

DMSE FALL 2021

SEMINAR SERIES

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Targeted therapeutic delivery systems to the Gut: overcoming Device/Graft rejection, Autoimmunity, & Cancer

I will discuss eliminating material-induced foreign body response and scarring to support positive wound resolution and to be more hospitable to encapsulated biologic grafts, such as pancreatic islets to restore endocrine and insulin regulation in Type 1 diabetes patients (also relevant following resection of cancerous pancreatic tissue). Further, we identify next generation targets using pathway generation and systems biology perturbation techniques to guide development of drug and biomaterial technologies (e.g., crystallized drug, physiochemically modified biomaterials) for maximizing therapeutic efficacy. Of note, drugs that inhibit multiple cell types may complicate response. Also, tuning complex tissue responses to delivered therapeutics is important, as biologic behavior can change in different plateaus or tiers of drug exposure (i.e., toxicity/off-target effects on the high, inaction or sub-optimal dosing on the low, and appropriately tuned immunity in-between). Lastly, I will discuss a new photocrosslinkable biomaterial delivery system capable of localized, retained deposition of therapeutic payloads (drugs or cells). We hope that this work will improve efforts to eliminate inflammatory bowel diseases (i.e., type 1 diabetes, Crohn's/Colitis), that can lead to cancer formation over time, as well as aid in coating primary and/or metastatic nodules for containment and elimination. We expect this platform to be delivered via minimally invasive methods and provide patients with dramatically elongated, improved quality of life.

**Wednesday
October 27th - 2:30 pm
Mudd Hall, Room 26**

Email dmse@jhu.edu for Zoom Link