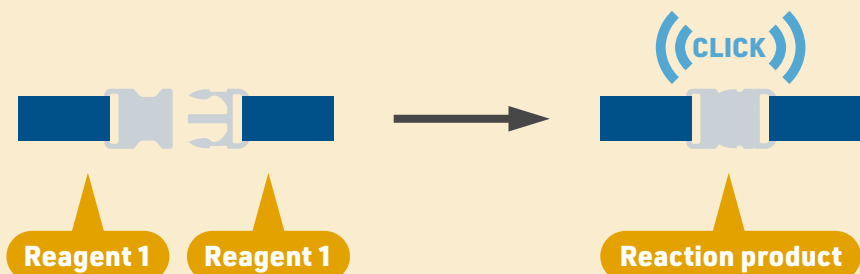


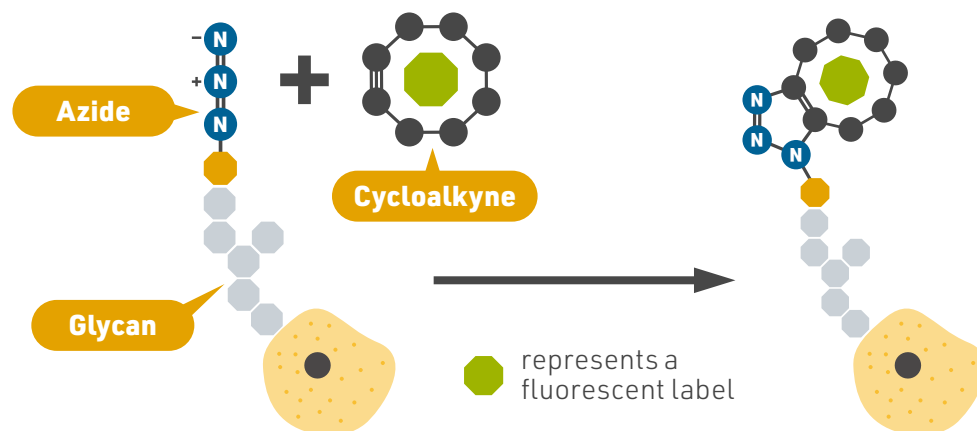
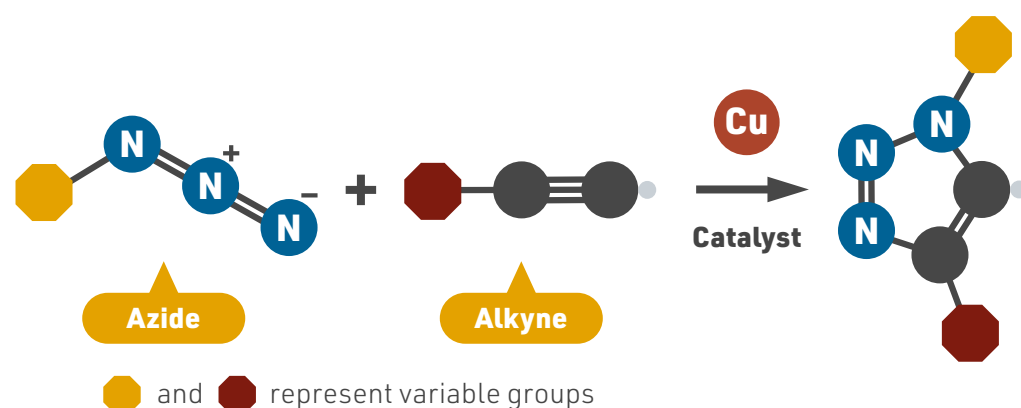
2022 NOBEL PRIZE IN CHEMISTRY



The 2022 Nobel Prize in Chemistry was awarded jointly to **Carolyn R. Bertozzi**, **Morten Meldal** and **K. Barry Sharpless** for their development of click chemistry and bioorthogonal chemistry.



Barry Sharpless coined the concept of “click” chemistry in 2001: the idea of reactions that efficiently snap together small molecular building blocks using easily achieved reaction conditions, avoiding unwanted byproducts.



Independently, **Barry Sharpless** and **Morten Meldal** developed the first click reaction: a reaction in which an azide is added to an alkyne with a copper catalyst. The two reagents click together to form a single cyclic product, with the copper catalyst making the reaction quick and selective. Chemists could add useful groups onto the azide and alkyne to change the product formed by the reaction.

Carolyn Bertozzi introduced the concept of bioorthogonal chemistry – chemical reactions that happen in cells without affecting their normal chemistry – in 2003. Copper is toxic to living cells, so she modified the original click reaction to produce a copper-free version. She used this reaction to track molecules called glycans on cell surfaces, which she had been investigating since the early 1990s.

WHY DOES THIS RESEARCH MATTER?

Additional click chemistry reactions have been developed, useful in the synthesis of new drugs. Bioorthogonal reactions allow researchers to study biological molecules and help identify targets of new drugs, and are also being trialled to produce ‘clickable’ antibodies to target cancerous tumours.

Nobel Prize in Chemistry press release: <https://www.nobelprize.org/prizes/chemistry/2022/press-release/>