

# Streptavidin-IgG Conjugation Kit

## For labeling 3 x 100 µg IgG

### Reagent Storage

The kit is shipped on blue ice. Please store kit components as described below.

Kit Component	Storage Temp	Storage Notes
Concentrated Activator	-20°C	Keep the vial in the desiccated container as supplied in the kit
Strep-Z™	-20°C or 2-8°C	Does not need to be kept desiccated.
Quenching Reagent	-20°C or 2-8°C	Does not need to be kept desiccated.
Zeba Desalting Column with Collection Tube	2-8°C	Does not need to be kept desiccated. Do not store at freezing temperatures.

### Introduction

Streptavidin is a biotin-binding protein produced by the bacterium *Streptomyces avidinii* that binds 4 moles of biotin per mole of protein with high affinity. Since streptavidin is tetravalent it is possible to utilize streptavidin-IgG conjugates to facilitate the amplification of signal in immunologic assays. In combination with a biotinylated reporter enzyme or a biotinylated fluorescent reporter, it is theoretically possible to bind significantly more reporter enzymes to a single immunologic binding event than for a directly labeled IgG. In addition, streptavidin-IgG conjugates may find use under conditions (high temperature or presence of inhibitory compounds) that would irreversibly inactivate a reporter enzyme. The Streptavidin-IgG conjugation kit utilizes a novel chemistry to easily generate streptavidin-IgG conjugates with a simple procedure. Such conjugates may also have improved stability over those prepared with traditional chemistry.

### Features

- Liquid-based reagents.
- Completely scalable: conjugate anywhere from 10 µg to 1-gram IgG per reaction.
- Supplies sufficient activated Streptavidin to conjugate all IgG at a 2:1 Streptavidin:IgG ratio.
- Highly efficient Streptavidin incorporation - purification not usually necessary.
- Customize the Streptavidin:IgG ratio to create optimized conjugates for different applications.
- Conjugates have greatly improved stability vs Lightning-Link™ and traditional chemistry.

### Product & Contents

Catalogue Number	Streptavidin -Link-CC
For Labeling:	3 x 100 ug IgG
Concentrated Activator	10 µL
Strep-Z™- Activated Streptavidin (3.5 mg/ml)	65 µL
1X Quenching Reagent	40 µL
Zeba Desalting Column with Collection Tube	3 each

### **Additional Reagents Required But Not Supplied**

1X Phosphate Buffered Saline (1X PBS), pH 7.2-7.5

Deionized water (dH<sub>2</sub>O)

1.5 ml microcentrifuge tubes

### **Shelf Life**

The performance of the product is guaranteed for a minimum of 12 months when stored as directed.

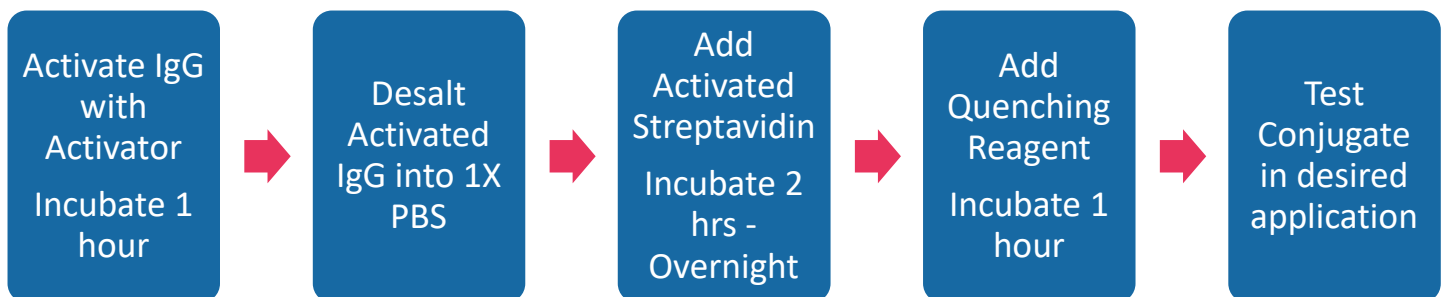
### **IgG Requirements**

The IgG to be labeled should be at a minimum concentration of 0.8 mg/ml in pure 1X PBS and should not contain any preservatives or carriers such as sodium azide, Proclin 300 or BSA.

### **Streptavidin:IgG Molar Ratio**

This kit utilizes a 2:1 Streptavidin:IgG molar ratio which is optimal for most conjugations reaction. However, lower or higher ratios may give better results depending upon the antibody characteristics and the intended end-use. To change the Streptavidin:IgG molar ratio, vary the volume of Strep-Z™ added to the conjugation reaction (Step 8).

