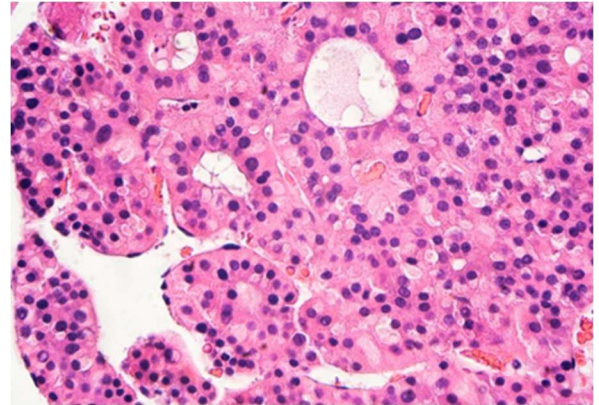


USING ENDOCYTIC PROTEINS AS ANTICANCER AGENTS

Need - Oxidative stress is the driving force for many human illnesses such as liver cancer, which impacts millions of people every year. Increased oxidative stress helps cancer cells to proliferate and make the cells metabolically active. It is unknown how far the enhancement of the thioredoxin system offers in sufficient protection against liver cancer. Furthermore, it is not clear whether the protective effect of clathrin-mediated endocytosis (CME) inhibitors, like chlorpromazine, is modulated by the thioredoxin system. There is an increased need to study mitochondrial (powerhouse of the cells) function and dynamics associated with liver cancer and its treatment.



Vision - We hypothesize that selective inhibition of CME by Thioredoxin-1 protein, a small redox molecule, will be shown to restrict the survival of cancer cells through their direct effect on mitochondrial functions and dynamics. We further hope to confirm that endocytosis has crucial importance for regulating metastasis of cancer cells.

Research – Thioredoxin system is a very powerful detoxifying system which regulates redox environment and reduces oxidative stress. This project studies the useability of (CME) pathway and thioredoxin overexpression in cell protection and prevention of liver cancer development and metastasis in preclinical models.

Impact – This cutting-edge research study has the potential to deliver new strategies in cancer treatment by diminishing the survival chances of liver cancer cells and minimizing their migration potentials. We believe that our study will lay a foundation for direct translation into clinical and therapeutic trials.



Who We Are: Professor Nilanjana Maulik is Professor of Molecular Cardiology and heads the Angiogenesis Laboratory at the Department of Surgery, UConn Health in Farmington. She currently runs 7 dynamic laboratories at UConn Health. She has published 170 original peer reviewed articles, 35 book chapters, and has edited a book on epigenetics and human diseases. She can be reached at nmaulik@uchc.edu

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