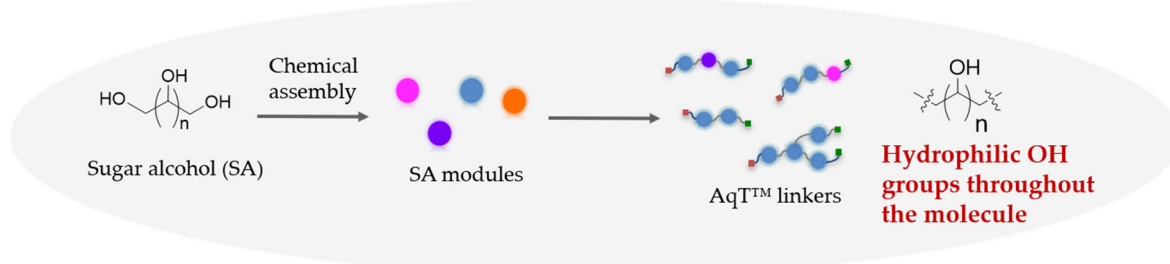


AqueaTether™ (AqT™) KITS AND PRODUCTS

CellMosaic is developing next-generation conjugation kits and products based on our proprietary super-hydrophilic and high-loading AqT™ linkers. AqT™ linkers are novel proprietary biomaterials invented at CellMosaic and are chemically assembled from a class of natural and edible sugar alcohol (SA) compounds with properties by design. AqT™ linkers are designed for labeling and conjugating biomolecules with very hydrophobic small molecules, such as fluorescent compounds, biotin, and small molecule drugs. **If you are interested in using any of these products or co-developing AqT™-based products, please let us know.**



AqT™ Biotin Labeling Kits & Products

Biotin is a very hydrophobic molecule. Based on our experience, antibodies and proteins labeled with biotin tend to aggregate and precipitate out from solution over time. In the past, for optimized performance, we have controlled all antibody and protein biotin labeling to 2-4 biotin per antibody/protein. However, in many cases, high loading of biotin is desirable for an enhanced/amplified signal or selection. We have modified biotin with AqT™ linker to increase biotin's hydrophilicity. The hydroxy (-OH) groups of AqT™ linkers create a microenvironment that shields neighboring biotins from stacking or interacting with one another. Antibody/protein can be labeled with a high amount of AqT™-biotin with minimum or no aggregation. CellMosaic is currently developing AqT™ biotin labeling kits and products.

AqT™ Fluorescence Labeling Kits & Products

Our initial experiment shows that AqT™-fluorescein has a vivid and bright color compared to unmodified fluorescein. With the same dye loading, AqT™-fluorescein-labeled antibody has a few times higher signal than fluorescein-labeled antibody. AqT™-dye contains multiple OH groups that can interact with neighboring water and create a microenvironment that prevents or shields neighboring dyes from stacking and quenching. AqT™-dye does not introduce an ionic group that can change the properties of antibodies, as occurs in most of the modified commercial dyes with increased water solubility. CellMosaic is currently developing AqT™ fluorescent dyes with maximum absorbance ranging from the UV to Vis wavelength: AqT™ 343, AqT™ 445, AqT™ 496, AqT™ 555, AqT™ 560, AqT™ 570, AqT™ 646, AqT™ 750. These dyes will be used to create PerKits™ and conjugates.

AqT™ Assay Plates

Enzymes/antibodies/proteins (biopolymers) immobilized on assay plates via covalent linkage generally have decreased activity and stability compared to the soluble biopolymers. Most of these plates are polystyrene or polyethylene-based, which are very hydrophobic. Hydrophobic surfaces not only cause high background noise due to nonspecific binding of proteins, but also destabilize the immobilized proteins. CellMosaic is developing AqT™ assay plates coated with AqT™ linkers to increase the hydrophilicity and biocompatibility of the plates. Biopolymers will also be immobilized onto the plates via AqT™ linkers. The end results are long shelf life, high loading, and increased signals for AqT™ assay plates. CellMosaic is developing AqT™ assay plates that are either pre-coated with assay molecules or to be coated by our customers.

AqT™ Immobilization Kits & Products

CellMosaic is developing next-generation immobilization kits and products using sugar alcohol-based AqT™ linkers. In many cases, we need to load very hydrophobic small molecules (antigen molecules) onto a solid support. Many of these immobilizations must be done in an aqueous environment. Even with sugar-based agarose beads, we experience challenges obtaining high loading with conventional ethylene or PEG-based linkers. When we manage to achieve high loading, beads end up aggregating or clustering together and are difficult to use. On the other hand, there have been many developments in non-sugar-based beads for immobilization purposes, such as poly(methyl methacrylate) (PMMA). The surface of PMMA is very hydrophobic. AqT™ modification can convert the surface of these beads to be hydrophilic and more biocompatible. CellMosaic is currently developing AqT™-modified beads and immobilization kits/products.