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Click Chemistry Reagents

Highly selective, rapid and biocompatible labeling

Click Chemistry[1] describes pairs of functional groups that rapidly and selectively react ("click") with each other in mild, aqueous conditions. The concept of Click Chemistry has been transformed into **convenient, versatile and reliable two-step coupling procedures of two molecules A and B**[1-5], that are widely used in biosciences[6-8], drug discovery[9] and material science[10].

Principle of Click Chemistry

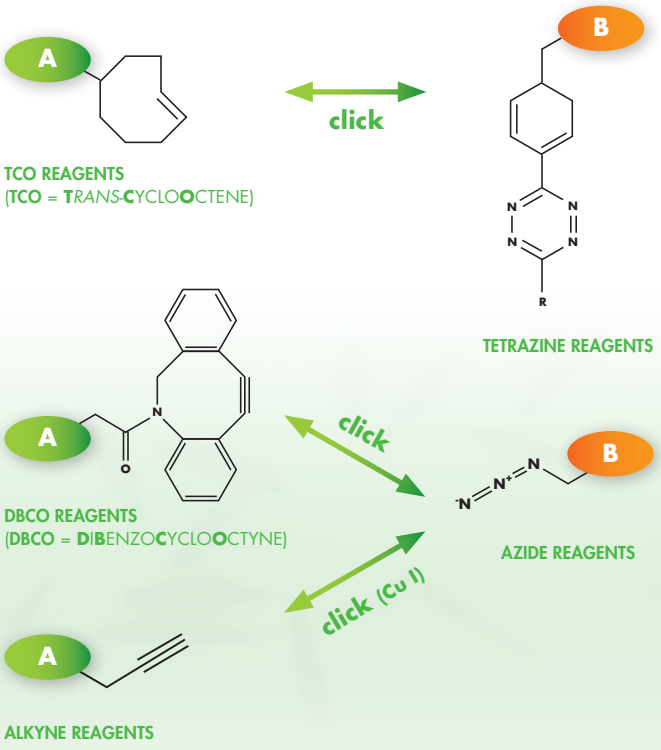
1 Activation of molecule A and B
Compatible CLICK-functional groups are introduced via CLICK reagents

2 CLICK-coupling of molecule A and B
The CLICK-activated molecules form a stable conjugate

Advantages of Click Chemistry

- **Highly selective, low background labeling:** CLICK-functional groups are inert to naturally occurring functional groups ("bioorthogonal") such as amines
- **Rapid and quantitative labeling**
- **Allows non-radioactive analysis of enzymatic activities both in vitro and in vivo:** Small-sized CLICK-functional groups possess excellent substrate properties

CLICK REAGENTS BY CHEMISTRY



CLICK REAGENTS BY APPLICATION

... ON DNA

- DNA synthesis monitoring (Cell proliferation)
- Enzymatic CLICK-functionalization of DNA

... ON RNA

- RNA synthesis monitoring
- Analysis of poly(A) tail dynamics (polyadenylation)
- Enzymatic CLICK-functionalization of RNA

... ON PROTEINS

- Protein synthesis monitoring (site- and residue-selective)
- Chemical CLICK-functionalization of recombinant proteins
- Purification/Pull-down of CLICK-functionalized Proteins

... IN POSTTRANSLATIONAL MODIFICATION ANALYSIS

- Phosphorylation
- AMPylation

Check out our complete click chemistry product portfolio and find more infos at www.click-chemistry.net

Introduction to the concept of Click Chemistry

[1] Kolb *et al.* (2001) Click chemistry: diverse chemical function from a few good reactions. *Angew. Chem. Int. Ed.* **40(11)**:2004.
[2] Sletten *et al.* (2009) Bioorthogonal Chemistry: Fishing for Selectivity in a Sea of Functionality. *Angew. Chem. Int. Ed.* **48**:6998.
[3] Jewett *et al.* (2010) Cu-free click cycloaddition reactions in chemical biology. *Chem. Soc. Rev.* **39(4)**:1272.
[4] Best *et al.* (2009) Click Chemistry and Bioorthogonal Reactions: Unprecedented Selectivity in the Labeling of Biological Molecules. Biochemistry. **48**:6571.
[5] Lallana *et al.* (2011) Reliable and Efficient Procedures for the Conjugation of Biomolecules through Huisgen Azide–Alkyne Cycloadditions. *Angew. Chem. Int. Ed.* **50**:8794.

Overview of Click Chemistry Applications

[6] Grammel *et al.* (2013) Chemical Reporters for biological discovery. *Nature Chemical Biology* **9**:475.
[7] Xie *et al.* (2013) Cell-selective metabolic labeling of biomolecules with bioorthogonal functionalities. *Current Opinion in Chemical Biology* **17**:747.
[8] Su *et al.* (2013) Target identification of biologically active small molecules via in situ methods. *Current Opinion in Chemical Biology* **17**:768.
[9] Zeng *et al.* (2013) The Growing Impact of Bioorthogonal Click Chemistry on the Development of Radiopharmaceuticals. *J. Nucl. Med.* **54**:829.
[10] Evans *et al.* (2007) The Rise of Azide–Alkyne 1,3-Dipolar 'Click' Cycloaddition and its Application to Polymer Science and Surface Modification. *Australian Journal of Chemistry* **60(6)**:384.

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