

## **DR. JITESH PRATAP (2015 AWARD)**

### **Novel Regulatory Mechanisms of Cell Survival During Bone Metastasis of Breast Cancer**

The specific aims of the project were to determine the regulatory mechanism by which loss of Runx2/ $\beta$ -Arrestin activates IGF-1R in bone metastasis and examining the impact of bone microenvironment on metastatic breast cancer cell survival. Our central hypothesis is that the Runx2/ $\beta$ -Arrestin axis plays a central role in survival of bone metastatic cancer cells by regulating IGF-1R signaling. In summary, we identified novel mechanisms for cancer cell survival in the bone microenvironment by applying multiple molecular and biochemical approaches on metastatic cancer cells. Our findings suggest that bone metastatic breast cancer cells are sensitive to inhibition of Erk signaling and autophagy for their survival. Importantly, these novel findings will help us to develop effective therapeutic strategies for bone metastasis of breast cancer.

- Publications: METAvivor's support for this project resulted in four project-related presentations and two publications so far -  
<https://www.ncbi.nlm.nih.gov/pubmed/?term=Role+of+Runx2+in+IGF-1R%CE%B2%2FAkt+and+AMPK%2Ferk-dependent+growth%2C+survival+and+sensitivity+towards+metformin+breast+cancer+bone+metastasis> and  
<https://www.ncbi.nlm.nih.gov/pubmed/?term=The+role+of+Runx2+in+facilitating+autophagy+in+metastatic+breast+cancer+cells>.
- Funding: Based on our findings, two NIH/R01 proposals are now in submission.