



Bertozzi invented a new class of chemical reactions, called bio-orthogonal chemistry, that lets scientists label biomolecules within living cells. These kinds of reactions are special because they can take place within a cell without disrupting any of the biochemical reactions that are naturally occurring there. These methods, now widely used, have allowed scientists to study a range of biomolecules—including glycans (a type of carbohydrate), lipids, and proteins—in living systems in real time.

Bertozzi has pioneered the use bio-orthogonal chemistry in the field of glycobiology, using the technique to study the glycans that decorate the surfaces of cells and change during inflammation or as a cell transforms from normal to malignant. She and her team tag these sugar analogs with fluorescent molecules and monitor their fates during the cell cycle. These methods, which have recently been applied to imaging in simple animal models such as zebrafish, are allowing Bertozzi and others to make important insights into intracellular processes responsible for health and disease.