

## The Synthesis of Complex Polymer Architectures Using Hyperbranched Polyglycerols for Applications in Drug Delivery and Cell Surface Display

Alexandra Rutz, Andrew Zill, Richie E. Kohman, and Steven Zimmerman

Hyperbranched polyglycerols represent a new class of non-toxic, non-immunogenic, biocompatible polymers useful as multivalent platforms for biological applications. By using a simple propargyl alcohol initiator, we have developed a method for producing monovalent polyglycerol with  $M_n$  values ranging from 1000 – 7000 g/mol and polydispersity as low as 1.25. These polymers are capable of undergoing 1,3-dipolar cycloaddition and have been used for the synthesis of complex polymeric architectures which require highly robust and orthogonal chemistry. These include core-shell polymers containing acid labile triazaadamantane dendrimer cores for drug delivery and dendrigraft polyglycerols that are partially alkylated for cell membrane binding and cell surface display.

