



CANCER PREVENTION & RESEARCH  
INSTITUTE OF TEXAS

Award ID:  
RP130603

Project Title:  
Evaluation of the role of the BAP1 tumor suppressor gene in renal cancer

Award Mechanism:  
Individual Investigator

Principal Investigator:  
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Entity:  
The University of Texas Southwestern Medical Center

Lay Summary:

We have discovered that the gene BAP1 is inactivated in 15% of renal tumors. We found that tumors with BAP1 mutations tend not to have mutations in PBRM1. Mutations in BAP1 or PBRM1 were observed in 70% of all renal tumors. Interestingly, whereas BAP1 mutation was associated with aggressive features (high tumor grade), tumors with PBRM1 mutations exhibited milder features. These findings establish the foundation for a classification of kidney cancer that is based on mutated genes. Since mutated genes are ultimately responsible for the behavior of cancer cells, these findings have far-reaching implications. In fact, we observed that loss of BAP1 sensitizes tumor cells to radiation, a finding that could be exploited for the treatment of BAP1-deficient tumors. In this proposal, experiments are proposed to: (i) determine, biochemically, how BAP1 protects kidney cells from tumor development, (ii) obtain insight into how mutations in BAP1 contribute to the process of kidney cancer development, and (iii) create a model of kidney cancer in mice. The proposed studies should shed light into how BAP1 functions and may pave the way for better treatments for patients with aggressive kidney cancer.