



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

Award ID:
RP140479

Project Title:
Screening for Melanoma Genes Using Natural Hybrid Incompatibilities

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Rosenthal, Gil

Entity:
Texas A&M University

Lay Summary:

Identifying the genes responsible for particular cancers is critical for prevention, diagnosis, and treatment. Looking for genes associated with cancer risk in humans is complicated both by environmental factors and by the fact that cancer often depends not on a single genetic mutation, but on an abnormal interaction between multiple genes. The proposed study takes advantage of natural variation and natural selection in wild populations of swordtail fish. Some swordtail species develop spontaneous melanomas – skin cancers – while others don't. Using state-of-the-art genomic techniques, this study will use natural hybrids between a melanoma-producing species and one that doesn't, to pinpoint the genes associated with melanoma formation in the wild. Next, screening for gene combinations that are much rarer than expected will identify other genes that interact with these melanoma genes in ways that are harmful to survival or reproduction. Finally, laboratory crosses between these species will be used to validate the link between these genes and melanoma, and to determine how interactions among genes are harmful.