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Data Sheet **CD40:CD40L TR-FRET Assay** Catalog # 79258

DESCRIPTION:

The CD40:CD40L TR-FRET Assay is designed to measure the inhibition of CD40 binding to CD40L in a homogeneous 384 reaction format. This FRET-based assay requires no time-consuming washing steps, making it especially suitable for high throughput screening applications. The assay procedure is straightforward and simple; a sample containing biotinylated CD40, CD40L, anti-His Tb donor, dye-labeled acceptor, and an inhibitor is incubated for two hours. Then, the fluorescence intensity is measured using a fluorescence reader.

COMPONENTS:

Catalog #	Component	Amount	Storage	
79102	CD40, biotinylated	15 µg	-80°C	(Avoid freeze/thaw cycles!)
71191	CD40L-His	2 µg	-80°C	
	Anti-His Tb Donor	2 x 10 µl	-20°C	
	Dye-labeled Acceptor	2 x 10 µl	-20°C	
79311	3x Immuno Buffer 1	4 ml	-20°C	
	White, non-binding, low volume, 384-well microtiter plate	1	Room temp.	

MATERIALS OR INSTRUMENTS REQUIRED BUT NOT SUPPLIED:

Fluorescence microplate reader capable of measuring Time Resolved Fluorescence Resonance Energy Transfer (TR-FRET)
Adjustable micropipettor and sterile tips

APPLICATIONS: Great for screening small molecular inhibitors for drug discovery and HTS applications.

STABILITY: At least 6 months from date of receipt when stored as directed.

REFERENCES:

1. Annis, A., *et al. J. Amer. Chem. Soc.*, 2004 May; **126(4)**: 15495-15503.
2. Yan, T., *et al. J. Cellular Biochem.* 2001 Aug; **83(2)**: 320-325.

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ASSAY PROTOCOL:

All samples and controls should be tested in at least duplicate.

Protocol for CD40 assay

- 1) Dilute one part **3x Immuno Buffer 1** with 2 parts distilled water (3-fold dilution) to make **1x Immuno Buffer 1**. Make only a sufficient quantity needed for the assay; store remaining stock solution in aliquots at -20°C.
- 2) Dilute **Anti-His Tb Donor** 100-fold in **1x Immuno Buffer 1**. Make only sufficient quantities needed for the assay; store remaining stock solution in aliquots at -20°C.
- 3) Dilute **Dye-labeled acceptor** 100-fold in **1x Immuno Buffer 1**. Make only sufficient quantities needed for the assay; store remaining stock solution in aliquots at -20°C.
- 4) Thaw **CD40, Biotinylated** on ice. Upon first thaw, briefly spin tube containing **CD40, Biotinylated** to recover the full contents of the tube. Aliquot into single-use aliquots. Store remaining undiluted **CD40** at -80°C immediately. *Note: **CD40, Biotinylated** is very sensitive to freeze/thaw cycles. Do not re-use thawed aliquots or diluted protein.*
- 5) Dilute **CD40, Biotinylated** in **1x Immuno Buffer 1** to 8 µg/ml. Make only sufficient quantities needed for the assay; store remaining stock solution in aliquots at -20°C.
- 6) Prepare the master mixture: N wells x (3 µl diluted **CD40, Biotinylated** + 5 µl diluted **Anti-His Tb Donor** + 5 µl diluted **Dye-labeled acceptor**). Add 13 µl to every well.
- 6) Add 2 µl of inhibitor solution to each well designated "Test Inhibitor." Add 2 µl of the same solution without inhibitor (inhibitor buffer) to the wells labeled "Negative Control" and "Positive Control."
- 7) Add 5 µl **1x Immuno Buffer 1** to wells designated for "Negative Control."

