

# Lightning-Link® Rapid Conjugation System

Applicable to:

Product series 310 to 369

Release 10

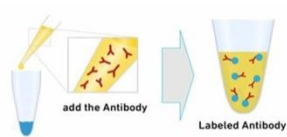
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## Introduction

Lightning-Link® Rapid conjugation technology works by targeting amine groups (e.g. lysines) and is widely used to label antibodies.

The Lightning-Link® Rapid conjugation kit allows conjugations to be set up in *less than 30 seconds*, simply by adding a solution of the antibody to a lyophilized mixture containing a proprietary activated ligand (Figure 1).

**Figure 1. Lightning-Link® antibody conjugation**



By circumventing the desalting or dialysis steps that commonly interrupt traditional antibody conjugation procedures, Lightning-Link® technology can be used to label both small (e.g. 10µg) and large quantities of primary antibodies with ease. Batch-to-batch variation upon scale up is minimal as the process is so simple, and recoveries are always 100%.

Directly labeled primary antibodies are advantageous as they eliminate the need for secondary reagents in immunoassay procedures, thus removing a tedious extra cycle of incubation and wash steps in applications such as ELISA and Western blotting.

Lightning-Link® technology can also be used to label proteins, peptides and other biomolecules (See the 'What can I label using Lightning-Link®?' Section of the protocol for further information).

## Kit contents

1 or 3 glass vial(s) of Lightning-Link® Rapid mix

1 vial of LL-Rapid Modifier reagent

1 vial of LL -Rapid Quencher reagent

## Shipping conditions

The kit is shipped at ambient temperature in a tamper-evident polypropylene container. Store the kits at -20°C upon receipt.

Please note that the modifier and quencher after initial thawing can be stored at either 4°C or -20°C.

## Buffer considerations

Please see the below table for recommended buffer conditions and components:

Buffer components	
pH	6.5-8.5
Amine free buffer (e.g. MES, MOPS, HEPES, PBS)	✓
Non-buffering salts (e.g. sodium chloride)	✓
Chelating agents (e.g. EDTA)	✓
Sugars	✓
Glycerol	<50%
Thiomersal / Thimerosal	✗
Merthiolate	✗
Sodium Azide <sup>1</sup>	<0.1%
BSA <sup>1,2</sup>	<0.1%
Gelatin <sup>1,2</sup>	<0.1%
Tris	<50mM
Glycine	✗
Proclin	✗
Borate buffer	✓
Nucleophilic components (Primary amines e.g. amino acids or ethanolamine and thiols e.g. mercaptoethanol or DTT)	✗

<sup>1</sup> Please note that individually the concentrations shown should not affect the reaction. However in combination with additional compounds that are not recommended above a certain concentration, the reaction may be affected.

<sup>2</sup> If intending to use this kit for immunohistochemistry, it is recommended that there be no gelatin or BSA present.

## Amount and volume of antibody

Pack size	Recommended amount of antibody	Maximum amount of antibody	Maximum conjugation volume
Up to 20µg	10µg	20µg	10µl
Up to 200µg	100µg	200µg	100µl
Up to 2mg	1mg	2mg	1ml

The recommended conjugation conditions are based on using a 1mg/ml antibody concentration. Antibodies greater than 1mg/ml should be diluted to 1mg/ml using either milli-Q water or PBS.

Superior conjugates are normally generated using the recommended amount of antibody. Using the maximum amount of antibody will still generate quality conjugates.

Antibodies less than 1mg/ml can still be used to generate good conjugates provided the maximum conjugation volume is not exceeded. Adding less than the recommended maximum amount

of antibody may result in unbound label post conjugation. This excess label will be deactivated by the quencher and removed during the first wash step of any application. We would recommend that antibodies below 0.5mg/ml are concentrated prior to use.

Please contact our technical support team for more advice.

## Instructions

Setting up your conjugation reaction

1. Before you add antibody to the Lightning-Link® Rapid mix, add 1µl of LL-Rapid modifier reagent for each 10µl of antibody to be labeled. Mix gently.
2. Remove the screw cap from the vial of Lightning-Link® Rapid mix and pipette the antibody sample (with added LL-Rapid modifier) directly onto the lyophilized material. Resuspend gently by withdrawing and re-dispensing the liquid once or twice using a pipette.
3. Place the cap back on the vial and leave the vial standing for 15 minutes at room temperature (20-25°C) in the dark. Alternatively, and sometimes more conveniently, conjugations can be set up and left at room temperature overnight, as the longer incubation time has no negative effect on the conjugate.
4. After incubating for 15 minutes (or more), add 1µl of LL-Rapid quencher reagent for every 10µl of antibody used. The conjugate can be used after 5 minutes. The conjugates do not require purification.

## Storage of conjugates

Your Rapid conjugate can be stored at 4°C for up to 18 months. For longer storage the conjugate can be stored at -20°C with a cryoprotectant such as 50% glycerol.

The best storage conditions for any particular conjugate must be determined by experimentation.

The conjugate should always be stored in the dark.

## What can I label using Lightning-Link®?

Lightning-Link® technology works by targeting free amine groups. It can be used to label antibodies, peptides, proteins and other molecules with free amine groups.

The protocol provided here is optimized for labeling IgGs, we would recommend when labeling other molecules you visit our dedicated alternative applications page,

[www.innovabiosciences.com/innova/advanced-users-guide.html](http://www.innovabiosciences.com/innova/advanced-users-guide.html)

our Lightning-Link FAQ page for antibody related questions <https://www.innovabiosciences.com/faqs/antibody-labeling-faqs.html>

or contact our technical support team.

[technical.enquiries@innovabiosciences.com](mailto:technical.enquiries@innovabiosciences.com)

Our custom conjugation service team will also be happy to generate your conjugate for you. Please contact our sales team for a quote. [info@innovabiosciences.com](mailto:info@innovabiosciences.com)

## What if my buffer doesn't fit the requirements?

The AbSelect™ purification kit range allows you to quickly and simply purify your antibody using our conjugation friendly buffers.

The appropriate kit to use depends on your particular sample. We have designed a handy flow chart on the AbSelect™ webpage to help you select the best kit;

<https://www.innovabiosciences.com/antibody-purification-kits.html>

If your antibody is already purified but its concentration is too low, you can concentrate it by using our AbSelect™ Antibody Concentration and Clean Up Kit (product code 861-0010). This kit can also be used to remove low molecular weight contaminants such as azide, Tris or glycine.

If your antibody contains BSA, you can now use our AbSelect™ BSA removal kit to purify your antibody in one simple step.

Our AbSelect™ kits are fully compatible with Lightning-Link® and are designed to work with IgG antibodies. The only exception is the Concentration and Clean Up kit (861-0010), which will work with any molecule greater than 10kDa.

## I have a question regarding my conjugation

Please contact our technical support team at [technical.enquiries@innovabiosciences.com](mailto:technical.enquiries@innovabiosciences.com) if you require any further information or help about our products.

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