesoporous silica nanoparticles for targeting senescent cells*. 2023. (under preparation)

**Shivay Parihar**, Garima Nath, Divesh Kumar Avasthi. *PillPerfect: Automated solution for enhanced medication adherence*. Jun. 2023. Medical device hackathon, Indian Institute of Technology, Bombay.

**Shivay Parihar**. *Use of Placebos as an alternative remedy to reduce drug burden in the elderly*. Aug. 2018. Conference of Indian Academy of Geriatrics, Jodhpur.

**Shivay Parihar**, Dr. Arnab Mukhopadhyay. *RNAi screening to identify epigenetic regulators of dietary restriction mediated endoplasmic reticulum hormesis and longevity*. Dec. 2021. 3rd National Biomedical Research Competition, SYBS, India.

Shubham Kumar Singh, **Shivay Parihar**, Anthony Vinc. *Demonstration of nanoparticle biodistribution, targeting, and clearance in the human body*. Nov. 2022. Open-House, Indian Institute of Technology, Jodhpur.

## ACADEMIC HONORS AND ACHIEVEMENTS

---

- Secured **All India Rank 1165** in National medical entrance(NEET), 2017- with 1,138,890 appearing students.
- Awarded **First prize** at oral and poster presentation at the conference of Indian Academy of Geriatrics, Jodhpur.
- **Awarded the short-term studentship, 2019** by Indian Council of Medical Research(Ref. No.- 2019-05283). One of five awardees among nearly 1,000 students in the institute in 2019.
- **Awarded the Summer research fellowship, 2021** by the Indian Academy of Sciences(Id:LFS2592).
- **Led winning team of medical device hackathon** at AIIMS-IIT, Jodhpur, and finale participant at IIT, Bombay among 14 institutes across India.

## RESEARCH PROJECTS

---

### Nanoparticle mediated selective clearance of Senescent cells

Jun. 2022 – Present

*Indian Institute of Technology*

Jodhpur

- Developed two novel strategies deploying mesoporous silica nanoparticles(MSNs) for selective targeting and clearance of senescent cells.
- Implemented a new working protocol for the template extraction of MSN nanoparticles.
- Designed, and performed each step of the synthesis, and ten different physiochemical, and morphological characterizations of the nanoparticles, followed by cellular studies and drug treatment experiments.
- Currently in preparation for one conference presentation in 2024 and one publication in 2023.

## **Automated pill dispenser for the Indian market**

May 2023 – Present

*Indian Institute of Technology*

*Jodhpur*

- Shaped a problem statement for medication adherence that can be worked on by engineering solutions based on clinical experience.
- Collaborated with a team of a dentist, and electrical and mechanical engineers to conceive novel solutions that can introduce an automated pill dispenser in the Indian market.
- Guided engineers on the clinical aspects of developing a prototype for the device; conducted surveys among physicians and patients with chronic multi-morbidities.
- Presented the work as an oral and poster presentation, securing interest from three investors and the first prize at the medical device hackathon 2023 preliminaries, Indian Institute of Technology, Bombay.

## **Epigenetic regulation of Dietary restriction mediated ER-hormesis**

Aug. 2021 – Oct. 2021

*National Institute of Immunology*

*New Delhi*

- Conceived and spearheaded an independent research project in a period of two months on RNA interference screening to discover epigenetic regulators of dietary restriction-mediated endoplasmic reticulum hormesis and longevity studying *C. elegans* as a model organism.
- Identified five epigenetic regulators of ER-hormesis through primary screening to be further screened using confirmatory assays.
- Utilized eat-2(-) mutant *C. elegans* as a dietary restriction model with GFP linked to hsp-4 to study ER-stress.
- Presented the work after selection at the 3rd National Biomedical Research Competition, 2021.

## **Investigation of DNA methylation at promoters of longevity genes**

Jun. 2021 – Aug. 2021

*University of Hyderabad*

*Online*

- Investigated changes in CpG methylation at promoters of longevity genes with age.
- Completed project under Summer research fellowship for Indian Academy of Sciences.
- Conducted online epigenomics data access and analysis.
- Designed primers for methylation-specific PCR for testing clinical samples.

## **Epidemiology of Premature Hair Graying**

Apr. 2019 - Sep. 2019

*Dr. S.N. Medical College*

*Jodhpur*

- Conducted the first epidemiological study of premature hair graying from the region of Western Rajasthan, India.
- Determined the first correlation of premature hair graying with lifestyle choices and sociodemographic factors among medical students from India.
- Authored a first-author publication contributing to all data analysis, manuscript writing, editing, and revisions.

