Local Delivery Strategies

Monday, March 3
1037 Emerging Technologies Building
9:10 a.m.

Local release of biomolecules can be achieved by direct injection at the site or by systemic delivery with targeting ligands. These two broad strategies will be described.

Using an injectable hydrogel of hyaluronan and methyl cellulose in which poly(lactide-co-glycolide) microspheres encapsulating therapeutic proteins are dispersed, I will discuss local delivery to the brain in a stroke-injured mouse model. Using biodegradable polymeric nanoparticle micelles with targeting antibodies, I will discuss targeted delivery in a breast cancer mouse model. Both the underlying biomaterials strategies and resulting biological consequences will be emphasized.

Molly S. Shoichet, Ph.D.
Professor and Canada Research Chair, Tissue Engineering
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Molly Shoichet is an expert in the study of polymers for drug delivery and regeneration, which are materials that promote healing in the body. Dr. Shoichet has published more than 450 papers, patents and abstracts and has given more than 275 lectures worldwide. She leads a laboratory of 25 researchers and has graduated 115 researchers throughout the past 18 years. She founded two spin-off companies from research in her laboratory and is actively engaged in translational research. Dr. Shoichet is the only person to be a Fellow of Canada’s three national academies: the Canadian Academy of Sciences of the Royal Society of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences. She is the recipient of many prestigious distinctions, including the Canada Council for the Arts’ Killam Research Fellowship, NSERC’s Steacie Fellowship, CIFAR’s Young Explorer’s Award, Canada’s Top 40 under 40TM, the Society for Biomaterials’ Clemonson Award, and International Fellows of Tissue Engineering and Regenerative Medicine. In 2011, Dr. Shoichet was appointed to the Order of Ontario, Ontario’s highest honor, and recognized as a Fellow of the American Association for the Advancement of Science. In 2013, Dr. Shoichet’s contributions to Canada’s innovation agenda and the advancement of knowledge were recognized with the QEI Diamond Jubilee Award. Before being recruited to the University of Toronto in 1995, Dr. Shoichet worked at CytoTherapeutics Inc. on encapsulated cell therapy. Dr. Shoichet received her S.B. from the Massachusetts Institute of Technology in chemistry and her Ph.D. from the University of Massachusetts, Amherst in polymer science and engineering.