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# Data Sheet

## *JARID1B Chemiluminescent Assay Kit*

**Catalog # 50517**
**Size: 96 reactions**

**DESCRIPTION:** The *JARID1B Chemiluminescent Assay Kit* is designed to measure JARID1B activity for screening and profiling applications. JARID1B is a member of the Jumonji, AT-rich interactive domain 1 (JARID1) histone demethylase protein family. It binds directly, with several other proteins, to retinoblastoma protein which regulates cell proliferation. The *JARID1B Chemiluminescent Assay Kit* comes in a convenient format, with a 96-well strip plate pre-coated with methylated histone H3 peptide substrate, primary antibody, secondary HRP-labeled antibody, demethylase assay buffer, and purified JARID1B for 100 enzyme reactions. The key to the *JARID1B Chemiluminescent Assay Kit* is a highly specific antibody that recognizes demethylated substrate. With this kit, only three simple steps on a microtiter plate are required for detection of demethylase activity. First, JARID1B enzyme is incubated with the methylated H3 peptide for one hour. Next, primary antibody is added. Finally, the plate is treated with an HRP-labeled secondary antibody followed by the addition of the ECL substrate to produce chemiluminescence that can be measured using a chemiluminescence reader.

**COMPONENTS:**

| Catalog # | Component | Amount | Storage | |
|---|---|---|---|---|
| 50121 | JARID1B (KDM5B, PLU-1) | 20 µg | -80°C | ***Avoid freeze/ thaw cycles!*** |
| 52140M | Primary antibody 13 | 12.5 µl | -80°C | |
| 52130H | Secondary HRP-labeled antibody 1 | 10 µl | -80°C | |
| | 4x JARID1B assay buffer | 3 x 1 ml | -80°C | |
| 52100 | Blocking buffer 4 | 50 ml | +4°C | |
| 79670 | ELISA ECL substrate A (transparent bottle) | 6 ml | Room temp. | |
| | ELISA ECL substrate B (brown bottle) | 6 ml | Room temp. | |
| | 8-well strip plate module pre-coated with histone substrate | 1 | +4°C | |

**MATERIALS OR INSTRUMENTS REQUIRED BUT NOT SUPPLIED:**
TBST buffer (1 x TBS, pH 8.0, containing 0.05% Tween-20)
Luminometer or microplate reader capable of reading chemiluminescence
Adjustable micropipettor and sterile tips
Rotating or rocker platform

**APPLICATIONS:** Great for studying enzyme kinetics and HTS applications.

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**CONTRAINDICATIONS:** DMSO >1%, strong acids or bases, ionic detergents, high salt

**STABILITY:** One year from date of receipt when stored as directed.

**REFERENCE:** Klose, R.J., *et al. Cell* 2007; **128:** 889.

**ASSAY PROTOCOL:**
***All samples and controls should be tested in duplicate.***

**Step 1:**

1) Rehydrate the microwells by adding 200 µl of TBST buffer (1x TBS, pH 8.0, containing 0.05% Tween-20) to every well. Incubate 5 minutes at room temperature. Tap the strip plate onto clean paper towels to remove liquid.

2) Prepare master mix: N wells × (7.5 µl **4x JARID1B assay buffer** + 12.5 µl water). Add 20 µl of master mixture to each well.

3) Add 10 µl of inhibitor solution to each well designated “Test Inhibitor”. For the “Positive Control" and "Blank" add 10 µl of the same solution without inhibitor (Inhibitor solvent). *Note: Keep final DMSO concentration ≤1%.*

| | Positive Control | Test Inhibitor | Blank |
|---|---|---|---|
| 4x JARID1B assay buffer | 7.5 µl | 7.5 µl | 7.5 µl |
| Distilled water | 12.5 µl | 12.5 µl | 12.5 µl |
| Test Inhibitor | – | 10 µl | – |
| Inhibitor solvent (no inhibitor) | 10 µl | – | 10 µl |
| 1x JARID1B assay buffer | – | – | 20 µl |
| JARID1B (10 ng/µl) | 20 µl | 20 µl | – |
| **Total** | **50 µl** | **50 µl** | **50 µl** |

4) Dilute 1 part **4x JARID1B assay buffer** with 3 parts distilled water (4-fold dilution) to make **1x JARID1B assay buffer**. Make only sufficient quantity needed for the assay; store remaining stock solution in aliquots at -20°C.

