SL 08

SELF-CROSSLINKABLE POLYELECTROLYTES FOR CELL IMMUNO-ISOLATION

H.D.H. Stöver[a], M.A.J. Mazumder[a], N. Burke[a], F. Shen[b], M. Potter[b]

[a]*Department of Chemistry, McMaster University, 1240 Main Street West, Hamilton, ON, L8S 4M1 Canada (stoverh@mcmaster.ca)*

[b]*Department of Pathology & Molecular Medicine, McMaster University, 1240 Main Street West, Hamilton, Ontario, L8S 4M1 Canada*

Pairs of polyelectrolytes capable of electrostatic complexation followed by covalent crosslinking, are sequentially coated onto cell-containing calcium alginate beads to form perm-selective, strong outer shells that can enable long-duration allogenic transplants.

A typical matched polyelectrolyte pair consists of poly(sodium methacrylate containing electrophilic comonomer such as methacryloylethylacetoacetate (MEAA), and poly-L-lysine (PLL). Initial exposure of the calcium alginate beads to polyamine leads to partial displacement of calcium. Subsequent exposure to the reactive polyanion leads to formation of a polyelectrolyte complex that instantly crosslinks to form a tough shell around the calcium alginate core (a). The use of this approach to encapsulate genetically modified mouse C2C12 cells (b) for treatment of Lysosomal Storage Disorders will be described. Control over polyelectrolyte molecular weight optionally permits formation of core-crosslinked beads (c) that promise superb mechanical strength, together with immune-isolation from the host.