



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP110166

Project Title:
Mast Cell Tryptases in Lung Cancer Development and Progression

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
The University of Texas M.D. Anderson Cancer Center

Lay Summary:

Lung cancer is the main cause of cancer-related death in our country, and very often the prognosis is already poor at the time of diagnosis. The development of lung cancer is linked to tobacco smoking and to the development of an inflammatory condition of the airways known as COPD. This relationship between cancer and inflammation has been seen in many other malignancies. We study mast cells, which are involved in many inflammatory conditions, and lately their presence has been associated to development of tumors in animals and to a worse prognosis in some patients with cancer. Among the many substances released by mast cells, we are interested in a group of enzymes known as tryptases. We have found that two tryptases that are produced only by mast cells are important in the development of inflammatory arthritis and colitis. We wanted to apply our expertise and test if these tryptases are important for the development of the inflammation associated with cancer and for the progression of lung cancer. We have found that mice predisposed to develop a form of lung cancer have less tumors when mast cells are not present. We have also seen that if we eliminate two of the tryptases produced by mast cells in these mice we get the same results. Our conclusion so far is that mast cells and mast cell tryptases are important for cancer development in this mouse model. Now we want to study how these enzymes promote the development of these tumors, and we suspect that they do so by affecting the inflammation associated with lung cancer. Our studies may reveal new mechanisms that could be targeted by drugs that block the actions of mast cell tryptases or that inhibit the responses from mast cells. These treatments could then be used to decrease the risk of lung cancer in patients with airway inflammation or to slow the progression of tumors in patients with lung cancer.