## **PROFESSIONAL EXPERIENCE**

---

### **Resident-Intern**

Mar. 2022 – Mar. 2023

*Dr. Sampurnanand Medical College & Affiliated hospitals*

*Jodhpur*

- Conducted the diagnosis and management of common ailments in the branches of medicine and surgery.
- Shadowed physicians and surgeons working across 17 departments in four hospitals around Jodhpur.
- Responsible for assisting residents with diagnostic procedures and executing physician-prescribed treatment protocols.
- Oversaw hospital wards for monitoring and maintaining patient status, sample collection, prescription adherence, discharge, and follow-up care.
- Contributed to a team of three interns rotationally assigned to four wards in internal medicine, six wards in general surgery, seven wards in pediatrics, six wards in obstetrics and gynecology, and three primary health centers under community medicine with an average patient attendance of 25 per ward.

### **Rajasthan Medical Council**

Aug. 2023 – Aug. 2033

*Permanently registered Allopathic doctor*

*RMC-63383*

## TECHNICAL SKILLS

---

**Biochemistry and molecular biology:** gDNA/RNA/plasmid DNA isolation and quantification, protein/RNA isolation and quantification, ELISA, primer design, PCR, real time-PCR, Western blotting, SDS-PAGE.

**C. elegans:** Stage Identification, growth, handling (feed preparation/bacterial culture, picking, stacking, crossing), Stress assays (ER, Osmotic stresses), RNA interference screening, bleach-based developmental stage synchronization, strain revival and freezing, fluorescence microscopy and analysis, **dietary restriction protocols** (peptone dilution, bacterial dilution, and eat-2 mutants).

**Cellular culture:** Passaging, freezing and revival, cell-counting and seeding, contamination detection and troubleshooting, **cellular senescence studies**, drug treatment studies, and **staining assays** (X-gal Beta-Gal, DCFH-DA-ROS, DAPI, Propidium Iodide, MTT/cell-viability), flow cytometry and FACS.

**CRISPR/cas9:** Knock-out/in-model generation, preparation of sgRNA constructs, in-vitro transcription, genotyping strategies for F0 founders, editing on SnapGene software.

**Nanomaterial synthesis and characterization: Mesoporous silica nanoparticles** (Synthesis, template-extraction, surface functionalization(NH-2, Lactose), drug loading/release, near-infrared laser treatment); synthesis of gold nanoparticles and nanorods, carbon quantum dots); (**Characterizations:** UV-visible and FT-IR spectroscopy, Thermogravimetric analysis, BET adsorption/desorption analysis, Field emission-scanning electron microscopy, Dynamic light scattering, and zeta potential measurements.)

**Lab animal experiments: Zebrafish** (handling, anesthesia, and necropsy); **mice, rats** (Handling, restraint, blood collection, dosing[IO, IV, IP], anesthesia, and necropsy); **guinea pigs, rabbits** (Handling, restraint, and blood collection.)

**Programming: Python** (libraries: NumPy, pandas, scikit-learn; software: Jupyter, Spyder), R (Linux environment basics, Rstudio, ggplot, dplyr, signr, bioconductor, methylation[WGBS] sequencing analysis, RNA sequencing analysis.)

**Data Analysis:** Epi-info, IBM-SPSS, Galaxy online genomics analysis, GraphPad, Excel.

**In-silico drug discovery:** Pharmacokinetics(ADMET), Pharmacodynamic analysis, Toxicity studies(Toxtree, Toxread, QSAR), Molecular docking(Autodock Vina).

## COURSES AND WORKSHOPS

---

**Medical courses:** Human anatomy, **biochemistry**, human **physiology**, **pathology**, **microbiology**, pharmacology, general medicine, general surgery, dermatology, otorhinolaryngology, ophthalmology, community medicine, anesthesiology, orthopedics, radiology, psychiatry, pediatrics, emergency medicine, obstetrics and gynecology, respiratory and tuberculosis medicine, and forensic medicine.

**Python:** Computing in Python I, II, III, IV, Georgia Tech, April to October 2020 (edX); Using Python for Research, Harvard University, December 2020 (HarvardX PH526x), (edX).

**CRISPR/cas9:** One week hands-on genome editing using CRISPR/cas9 workshop, National center for biological sciences, July 12-16, 2022, Bengaluru.

**Lab animal experiments:** Workshop on laboratory animal handling and management, Tamil Nadu Veterinary and Animal Sciences University, May 16-26, 2023, Chennai.

**R:** Decode Life Workshop on **Data Science & Machine Learning for Bioinformatics with “R”** from September 26 to October 22, 2022 and on **Bioinformatics and data science with R and SQL** from April 15 to May 16, 2023.

## EXTRA-CURRICULARS

---

**Mentoring:** Mentored and guided five junior batch students to secure ICMR-STs projects and conduct their research.

**Writing:** I write about aging, epigenetics, and science fiction on my [blog](#).