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# Data Sheet

## *PRMT5 Chemiluminescent Assay Kit*

**Catalog #52073**
**Size: 384 reactions**

**DESCRIPTION:** The *PRMT5 Chemiluminescent Assay Kit* is designed to measure PRMT5 activity for screening and profiling applications. The *PRMT5 Chemiluminescent Assay Kit* comes in a convenient format, with a 384-well plate precoated with histone H4 peptide substrate, the antibody against methylated arginine3 residue of Histone H4, the secondary HRP-labeled antibody, S-adenosylmethionine, methyltransferase assay buffer, and purified PRMT5 enzyme for 384 enzyme reactions. The key to the *PRMT5 Chemiluminescent Assay Kit* is a highly specific antibody that recognizes methylated R3 residue of Histone H4. With this kit, only three simple steps on a microtiter plate are required for methyltransferase detection. First, S-adenosylmethionine is incubated with a sample containing assay buffer and methyltransferase enzyme. Next, primary antibody is added. Finally, the plate is treated with an HRP-labeled secondary antibody followed by addition of the HRP substrate to produce chemiluminescence that can then be measured using a chemiluminescence reader.

**COMPONENTS:**

| Catalog # | Components | Amount | Storage | |
|---|---|---|---|---|
| 51045 | PRMT5/MEP50 human enzyme | 40 µg | -80°C | ***Avoid freeze/ thaw cycles!*** |
| 52120 | 100 µM S-adenosylmethionine | 250 µl | -80°C | |
| 52150-3 | Primary antibody 4-3 | 100 µl | -80°C | |
| 52131H | Secondary HRP-labeled antibody 2 | 2x10 µl | -80°C | |
| | 4x PRMT5 assay buffer (add DTT before experiment) | 2x3 ml | -20°C | |
| 52100 | Blocking buffer | 2x50 ml | +4°C | |
| | HRP chemiluminescent substrate A (transparent bottle) | 2x6 ml | +4°C | |
| | HRP chemiluminescent substrate B (brown bottle) | 2x6 ml | +4°C | |
| | 384-well plate precoated with histone substrate | 1 | +4°C | |

**MATERIALS REQUIRED BUT NOT SUPPLIED:**
TBST buffer (1 x TBS, pH 8.0, containing 0.05% Tween-20)
DTT (Dithiothreitol), 0.5M (Sigma, Cat. # D0632)
Luminometer or fluorescent microplate reader capable of reading chemiluminescence
Adjustable micropipettor and sterile tips
Rotating or rocker platform

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

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

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

**REFERENCE:** Stopa, N., *et al*. 2015. *Cell Mol Life Sci.* **72(11):**2041-59.

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

**Step 1:**

1) Rehydrate the microwells by adding 100 µl of TBST buffer (1x TBS, pH 8.0, containing 0.05% Tween-20) to every well. Incubate 15 minutes at room temperature. Tap the plate onto clean paper towels to remove liquid.

2) Thaw **S-adenosylmethionine** on ice. Upon first thaw, briefly spin tube containing **S-adenosylmethionine** to recover full contents of the tube. Aliquot **S-adenosylmethionine** into single use aliquots and store at -80˚C. *Note: **S-adenosylmethionine** is very sensitive to freeze/thaw cycles. Avoid multiple freeze/thaw cycles.*

3) Add 30 µl 0.5 M DTT to 4x PRMT5 assay buffer. Prepare the master mixture: N wells × (7.5 µl **4X PRMT5 buffer** + 0.5 µl **100 µM S-adenosylmethionine** + 17 µl water). Add 25 µl of master mixture to all wells labeled “Positive Control”, “Test Sample” and “Blank”. For wells labeled “Substrate control”, add 7.5 µl **4X PRMT5 buffer** + 17.5 µl water.

4) Add 5 µl of inhibitor solution of each well designated “Test Inhibitor”. For the “Positive Control", “Substrate Control” and “Blank”, add 5 µl of the same solution without inhibitor (inhibitor buffer).

| | Blank | Substrate Control | Positive Control | Test Sample |
|---|---|---|---|---|
| 4X PRMT5 buffer | 7.5 µl | 7.5 µl | 7.5 µl | 7.5 µl |
| 100 µM S-adenosylmethionine | 0.5 µl | – | 0.5 µl | 0.5 µl |
| $H_2O$ | 17 µl | 17.5 µl | 17 µl | 17 µl |
| Test Inhibitor | – | – | – | 5 µl |
| Inhibitor buffer (no inhibitor) | 5 µl | 5 µl | 5 µl | – |
| 1X PRMT5 buffer | 20 µl | – | – | – |
| Diluted PRMT5 (5 ng/µl) | | 20 µl | 20 µl | 20 µl |
| **Total** | **50 µl** | **50 µl** | **50 µl** | **50 µl** |

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5) Add 30 µl **0.5M DTT** (not provided) to 3-ml tube with **4x PRMT5 Assay Buffer.** Prepare **1x PRMT5 Assay Buffer** by adding 1 part of **4x PRMT5 Assay Buffer** to 3 parts water (v/v).

6) Thaw **PRMT5/MEP50 enzyme** on ice. Upon first thaw, briefly spin tube containing enzyme to recover full content of the tube. Aliquot **PRMT5/MEP50 enzyme** into single use aliquots. Store remaining undiluted enzyme in aliquots at -80°C immediately. *Note: **PRMT5/MEP50 enzyme** is very sensitive to freeze/thaw cycles. Do not re-use thawed aliquots or diluted enzyme.*

7) Dilute **PRMT5/MEP50 enzyme** in **1× PRMT5 buffer** at 5 ng/µl (100 ng/20 µl). Keep diluted enzyme on ice until use. Discard any unused diluted enzyme after use. *Note: Diluted enzyme may not be stable. Dilute the enzyme immediately before use.*

8) Add 20 µl of **1 × PRMT5 buffer** to the wells designated “Blank”.