	Positive Control	Negative Control	Test Inhibitor
CD40, Biotinylated (diluted)	3 µl	3 µl	3 µl
Anti-His Tb Donor	5 µl	5 µl	5 µl
Dye-labeled Acceptor	5 µl	5 µl	5 µl
Test Inhibitor	-	-	2 µl
Inhibitor Buffer (no inhibitor)	2 µl	2 µl	-
1x Immuno Buffer 1	-	5 µl	-
CD40L-His (diluted)	5 µl	-	5 µl
Total	20 µl	20 µl	20 µl

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- 8) Thaw **CD40L-His** protein on ice. Upon first thaw, briefly spin tube containing protein to recover the full contents of the tube. Aliquot **CD40L-His** into single-use aliquots. Store remaining undiluted **CD40L-His** in aliquots at -80°C immediately. *Note: **CD40L-His** is very sensitive to freeze/thaw cycles. Do not re-use thawed aliquots or diluted protein.*
- 9) Dilute **CD40L-His** in **1x Immuno Buffer 1** to 0.7 $\mu\text{g/ml}$. Initiate reaction by adding 5 μl of diluted **CD40L-His** to wells designated for the "Positive Control" and "Test Inhibitor." Discard any remaining diluted **CD40L-His** protein after use.
- 10) Incubate at room temperature for 1.5 hours.
- 11) Read the fluorescent intensity in a microtiter-plate reader capable of TR-FRET.

Instrument Settings

Reading Mode	Time Resolved
Excitation Wavelength	320 \pm 10 nm
Emission Wavelength	620 \pm 10 nm
Lag Time	60 μs
Integration Time	500 μs
Excitation Wavelength	320 \pm 20 nm
Emission Wavelength	665 \pm 10 nm
Lag Time	60 μs
Integration Time	500 μs

CALCULATING RESULTS:

Two sequential measurements should be conducted. Tb-donor emission should be measured at 620 nm followed by dye-acceptor emission at 665 nm. Data analysis is performed using the TR-FRET ratio (665 nm emission/620 nm emission).

If desired, data can be normalized to percent inhibition. Typically for inhibitor screens, the FRET value from the positive control is set to zero percent inhibition and the FRET value from the negative control is set to one hundred percent inhibition.

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EXAMPLE OF ASSAY RESULTS:

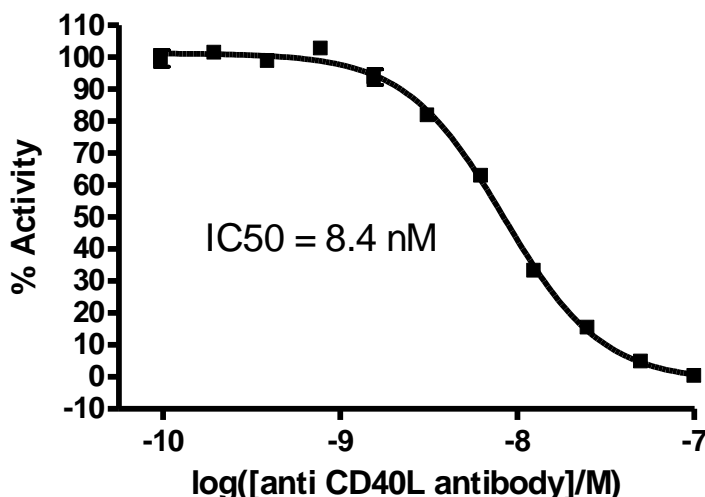


Figure Legend: Inhibition of CD40:CD40L interaction with anti CD40L antibody (BioLegend, #310827). Data in the above graphs are expressed as FRET ratios. Data shown is lot-specific. For lot-specific information, please contact BPS Bioscience, Inc. at info@bpsbioscience.com

RELATED PRODUCTS:

<u>Product</u>	<u>Catalog #</u>	<u>Size</u>
CD40, Fc fusion (Human)	71174	100 µg
CD40, Fc Fusion (IgG1) Avi-Tag, Biotin Labeled	79102	50 µg
CD40L (CD154), His-tag (Human)	71191	100 µg
CD40 - HEK293 Cell Line	71257	2 vials
CD40/NF-κB Reporter (Luc) - HEK293 Cell Line	60626	2 vials
CD40:CD40L[Biotinylated] Inhibitor Screening Kit	79257	96 rxns.

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