PI: Wilbur Bowne & Hao Cheng
Institution: Drexel University
Award Year: 2015
Project Title: "Developing a Novel Drug Delivery Platform for Targeting Hyaluronan Expression in Pseudomyxoma Peritonei through Human Sample Analysis and *In Vivo* Studies"
Project Status: Active

Update 1 (04-2017)
Our collaborative team has collected sample mucin and tumor samples from multiple patients with pseudomyxoma peritonei (PMP) treated with cytoreductive and hyperthermic intraperitoneal chemotherapy in order to facilitate testing of nanoparticle penetration through the mucinous matrix. Despite our initial studies demonstrating a lack of hyaluronic acid in the mucinous environment produced by certain cancer cells, we have adjusted our approach, employing re-configured nanoparticles that have lower binding affinity for surface proteins. We have demonstrated a significant increase in diffusion through this mucin with the redesigned nanoparticles. At the same time, we have continued work on developing a mouse model of peritoneal metastases that will allow for further in vivo studies of this disease. We will continue to collect samples from patients treated our institution to use in a mouse model derived from these tumors.

Update 2 (10-2017)
Our group has collected sample mucin and human tumor samples from multiple patients treated with cytoreductive surgery and heated intraperitoneal chemotherapy (HIPEC) in order to facilitate testing of nanoparticle penetration through the mucinous matrix produced in patients with PMP. Despite earlier studies demonstrating a lack of hyaluronic acid in mucin, we adjusted our approach, employing a modified nanoparticle that has lower binding affinity for cell surface proteins, allowing for improved penetration through the mucin matrix. Evaluation of nanoparticle diffusion in mouse pseudomyxoma peritonei models is currently in progress.

Update 3 (05-2018)
Our group has collected sample mucin and human tumor samples from multiple patients treated with cytoreductive surgery and heated intraperitoneal chemotherapy (HIPEC) in order to facilitate testing of nanoparticle penetration through the mucinous matrix produced in patients with PMP. Despite earlier studies demonstrating a lack of hyaluronic acid in the mucin, we adjusted our approach, employing a modified nanoparticle that has lower binding affinity for cell surface proteins, allowing for improved penetration through the mucin matrix. Evaluation of nanoparticle diffusion in mouse pseudomyxoma peritonei models is currently in progress.