### **Conjugation Procedure - Overview**



### **Before Beginning The Procedure**

Remove the Concentrated Activator from the freezer. Important: Allow sufficient time to let the container and contents come to room temperature before opening the outer and inner vials.

Note: The jar containing the Activator can be removed from the freezer up to 24 hours before use.

### **Detailed Conjugation Procedure**

1. Measure the absorbance of the IgG solution at 280 nm using PBS as a blank. Divide the A<sub>280</sub> by 1.40 to obtain the IgG concentration in mg/ml.
2. Dilute IgG to 1.20 mg/ml in 1X PBS (0.80 – 1.4 mg/ml is acceptable).
3. Add 100 µL of IgG solution to a new microcentrifuge tube.
4. Prepare a working dilution (1X) of Activator from Concentrated Activator in deionized water:
  - a. Add 2.0 µL of Concentrated Activator to 600 µL of deionized water.
  - b. Immediately vortex to mix the solution thoroughly.

Note: The 1X Activator must be used within 5 minutes of preparation. If more than 5 minutes passes before use, discard the 1X Activator and prepare a fresh solution.

5. Add 10.0 µL of 1X Activator to the 100 µL aliquot of IgG and then mix thoroughly by gentle vortexing.
6. Incubate the solution at room temperature for 1 hour.

Note: A longer incubation is not harmful and even overnight incubations will be successful.

7. Desalt the complete 110 µL reaction volume into pure 1X PBS using the included Zeba spin column. See the attached desalting protocol.

Note: The activated IgG is stable and can be stored at 2-8°C for at least 4 months.

8. Add 20 µL of Strep-Z to the desalted, activated IgG and mix by gentle vortexing.
9. Incubate the solution at room temperature for 2-24 hours.

Note: Usable conjugates are produced after only 2 hours incubation. Larger and more potent conjugates will be produced after longer incubations.

10. Add 5  $\mu$ L of Quenching Reagent to the reaction and mix by gentle vortexing.

11. Incubate the solution at room temperature for 1 hour.

Note: A longer incubation is not harmful and overnight incubations will be successful.

12. Conjugate is ready for use. Store at 2-8°C.

Note: To improve conjugate performance, it may help to purify the conjugate from the unincorporated Streptavidin and reaction components by size exclusion chromatography.

### **Optional Accessories**

For desalting IgG before activation - Order from Thermo Fisher Scientific:

Sample Size	Description	Cat #
2 – 12 $\mu$ L	Zeba Spin Desalting Columns, Micro (75 $\mu$ L), 7K MWCO	89877, 89878
30 - 130 $\mu$ L	Zeba Spin Desalting Columns, 0.5mL, 7K MWCO	89882, 89883

For concentrating IgG before or after IgG activation or for concentrating the final conjugate – Order from MilliporeSigma:

Sample Size	Description	Cat #
Up to 500 $\mu$ L	Amicon Ultra-0.5 Centrifugal Filter Unit with Ultracel-50 membrane	Z740176

# Zeba Spin Desalting Column Instructions

## *0.5 mL columns for 30 – 130 $\mu$ L Samples*

### **Notes:**

- Each column can desalt a 30-130  $\mu$ L sample.
- The resin slurry contains 0.05% sodium azide.
- These columns are recommended for desalting molecules > 7000 Daltons.

### **Storage:**

- Store columns at 2-8°C.
- Columns may be stored at room temperature for several days without adverse effects.

### **Additional Materials Required**

- Variable-speed bench-top microcentrifuge
- 1.5 mL microcentrifuge tubes

### **Spin Column Preparation**

1. Remove column's bottom closure and loosen cap (do not remove cap).
2. Place column in the collection tube provided.
3. Centrifuge at 1500  $\times$  *g* for 1 minute to remove storage solution.
4. Remove column cap and place a mark on the side of the column where the compacted resin is slanted upward. For all subsequent steps, place column in the microcentrifuge with the mark facing outward. Improper orientation will result in reduced desalting efficiency. It is not necessary to replace the cap for subsequent steps. Discard the flow through buffer from the collection tube.
5. Add 300  $\mu$ L of buffer on top of the resin bed. Centrifuge at 1500  $\times$  *g* for 1 minute to remove buffer. Discard the flow through buffer from the collection tube.
6. Repeat Step 5 two additional times for a total of 3 column washes.

### **Sample Desalting**

7. Place the column in a new microcentrifuge tube and slowly apply the complete sample to the center of the compacted resin bed.
8. Do not add a stacker after application of the sample to the resin bed.
9. Centrifuge column at 1500  $\times$  *g* for 2 minutes to collect desalted sample. Discard desalting column after use.

Zeba Desalting Columns are a product of Thermo Fisher Scientific Inc.

Sample Size	Description	Cat #
30 - 130 $\mu$ L	Zeba Spin Desalting Columns, 0.5mL, 7K MWCO	89882, 89883