5) Add 20 µl of **1x JARID1B assay buffer** to wells designated as "Blank."

6) Thaw **JARID1B** on ice. Upon first thaw, briefly spin tube containing enzyme to recover full content of the tube. Aliquot **JARID1B** enzyme into single use aliquots. Store remaining

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undiluted enzyme in aliquots at -80°C. *Note: JARID1B is very sensitive to freeze/thaw cycles. Do not re-use thawed aliquots or diluted enzyme.*

7) Dilute **JARID1B** in **1x JARID1B assay buffer** at 10 ng/µl (200 ng/reaction). Keep diluted enzyme on ice until use. Discard any unused diluted enzyme after use.

8) Initiate reaction by adding 20 µl of diluted **JARID1B** prepared as described above to wells designated "Positive Control" and "Test Inhibitor." Incubate at room temperature for one hour.

9) Wash the strip plate three times with TBST buffer. Blot dry onto clean paper towels

10) Add 100 µl of **Blocking buffer 4** to every well. Shake on a rotating platform for 10 minutes. Remove supernatant as described above.

**Step 2:**

1) Dilute **Primary antibody 13** 800-fold with **Blocking buffer 4**.

2) Add 100 µl per well. Incubate 1 hour at room temperature with slow shaking.

3) Wash strip plate with TBST buffer and incubate in **Blocking buffer 4** as described in steps 1-9 and 1-10.

**Step 3:**

1) Dilute **Secondary HRP-labeled antibody 1** 1,000-fold with **Blocking buffer 4**.

2) Add 100 µl per well. Incubate for 30 min. at room temperature with slow shaking.

3) Wash strip plate with TBST buffer and incubate in **Blocking buffer 4** as described in steps 1-9 and 1-10.

4) Just before use, mix on ice 50 µl **ELISA ECL substrate A** and 50 µl **ELISA ECL substrate B** and add 100 µl per well. Discard any unused chemiluminescent reagent after use.

5) Immediately read sample in a luminometer or microtiter-plate capable of reading chemiluminescence.

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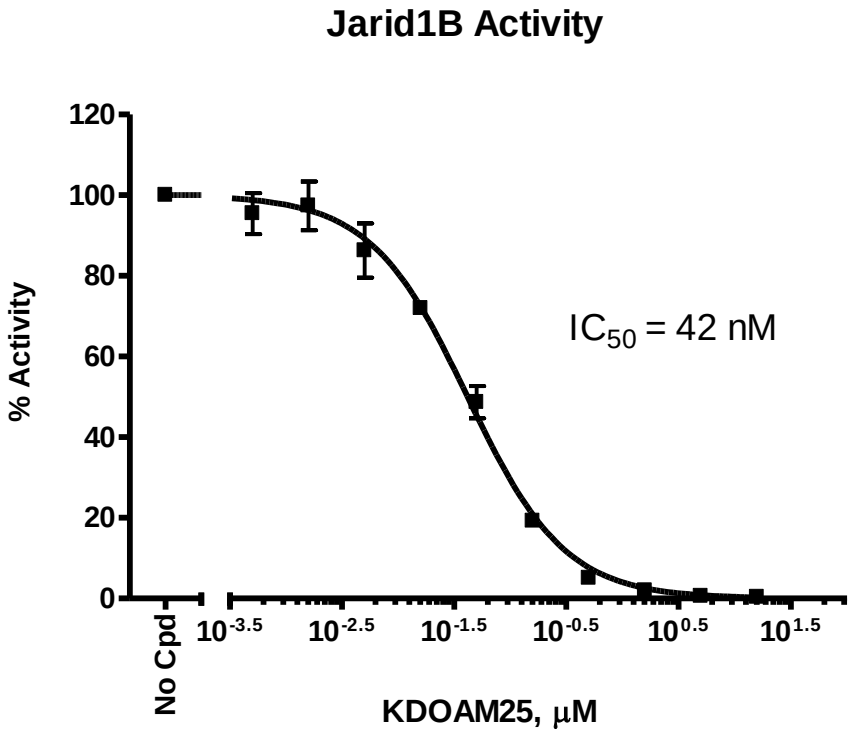
**Reading Chemiluminescence:**

Chemiluminescence is the emission of light (luminescence) which results from a chemical reaction. The detection of chemiluminescence requires no wavelength selection because the method used is emission photometry and is not emission spectrophotometry.

