Marrissa Izykowicz

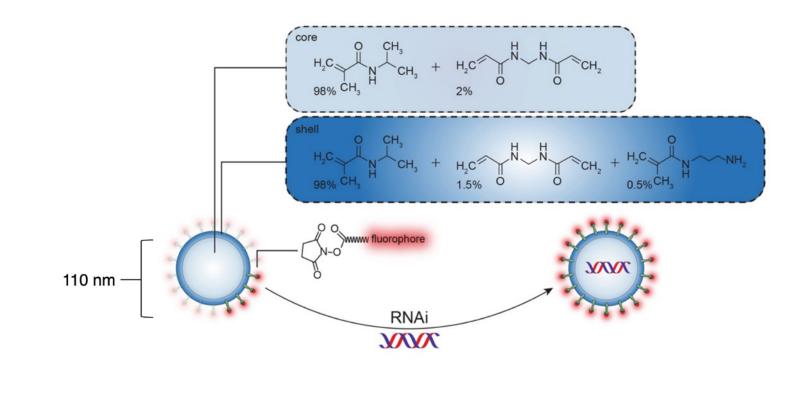
Roche Award *Ph.D. Student, Chemical Biology First Year ARCS Scholar*

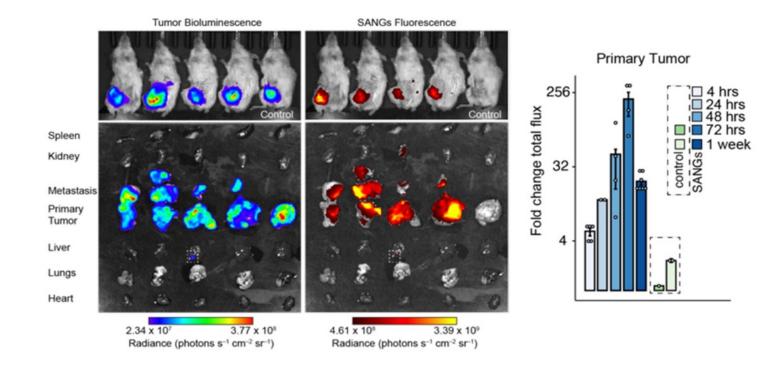
Georgia Iech

Investigating Self-Agglomerating Nanohydrogels (SANGs) as a Drug Delivery Platform

My Ph.D. research seeks to improve cancer treatment by developing self-agglomerating nanohydrogels (SANGs) that enhance the targeting and retention of therapeutic agents in tumor • tissues, addressing current nanoparticle delivery system inefficiencies. This work involves a phased • approach, including in vitro and in vivo testing, to optimize SANGs for more effective and cost-efficient drug delivery across various cancer types.

What are SANGs?



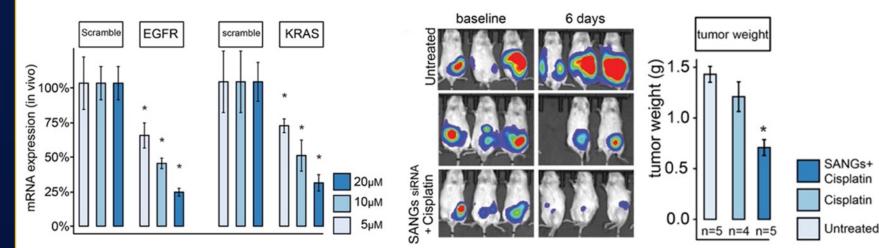


Nick Housley Ph.D., DPT, PT

Metastasis Targeting and Tumor Colocalization

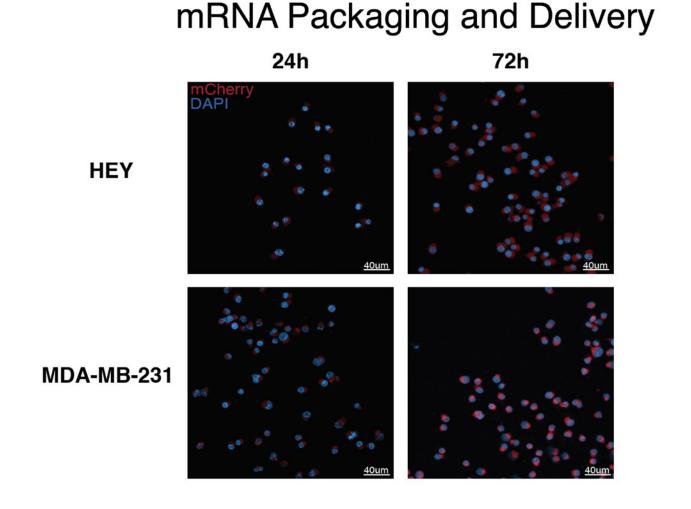
SANGs Fluorescence **Tumor Bioluminescence** Metastasis Colocalization 1.00 24 hrs 48 hrs 🔲 🗖 72 hrs 0.75 🔲 🔲 1 week SANGS 0.50 1.26 x 10⁹ 3.30 x 108 3.14 x 10⁸ 4.88 x 10⁹ 0.00 0.25 0.50 0.75 1.00 Radiance (photons s⁻¹ cm⁻² sr⁻¹) Radiance (photons s⁻¹ cm⁻² sr⁻¹) Tumor Bioluminescence

Oncogene Knockdown with siRNA Delivery

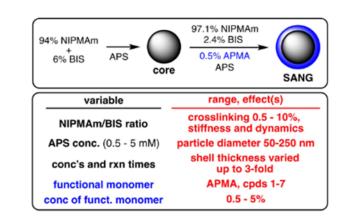


Nick Housley Ph.D., DPT, PT

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Optimizing SANG Formulation and Drug Combinations



cargo	physical properties		in vitro function			in vivo function	
siRNA mRNA (1k, 3k, 5k nt)	size DLS, MALLS, TEM stiffness AFM, nanoindentation diffusion NMR	\Box	uniake	microscopy, flow cytometry vs. conc., time microscopy		biodistribution	IVIS, intravital imaging, confocal
peptides (4 types)	cargo carrying uv-vis, IR, HPLC, and release as appropriate		endosomal escape		\Box	function	PCR, HCR/FISH
small protein (sfGFP)	agglomeration DLS, MALLS, TEM vs. concentration					toxicity	enzyme and cytokine panels

Scholar-Awards Celebration

November 13, 2024



Igniting Innovation in Georgia •