

# Site-Specific Ligation and Compound Conjugation to Existing Antibodies

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# **CONTACT**

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## **INVENTORS**

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# OTHER INFORMATION

# **KEYWORDS**

anti-body drug
conjugates, site specific
linker, fab crosslinker,
chemotherapy

# **CATEGORIZED AS**

#### Medical

Disease: Cancer

#### **RELATED CASES**

2015-138-0

#### **ABSTRACT**

Researchers at the University of California, Davis have developed a unique method for sitespecific ligation and conjugation of compounds to existing antibodies.

#### **FULL DESCRIPTION**

Traditionally, non-specific ligation methods have been used to chemically modify immunoglobulins. Through these methods, cytotoxic compounds are generally conjugated to antibodies via targeting of: (i) amines of lysine residues and (ii) free sulfhydryls of cysteine residues. These modifications, however, lead to heterogeneous products due to the multiple instances of identical functional groups. Therefore, there is a need for site-specific modification of immunoglobulins to establish homogenous immunoconjugates.

Researchers at the University of California, Davis have developed a unique method for site-specific ligation and conjugation of compounds to antibodies via direct binding of a ligand to the Fab arm. This method can be used to conjugate compounds to existing monoclonal and polyclonal antibodies, reducing production costs and shortening the preclinical-to-clinical translation times. The modification itself can be performed in very mild conditions, providing a viable method to create uniform antibody drug conjugates and bispecific antibodies. The method has been verified *in vitro* with human breast cancer cells and trastuzmab.

#### **APPLICATIONS**

- ▶ Therapeutics against cancer or infectious agents
- ▶ Bispecific antibodies

# FEATURES/BENEFITS

- ► Reduced production costs
- ▶ Reduced preclinical-to-clinical translation times
- ► Mild reaction conditions
- Site-specific ligation and conjugation
- ► Can be used with existing antibodies

#### **RELATED MATERIALS**

➤ Covalent Chemical Ligation Strategy for Mono- and Polyclonal Immunoglobulins at Their Nucleotide Binding Sites Diana Lac, Chun Feng, Gaurav Bhardwaj, Huong Le, Jimmy Tran, Li Xing, Gabriel Fung, Ruiwu Liu, Holland Cheng, and Kit S. Lam Bioconjugate Chemistry 2016 27 (1), 159-169 DOI: 10.1021/acs.bioconjchem.5b00574 - 12/02/2015

#### **PATENT STATUS**

Country	Туре	Number	Dated	Case
United States Of America	<b>Issued Patent</b>	10,588,982	03/17/2020	2015-138

Additional Patent Pending

# **ADDITIONAL TECHNOLOGIES BY THESE INVENTORS**

▶ Novel Solid Tumor Chemodrug LLS2

- ▶ Affinity Peptides for Diagnosis and Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 and Zika Virus Infections
- ▶ Nanoparticles for Drug Delivery, Tissue Targeting and Imaging Analysis
- ▶ Conjugates That Combine HDAC Inhibitors and Retinoids into Disease Preventatives/Treatments
- ► Artificial Intelligence-Based Evaluation Of Drug Efficacy
- ▶ A Novel RGD-Containing Cyclic Peptide for use in Cancer Imaging and as a Targeted-Therapy Ligand
- ► Ligands for Alpha-4-Beta-1 Integrin
- ► Functional Illumination in Living Cells
- ▶ Multifunctional Porphyrin-Based Nanomedicine Platform
- ▶ Engineered Biomaterial to Prevent Endothelial Inflammation
- ▶ PVA Nanocarrier System for Controlled Drug Delivery
- ▶ Systems and Methods of Single-Cell Segmentation and Spatial Multiomics Analyses

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