To properly read chemiluminescence, make sure the plate reader is set for LUMINESCENCE mode. Typical integration time is 1 second, delay after plate movement is 100 msec. Do not use a filter when measuring light emission. Typical settings for the Synergy 2 BioTek plate reader are: use the "hole" position on the filter wheel; Optics position: Top; Read type: endpoint. Sensitivity may be adjusted based on the luminescence of a control assay without enzyme (typically we set this value as 100).

**Examples of Assay Results:**




JARID1B enzyme inhibition by KDOAM25, measured using the *JARID1B Chemiluminescent Assay Kit*, BPS Bioscience #50517 *Data shown is lot-specific. For lot-specific information, please contact BPS Bioscience, Inc. at info@bpsbioscience.com*

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**RELATED PRODUCTS**

| Product Name | Catalog # | Size |
|---|---|---|
| JARID1A recombinant protein | 50110 | 20 µg |
| JARID1A recombinant protein, His/Avi-tag | 50155 | 20 µg |
| JARID1B recombinant protein | 50121 | 20 µg |
| JARID1C recombinant protein | 50112 | 20 µg |
| JMJD2C recombinant protein | 50105 | 100 µg |
| LSD1 recombinant protein | 50100 | 50 µg |
| JARID1A Homogeneous Assay Kit | 50510 | 384 reactions |
| JARID1B Homogeneous Assay Kit | 50512 | 384 reactions |
| JARID1C Homogeneous Assay Kit | 50511 | 384 reactions |
| JMJD2A Homogeneous Assay Kit | 50413 | 384 reactions |
| JMJD2B Homogeneous Assay Kit | 50414 | 384 reactions |
| JMJD2C Homogeneous Assay Kit | 50415 | 384 reactions |
| JMJD2C Chemiluminescent Assay Kit | 50405 | 96 reactions |
| JMJD2D Chemiluminescent Assay Kit | 50418 | 96 reactions |
| JMJD3 Chemiluminescent Assay Kit | 50406 | 96 reactions |
| LSD1 Chemiluminescent Assay Kit | 50109 | 96 reactions |

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**TROUBLESHOOTING GUIDE**

| Problem | Possible Cause | Solution |
|---|---|---|
| Luminescence signal of positive control reaction is same as "blank" value. | JARID1B has lost activity | Enzyme loses activity upon repeated freeze/thaw cycles. Use fresh JARID1B, BPS Bioscience #50121. Store enzyme in single-use aliquots. Increase time of enzyme incubation. Increase enzyme concentration. |
| | Antibody reaction is insufficient | Increase time for primary antibody incubation. Avoid freeze/thaw cycles of antibodies. |
| | Incorrect settings on instruments | Refer to instrument instructions for settings to increase sensitivity of light detection. See section on "Reading Chemiluminescence" above. |
| | Chemiluminescent reagents mixed too soon | Chemiluminescent solution should be used within 15 minutes of mixing. Ensure both reagents are properly mixed. |
| Luminescent signal is erratic or varies widely among wells | Inaccurate pipetting/technique | Run duplicates of all reactions.<br>Use a multichannel pipettor.<br>Use master mixes to minimize errors. |
| | Bubbles in wells | Pipette slowly to avoid bubble formation. Tap plate lightly to disperse bubbles; be careful not to splash between wells. |
| Background (signal to noise ratio) is high | Insufficient washes | Be sure to include blocking steps after wash steps. Increase number of washes. Increase wash volume. Increase Tween-20 concentration to 0.1% in TBST. |
| | Sample solvent is inhibiting the enzyme | Run negative control assay including solvent. Maintain DMSO level at <1%<br>Increase time of enzyme incubation. |
| | Results are outside the linear range of the assay | Use different concentrations of JARID1B, BPS Bioscience #50121 to create a standard curve. |