Targeted Therapies

FOR PANCREATIC CANCER

UC RIVERSIDE School of Medicine
CENTER FOR HEALTH DISPARITIES RESEARCH

City of Hope
UC RIVERSIDE
U54 CARE Partnership

UCR/City of Hope Comprehensive Cancer Center Partnership
(Pilot Project #3 Utilizing RELM-alpha deficient (M2 Macrophage-polarized) mice to develop novel desmoplastic models and targeted therapies for pancreatic cancer)

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SUMMARY

Cancer cells emerge from specific tissues or organs, such as the pancreas, and so uncontrolled growth of pancreatic cells can eventually form a pancreatic tumor. However, normal tissues are not built as collections of only a single type of cell, as other cells with less specialized features are also an essential part of the tissue, including blood vessel cells, fibroblasts that build connective tissue, and immune cells such as macrophages. Similarly, while tumors grow from a single cancer cell, they also begin to gather a variety of other cell types that are drawn to the tumor. For example, as the tumor requires more nutrients to support their growth, they also promote the growth of blood vessels to supply nutrients. The tumors also accumulate connective tissue components produced by fibroblasts, and as the complex mix of cells develops in the tumor, it can also affect the way the tumor grows, and even potentially resist the entry of chemotherapy drugs aimed at killing off the tumor cells. Therefore, one important area of cancer research is understanding how these complicated assemblies of mixed cell types, known as the Tumor MicroEnvironment (TME) are put together and how the cells interact.

RESEARCH TEAM

Lead PI: Meera G. Nair, PhD (UCR)
Co-Lead: Edwin R. Manuel, PhD (CoH)

PUBLICATION

Tumor-colonizing E.coli expressing both collagenase and hyaluronidase enhances therapeutic efficacy of gemcitabine in pancreatic cancer models

MORE INFORMATION

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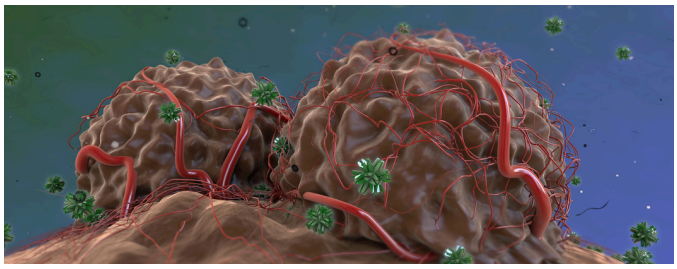

RESEARCH PROJECT

In this project, we study the impact of the mixtures of tumor and associated non-tumor cells in pancreatic ductal adenocarcinoma, which is an especially deadly cancer. Indeed, while pancreatic cancer is already deadly among the general population, it can be even more aggressive among African Americans as compared to the general population. The role of tumor associated cells such as fibroblasts and macrophages (Tumor-Associated Macrophages, or TAM) may be an important factor in increasing the aggressiveness of tumors among African Americans. It will be useful to understand how risk factors among African Americans may directly affect the biology of the TME and influence the clinical outcomes of patients with pancreatic cancer.

NEXT STEPS IN RESEARCH

TAM may influence tumors depending on whether they develop characteristics helping them to be toxic to tumors (showing “M1” macrophage features) or more supportive of tumor growth (“M2” features) along with tumor fibrosis. Among African American patients, studies have suggested that tumors may accumulate more M2 type of macrophages. This pilot project will use animal models to study the role of M2 type macrophages in tumor growth and fibrosis, as well as test whether these macrophages can be changed to improve clinical outcomes.