DEPARTMENT OF CHEMICAL AND BIOCHEMICAL ENGINEERING

Immunoengineering of the Tissue Microenvironment for Advancing Translational Medicine

Tumor Microenvironment Reprogramming:

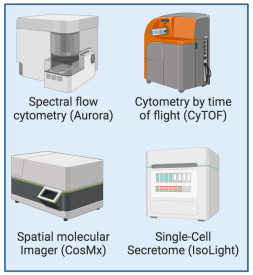
- Activating adaptive T cell immunity and repolarizing immunosuppressive macrophage leveraging nano/biomaterials to enhance therapeutic benefits of chemo-radio-immunotherapy.

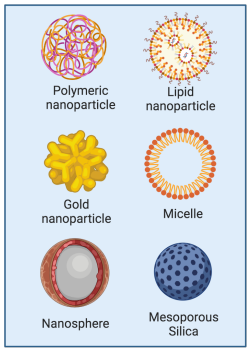
Personalized Cancer Nanovaccines:

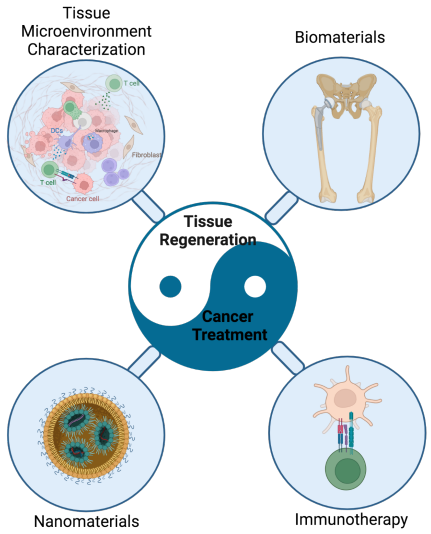
- Co-delivering neoantigen peptides and TLR agonists, in combination with anti-PD-1 and anti-CTLA-4 checkpoint inhibitors to augment antitumor activity of T cells.

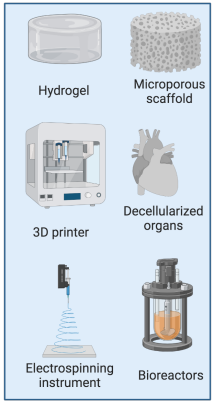
Immunoengineering for Musculoskeletal Tissue Repair:

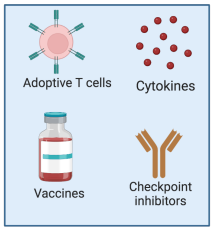
- Developing biodegradable scaffolds that synergistically enhance bone repair by integrating optimized osteoinductivity, osteoconductivity, and mechanical strength with immunomodulatory strategies—specifically, by inducing Treg activity to promote bone regeneration.











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Keywords:

- Biomaterials, Immunoengineering, Cancer Immunotherapy, Tissue Regeneration, Osteoimmunology, Drug and Gene Delivery, Nanomedicine.

Publications and Recognitions:

- Link to my Publications
- NIH T32 Fellowship, Basic Immune Mechanisms
- NIH T32 Fellowship, Carolina Center for Nanotechnology
- Guest Editor, Frontiers in Oncology

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