9) Initiate reaction by adding 20 µl of diluted **PRMT5/MEP50** enzyme to the wells designated “Positive Control”, "Substrate Control", and "Test Sample ". Incubate at room temperature for 1 hour.

10) Remove the supernatant from the wells and wash the strip three times with 100 µl TBST buffer. Blot dry onto clean paper towels.

11) Add 50 µl of **Blocking buffer** to every well. Shake on a rotating platform for 10 min. Remove supernatant as above.

**Step 2:**

1) Dilute **“Primary antibody 4-3”** 200-fold with **Blocking buffer.**
2) Add 50 µl per well. Incubate 1 hour at room temperature with slow shaking.
3) Wash plate three times with 100 µl TBST buffer and incubate in **Blocking buffer** as in steps 1-10 and 1-11.

**Step 3:**

1) Dilute “**Secondary HRP-labeled antibody 2**” 1,000-fold with **Blocking buffer.**
2) Add 50 µl per well. Incubate for 30 min. at room temperature with slow shaking.
3) Wash plate three times with TBST buffer and incubate in **Blocking buffer** as in steps 1-10 and 1-11.

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4) Just before use, mix on ice 25 µl **HRP chemiluminescent substrate A** and 25 µl **HRP chemiluminescent substrate B** and add 50 µl per well. Discard any unused chemiluminescent reagent after use.

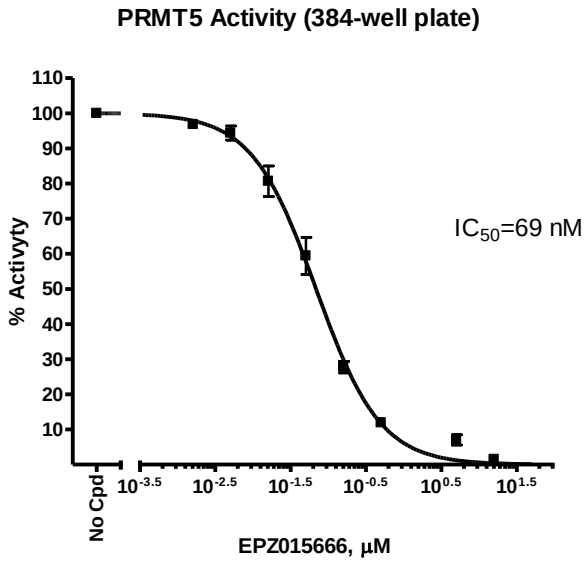
5) Immediately read sample in a luminometer or microtiter-plate capable of reading chemiluminescence. "Blank" value is subtracted from all readings.

**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).

**Example of Assay Results:**




PRMT5 enzyme activity, measured using the *PRMT5 384-well Chemiluminescent Assay Kit*, BPS Bioscience Catalog #...L. Luminescence was measured using a Bio-Tek fluorescent microplate reader. *Data shown is lot-specific. For lot-specific information, please contact BPS Bioscience, Inc. at info@bpsbioscience.com.*

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## RELATED PRODUCTS

| | | |
|---|---|---|
| PRMT5/MEP50 (expressed in Sf9 cells) | #51048 | 20 µg |
| PRMT1 (expressed in E. coli) | #51040 | 50 µg |
| PRMT1 (expressed in Sf9 cells) | #51041 | 20 µg |
| PRMT3 (expressed in E. coli) | #51043 | 50 µg |
| PRMT4/CARM1 (expressed in HEK293) | #51047 | 20 µg |
| PRMT5/MEP50 (expressed in HEK293) | #51045 | 20 µg |
| PRMT6 (expressed in HEK293) | #51049 | 20 µg |
| PRMT7 (expressed in Sf9) | #51054 | 20 µg |
| PRMT8 (expressed in Sf9) | #51052 | 20 µg |
| PRMT9 (expressed in Sf9) | #51053 | 20 µg |
| PRMT1 Chemiluminescent Assay Kit | #52004L | 96 reactions |
| PRMT3 Chemiluminescent Assay Kit | #52005L | 96 reactions |
| PRMT4 Chemiluminescent Assay Kit | #52041L | 96 reactions |
| PRMT6 Chemiluminescent Assay Kit | #52046 | 96 reactions |
| PRMT1 Homogeneous Assay Kit | #52054 | 384 reactions |
| PRMT3 Homogeneous Assay Kit | #52055 | 384 reactions |
| PRMT5 Homogeneous Assay Kit | #52052 | 384 reactions |
| PRMT6 Homogeneous Assay Kit | #52056 | 384 reactions |
| PRMT8 Homogeneous Assay Kit | #52058 | 384 reactions |

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**TROUBLESHOOTING GUIDE**

| Problem | Possible Cause | Solution |
|---|---|---|
| Luminescence signal of positive control reaction is weak | PRMT5 enzyme has lost activity | Enzyme loses activity upon repeated freeze/thaw cycles. Use fresh enzyme (PRMT5, BPS Bioscience #51045). 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 | Record light signals at 5 second intervals. Refer to instrument instructions for settings to increase sensitivity of light detection. See "Reading Chemiluminescence" section. |
| | 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. Use a multichannel pipettor. 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 | 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% Increase time of enzyme incubation. |
| | Results are outside the linear range of the assay | Use different concentrations of enzyme (PRMT5, BPS Bioscience #51045) to create a standard curve. |

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