Shivay Parihar

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ACADEMIC QUALIFICATIONS

Dr. Sampurnanand Medical College — Aug. 2017 – Mar. 2023
Bachelor of Medicine and Bachelor of Surgery — *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.

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

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.* Aug. 2021. National Biomedical Research Competition, SYBS, India.

Shubham Kumar Singh, **Shivay Parihar** , Anthony Vincy. *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 981** 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 and one publication.

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 on the clinical aspects of developing a prototype for the device, including conducting surveys from 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

National Institute of Immunology

Aug. 2021 – Oct. 2021

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 used as dietary restriction model with GFP linked to hsp-4 to study ER-stress.
- Presented the work selected at the National Biomedical Research Competition, 2021.

Investigation of DNA methylation at promoters of longevity genes

University of Hyderabad

Jun. 2021 – Aug. 2021

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

Dr. S.N. Medical College

Apr. 2019 - Sep. 2019

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

Dr. Sampurnanand Medical College & Affiliated hospitals

Mar. 2022 – Mar. 2023

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.

Technical Skills

Biochemistry and molecular biology: gDNA/RNA/plasmid DNA isolation and quantification, protein/RNA isolation and quantification, ELISA, primer design, PCR, RT-PCR, Gel Electrophoresis, Western blotting, SDS-PAGE, Flow cytometry(FACS).

C. elegans: Stage Identification, growth, handling (feed preparation/bacterial culture, picking, stacking, crossing), Stress assays (ER, Osmotic stresses), RNA interference, bleaching, and 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.)

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.)

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, ggplot, dplyr, siqnr, biostrings, next-generation sequencing analysis, methylation sequencing analysis; Rstudio).

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

In-silico drug discovery: Pharmacokinetic(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, (edX); Using Python for Research, Harvard University (HarvardX PH526x), (edX).

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

Lab animal experiments: Workshop on laboratory animal handling and management, Tamil Nadu Veterinary and Animal Sciences University, from May 16 to May 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.