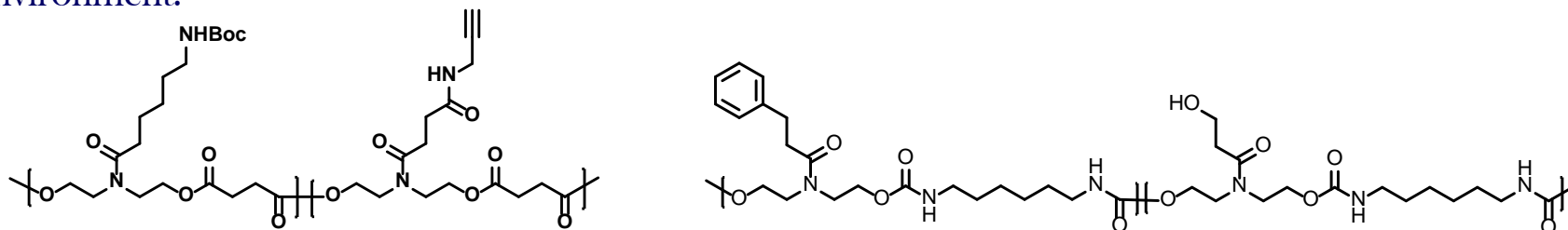


LIBRARY OF MULTIFUNCTIONAL POLYESTERS AND POLYURETHANES

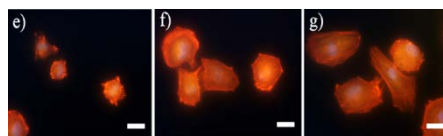
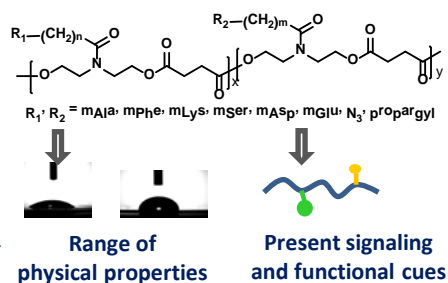
JOY LAB – UNIV. OF AKRON

To bridge the performance gap between natural and synthetic materials, the Joy Lab has developed a platform of multifunctional polyesters and polyurethanes. Such modular polymers can present appropriate functional groups to enable interaction with and integration into the physiological environment.



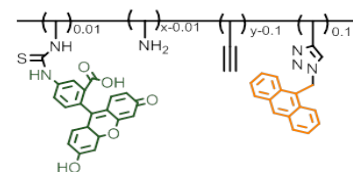
Representative examples of a multifunctional polyester (left) and polyurethane (right), designed to mimic the functional diversity of peptides

- Functional groups: alkyl, phenyl, phenol, -COOH, -OH, -NH₂, N₃, alkyne, temperature sensitive groups, crosslinking groups, adhesion promoting moieties etc. More than 25 different functional groups have been designed.
- Pendant groups modulate properties such as solubility, hydrophilicity, modulus, Tg etc.
- Potential application areas: controlled release of proteins/therapeutics, antimicrobials, synthetic ECM mimics, wet adhesives, matrix for stem cell differentiation, protein inhibitors
- The Joy Lab invites researchers to use this platform of materials for their tissue engineering / drug delivery needs and is willing to provide materials to the scientific community.



Modulation of cell response

Biomacromolecules, 2013, 14, 2489



Orthogonal Conjugation of Ligands (therapeutics, fluorophores, etc.)