Alkynyl Sugar Analogs for the Labeling and Visualization of Glycoconjugates in Cells

Strategy for Glycoprotein Labeling

Sugar analogs

glycan biosynthesis

CuAAC-based labeling

fluorescent

Probes

biotin

click-activated

non-fluorescent

glycoprotein

cell membrane

Strategy for Glycoprotein Labeling
Most of eukaryotic proteins are glycoproteins, and it is acknowledged that glycosylation process plays a central role in mediating protein function in living organisms. It is also known that altered glycosylation is often associated with inflammation and cancer metastasis. Therefore, the detailed correlations between glycosylation and biological or pathological statuses are of great interest and may provide information for disease diagnosis and treatment.

For this purpose, new chemical tools to probe glycoproteins are developed by the research team led by Dr. Chi-Huey Wong in Genomics Research Center. Sugar analogs are used to feed cells for incorporating into cellular glycoproteins by glycosyltransferases. With the chemical functionality on sugar analogs, the labeled glycoproteins can thus be specifically tagged on fluorogenic/fluorescent or affinity probes for imaging or purification. The studies were published in *Proc. Natl. Acad. Sci. USA* in 2006 and 2007. This work was selected and reported as a ‘Research Highlight’ by Nature Functional Glycomics Gateway--this method adds a powerful technique to the glycosylation and glycoprotein analysis repertoire.