

## **Rescue DNA repair pathway and tumor immunity**

### **Brief Synopsis:**

Defects in DNA damage response (DDR) is a major factor that predispose normal cells to acquire oncogenic mutations. However, after a tumor develops, cancer cells manage their survival by repairing DNA damage resulting from unchecked DNA replication. We show that breast cancer cells can use the alternative or backup (rescue) DNA repair programs to overcome their DDR defects and cope with genotoxic lesions. The addiction of breast cancer cells to these rescue DNA repair pathways may contribute to tumor progression and therapy-resistance. We provide compelling evidence that factors that play critical role in rescue DNA repair pathways may support tumor progression and therapy response by promoting tumor cell intrinsic and extrinsic mechanisms of immunosuppression. Our pre-clinical and clinical data suggest that successful targeting of those factor(s) will improve the therapeutic response to immunotherapy and will have promising clinical outcomes for treating breast cancer patients.