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📍 Lab 101, Mehta Family Centre for Engineering in Medicine (MFCEM), IIT Kanpur

SEEMA KULDEEP
GRADUATE STUDENT

About Me

Graduate student in Biological science and Bioengineering department (BSBE) at Indian Institute of technology kanpur (IIT Kanpur). I am exploring the role of G-protein coupled receptors (GPCRs) in macrophage and its impact on metabolic disorders.

Research Projects

IIT Kanpur 2021 - Present
Ph.D student

I am investigating the role of GPCRs in macrophages and their influence on metabolic disorders, particularly obesity and type 2 diabetes. By employing a chemogenetic approach using Designer Receptor Exclusively Activated by Designer Drug (DREADDs) expressed in transgenic mice. I aim to deepen my understanding of GPCR signaling in macrophages and develop novel therapeutic drug.

Central university of Rajasthan 2020 - 2021
Master's student

I worked on identifying a gene signature related to cholesterol metabolism for cancer diagnosis and as a predictive biomarker. I identified 'RXRA, SOAT1, SQLE, ACAT1/HSD17B7' as key genes for prognosis in various cancer types. I gained experience in KEGG pathway analysis, The Cancer Genome Atlas (TCGA), ULCAN server, cBioportal, and Kaplan-Meier plotter.

Central university of Rajasthan 2018 - 2019
Undergraduate student

I created a phylogenetic tree to compare the evolutionary relationships of the proteins involved in autophagy, necrosis, and apoptosis using clustal omega, which would provid an insight in developing prospective drug targets in cancer and various infectious diseases.

Education

Year	Degree	Institute
2021	Integrated Msc-Biochemistry	Central University of Rajasthan
2016	CBSE (XII)	Saint Soldier Public School

Awards

- Central Universities Common Entrance Examination (CUCET) 2016
- Joint Entrance Test for Masters (JAM) 2019
- Graduate Aptitude Test in Engineering (GATE): XL and BT 2020
- Council of Scientific & Industrial Research (CSIR) NET-JRF 2021

Publications

- Thrombospondin 2 is a key determinant of fibrogenesis in non-alcoholic fatty liver disease T Kimura, T Iwadare, S Wakabayashi, **S Kuldeep**, T Nakajima, ...Liver International 44 (2), 483–496.
- Dysregulated cholesterol regulatory genes as a diagnostic biomarker for cancer **S Kuldeep**, S Soni, A Srivastava, A Mishra, LK Sharma... - The journal of gene medicine, 2023.

Conference

- Participated in a conference entitled "Recent Trends in Cancer Research and Precision Medicine" (16th to 18th December 2022).
- Partcipated in International Conference on Molecular Basis of Diseases & Therapeutics (ICMBDT) March 8-10, 2019

Workshop

- Workshop on genome informatics, Linux commands, R programming, single–cell RNA seq data analysis, and chip seq analysis organised by De<CODE> life. dec 2021

Poster presentation

- Poster presentation entitled as "Understanding the Role of Macrophage Gi Signaling in Whole Body Glucose Homeostasis using Chemogenetic Approach" , MFCEM inauguration and research symposium at IIT Kanpur

Skills

- Molecular Biology techniques: Polymerase Chain Reaction (PCR)/qPCR, Gel Electrophoresis, Western Blotting, Cloning, Transformation/Transfection, ELISA (Enzyme-Linked Immunosorbent Assay), Flow Cytometry, and DNA/RNA Extraction, Immunohistochemistry, Immunofluroscence.
- Cell culture: Bone marrow derived macrophages (BMDM), Peripheral blood mononuclear cells (PBMC), Raw 264.7, 3T3-F442a, C2C12, HEK293.
- Animal experiments: Mice handling, Tail vein injection (I.V), Intraperitoneal Injection (I.P), Glucose tolerance test (GTT), Insulin tolerance test (ITT), Pyruvate tolerance test (PTT), Alanine tolerance test (ATT), Glucose stimulated insulin secretion (GSIS), .

References

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