



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP110324

Project Title:  
Impact of differentiation status on tumorigenesis

Award Mechanism:  
Individual Investigator

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

### Lay Summary:

In human development, cells start out as being able to become any cell type in the body. During development, most cells become more and more specialized in order to form the organs and systems of the fully developed human body. This process is called "differentiation", and there is a good, although still incomplete, understanding of how undifferentiated cells "know" which specialized cell they should become and how this normal differentiation process works. It is now known that some cancers come from immature, undifferentiated cells. However, how the biology of a tumor -- how it grows, how it may or may not respond to treatment, how curable it is, etc -- is a consequence of the degree of maturity or immaturity of the cell from which it arises is very poorly understood. The proposed work will examine this question by introducing gene mutations into kidney cells of the mouse at different stages of kidney differentiation and determining the frequency and biology of resulting tumors. We have previously defined specific subsets of human kidney tumors, and we have extensive clinical data from these patients, including their response to chemotherapy and long-term survival. We will compare the mouse tumors and the human tumors to determine if the different human subsets correspond to mouse tumors that have arisen from cells at different developmental stages. This work will help us understand the underlying biological differences between the different subsets of human kidney tumors. This information will likely be valuable for developing more effective treatment strategies, specifically targeted to the underlying biological etiology of tumors.