



Click-Chemistry Reagent for Mass Cytometry

Technology ID

2019-210

Click-chemistry mediated labeling of target molecules

This technology is a novel mass cytometry compatible molecular probe that uses click-chemistry mediated labeling of target molecules. This new lanthanide(Ln)-chelated azide containing probe allows for the detection of an expanded range of molecular features by mass cytometry compared to lanthanide-tagged antibodies. This probe is not dependent on antibodies and can be used with multiple lanthanide tags. Its flexibility allows simultaneous, multi-parametric detection of molecular targets via antibodies with RNA synthesis, lipid regulation of proteins and other emerging mass cytometry applications.

Potential applications of this technology include high precision identification of populations of immune cells, simultaneous characterization of drug responses in multiple cell types, dynamics of cell differentiation, and DNA synthesis.

Expanded range of molecular targets

Flow cytometry, the current method of choice for detecting molecular targets, can only detect 20 or fewer molecular targets and requires complex mathematical calculations for deconvolution of the data. Mass cytometry, which uses lanthanide-tagged antibodies to detect molecular targets in individual cells, is best suited for detecting proteins but not other types of molecular features. Until now, no click-chemistry reagent containing lanthanide-tagged probe has been available. This new technology offers a more versatile strategy that allows labeling with a lanthanide ion of choice. It shows results comparable to current antibody-based methods. The novel Ln-azide probe can be loaded with multiple lanthanide tags for multiparametric assays.

Phase of Development

- Prototype developed.

Benefits

- Increases range of molecular features detectable by mass cytometry
- Does not require antibodies
- Results comparable to current antibody-dependent methods

Features

- Versatile approach for mass cytometry-based detection of individual functional cell properties in individual cells
- Click-chemistry-mediated labeling of target molecules
- Novel Ln-azide probe can be loaded with multiple lanthanide tags for multi-parametric assays
- Compatible with parallel antibody-based detection of other parameters in single cells

Applications

Category

Engineering & Physical

Sciences/Chemicals

Life Sciences/Research Tools

Learn more



- Mass cytometry
- Molecular probe for mass cytometry
- Analytical instrumentation and reagent

Researchers

Jop H. van Berlo, MD, PhD

Professor of Medicine, Cardiovascular Division

[External Link](http://www.dom.umn.edu) (www.dom.umn.edu)

Edgar Arriaga, PhD

Professor, Department of Chemistry

[External Link](http://chem.umn.edu) (chem.umn.edu)

Valerie Pierre, PhD

Associate Professor, Department of Chemistry

[External Link](http://chem.umn.edu) (chem.umn.edu)

Publications

[*Development of a Click-Chemistry Reagent Compatible with Mass Cytometry*](#)

Scientific Reports, (2018) 8:6657

Interested in Licensing?

The University relies on industry partners to further develop and ultimately commercialize this technology. The license is for the sale, manufacture or use of products claimed by the patents. Please contact us to share your business needs and licensing and technical interests in this technology.