

Ethan Abel
Thomas Jefferson University Hospital
Kimmel Cancer Center

Regulation and Role of FOXD3 in Melanoma

Melanoma is by far the deadliest form of skin cancer, and results from alterations in the body's pigment cells, known as melanocytes. Most melanomas have mutations in a protein called B-RAF. Mutant B-RAF alters the expression of other genes in melanocytes to promote uncontrolled growth, resistance to death, and spreading beyond the confines of the skin. One gene that is suppressed by mutant B-RAF is called FOXD3, which functions as a cellular switch by turning the expression of genes on and off as needed. Uncovering the function of FOXD3, as well as how it is regulated by B-RAF in melanoma cells, is the focus of my research. I have found that not only does mutant B-RAF prevent the expression of FOXD3 in melanoma cells, but restoration of FOXD3 expression in melanoma cells can potently block the ability of the cells to grow. Currently, I am focusing on how FOXD3 induces a growth arrest in melanoma cells. I am also focusing on how B-RAF suppresses FOXD3 expression and what factors can induce its expression. Finally, I am exploring other possible roles for FOXD3 in melanoma, including cell survival, metabolism, and stem cell-like behavior, all of which contribute to the disease's malignancy. I am hoping that further understanding of the role and regulation of FOXD3 in melanoma will lead to novel therapies for treating the disease.