



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP160806

Project Title:
Development of high throughput technology to identify drugs for muscle wasting during cancer

Award Mechanism:
High Impact/High Risk

Principal Investigator:
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Entity:
Texas Tech University

Lay Summary:

A significant number of cancer patients experience muscle wasting, a phenomenon that is clinically referred to as cachexia. Due to a substantial loss in muscle mass and strength, cachexia presents a major quality of life problem for cancer patients. Cachexia patients suffer from fatigue, fitness loss, lethargy, psychological burden, and have difficulty battling the side effects of chemotherapy. Increased feeding does not improve muscle mass and strength due to accelerated degradation of muscle proteins. Importantly, one-third of the cancer deaths are attributed to cachexia and there are no approved drugs for its treatment. In this proposal, we seek to develop a high throughput technology for rapidly screening candidate drugs for cachexia. Our approach involves using the celebrated model organism *C.elegans*, a millimeter-sized nematode (worm), which has the same muscle protein degradation pathways as humans. We have developed a novel microfluidic technology called NemaFlex that is capable of measuring the muscle strength in worms. By combining the high throughput culturing capability of *C.elegans* with our NemaFlex technology, we will screen candidate drugs for cachexia that range from protein degradation blockers to exercise mimetic drugs to anti-aging compounds. Success in this exploratory study will lay the foundation for large-scale screenings of chemical libraries to identify effective drugs for cancer cachexia.