**Published publications**

“Collagen structure and local composition of demineralized bone paper direct mineralization” (under revision)

“Senolytic therapy eliminates drug-resistant cancer cells and rejuvenates human osteoblast functionality in a bioengineered osteogenic niche model” (in preparation)

Funding support obtained with METAvivor data: I have applied to the following funding opportunities but have not yet achieved success:

-NCI R01 (PAR-22-099): Cancer Tissue Engineering Collaborative

-NCI R01 (PAR-22-242): Bioengineering Research Grant

-NCI R33 (RFA-CA-23-003): Advanced Development and Validation of Emerging Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research,

-CDMRP: Bone Marrow Failure Program

**Summary of important findings**

DBP-based bone models have effectively demonstrated in vivo-relevant bone-forming osteoblast and bonebreaking osteoclast cellular processes with remarkable fidelity and analytical power. By introducing human breast tumor cells, we successfully simulated bone metastasis within our model. Additionally, our model displayed the capability to mimic pharmacological treatments, including vitamin D3, prostaglandin E2, and doxorubicin. Transitioning from our current in vitro 2D bone model to a humanized and enhanced 3D bone model is within our sights. We anticipate that the establishment of 2D/3D human bone metastasis models will significantly enhance our comprehension of bone metastasis and pave the way for novel therapeutic strategies.

Clinical relevance of findings i.e. upcoming/in progress trials, impact on MBC treatment (now or future) The significance of microphysiological human tissue models has been formally acknowledged under the FDA Modernization Act 2.0. This legislation accepts preclinical testing results from advanced human tissue models as valid substitutes for clinical testing results. I anticipate that our in vitro human bone metastasis model can greatly contribute to testing drugs targeting bone metastasis.