



Dhruv Kumar, Ph.D.

Professor

Specialization: **Translational Cancer Research, Cancer Stem Cell, Cancer Cell Metabolism, Tumor Microenvironment, Tumor Heterogeneity, Autophagy, Exosomes, Genome Editing, NGS Data analysis, Drug Designing, Drug Repurposing and Bioinformatics**

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After earning B.Sc. in Chemistry from Banaras Hindu University (BHU), Varanasi and M.Sc. in Bioinformatics with Distinction from the University of Allahabad (AU), Prayagraj, Dr. Dhruv Kumar completed his Ph.D. in Cellular, Molecular and Industrial Biology from the University of Bologna (UNIBO), Italy under one of the prestigious fellowships of Ministry of Human Resource and Development (MHRD), Indo-Italian Government fellowship. After completion of his PhD, he received five years of Postdoctoral training from the School of Medicine, University of Kansas Medical Center, Kansas City, USA. Currently, he is working as a Professor of Cancer Biology and Molecular Medicine at Amity Institute of Molecular Medicine and Stem Cell Research. He has worked on several cancers, including Prostate, Pancreatic, Brain, Breast and Head and Neck Cancer focusing on understanding the molecular mechanism (s) of the regulation of Autophagy and Apoptosis in Cancer Stem Cells (Prostate, Pancreatic, Brain and Breast). Specifically, he studied the molecular mechanism (s) of induced Autophagy in Cancer Stem Cells (CSCs) via PI3K/Akt/mTOR signaling pathways and molecular cross-talk between the tumor microenvironment (Cancer Associated Fibroblast (CAF)) and Head and Neck Squamous Cell Carcinoma (HNSCC) via HGF/c-MET and bFGF/FGFR signaling pathways, intra-tumor mutational heterogeneity. Currently, his lab is exploring the Autophagy-Metabolic axis in cancer cells (head and neck, oral, breast, and brain) and tumor microenvironment for the development of therapeutic approach. Recently, his group has significantly contributed in Drug Designing and Drug Repurposing for COVID-19. Apart from his research, he is actively involved in teaching courses at UG, PG and PhD level related to Cancer Biology, Stem Cell Biology, Molecular Medicine and Bioinformatics.

Fellowships and Awards:

1. **Senior Scientist Award, Society of Biomedical Laboratory Scientists, India (2019)**
2. **Scholar-in-Training Award, American Association for Cancer Research (AACR), USA (2016)**
3. **K-INBRE Postdoctoral Award, National Institute of Health (NIH), USA (2015)**
4. **8th EBSA European Biophysics Congress Bursaries Award (EBSA), Italy (2011)**
5. **Indo-Italian Government Scholarship Award (MHRD-Delhi), India (2008)**

Ongoing Research Projects:

1. **"Repurposing of drugs and validation of lead compounds against main protease and RNA dependent RNA polymerase of SARS-CoV-2"**, BRICS-DST. (PI & Coordinator)
2. **"Assessment of Female reproductive health and child health risks in Arsenic Exposed population of Bihar"**, ICMR New Delhi. (Co-PI)
3. **"Understanding the Metabolic Cross-Talk between Head and Neck Squamous Cell Carcinoma and Tumor Associated Fibroblasts"**, SERB-Department of Science and Technology, Government of India. (PI)

Selected Recent Publications:

1. Kumar S, Sharma PP, Shankar U, **Kumar D** et al. (2020). Discovery of New Hydroxyethylamine Analogs against 3CL pro Protein Target of SARS-CoV-2: Molecular Docking, Molecular Dynamics Simulation, and Structure-Activity Relationship Studies. *J Chem Inf Model*. 60(12), 5754–5770 (IF: 4.5)
2. Sibi Raj, Sartaj Khuranaa, Ramesh Choudhari et al. (2019). Specific targeting cancer cells with nanoparticles and drug delivery in cancer therapy. *Seminars in Cancer Biology*. 69(2), 166-177 (IF: 11)
3. **Kumar, D.**, New. J., et al. (2018). "Cancer-associated fibroblasts drive glycolysis in a targetable signaling loop implicated in head and neck squamous cell carcinoma progression." *Cancer Research*. 78 (14), 3769-3782 (IF: 9.1)
4. **Kumar, D.**, Shankar, S., et al. (2014). "Rottlerin induces autophagy and apoptosis in prostate cancer stem cells via PI3K/Akt/mTOR signaling pathway." *Cancer Letters*. 343(2): 179-189. (IF: 6.4)
5. Shankar, S., **Kumar, D.**, et al. (2013). "Epigenetic modifications by dietary phytochemicals: implications for personalized nutrition." *Pharmacology & Therapeutics*. 138(1): 1-17. (IF: 11.00)
6. **Kumar, D.**, Shankar, S., et al. (2013). "Rottlerin-induced autophagy leads to the apoptosis in breast cancer stem cells: molecular mechanisms." *Molecular Cancer* 12(1): 171. (IF: 10.6)