

## Anti-Human CD137/4-1BB (4B4-1)-209Bi

**Catalog number, package size:** 3209015B, 100 tests  
3209015C, 25 tests

**Clone:** 4B4-1

**Other Names:** ILA, TNFRSF9

**Isotype:** Mouse IgG1,  $\kappa$

**Reactivity:** Human, Cynomolgus Monkey, Rhesus, Chimpanzee, Olive Baboon

**Tag:** 209Bi

**Formulation:** Antibody stabilizer with 0.05% sodium azide

**Storage:** Store at 2–8 °C. Do not freeze.

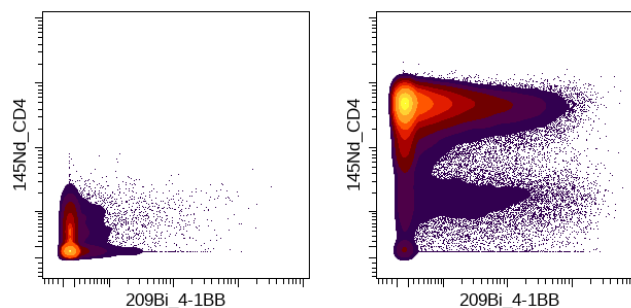
**Application:** CyTOF® suspension mass cytometry

### Technical Information

**Description:** CD137, also known as 4-1BB, is a TNFR family member expressed on activated T cells, NK cells, and a number of other activated cells of hematopoietic and non-hematopoietic origin. Its ligand, 4-1BBL, is expressed by activated DCs, B cells, and macrophages. This interaction leads to a co-stimulatory signal that promotes the up-regulation of anti-apoptotic molecules such as Bcl2 and Bcl-xL. 4-1BB plays roles in promoting cell proliferation and survival of antigen-specific T cells.

**Application:** The metal-tagged antibody is designed and formulated for the application of suspension mass cytometry using the Fluidigm CyTOF suspension systems on healthy human PBMC.

**Validation:** Each lot of conjugated antibody is quality control-tested by CyTOF suspension mass cytometry analysis of stained cells using appropriate positive and negative cell staining and/or activation controls.



PHA-stimulated human PBMC were stained with anti-CD3 (UCHT1)-170Er and anti-CD137/4-1BB (4B4-1)-209Bi antibodies. The plot shown on the left is gated on total NK cells (CD45+CD3-CD20-CD14-CD56+), and the plot shown on the right is gated on total T cells (CD45+CD20-CD14-CD3+).

**Recommended use:** Use 1  $\mu$ L for up to  $3 \times 10^6$  live cells in 100  $\mu$ L staining volume. We recommend titrating the antibody for optimal performance for each of the desired applications. Centrifuge the stock antibody at  $12,000 \times g$  for 5 min to sediment antibody aggregates. Fixation is typically used in intracellular staining protocols or in barcoding with the Cell-ID™ 20-Plex Pd Barcoding Kit (PN 201060). However, fixing before antibody staining can affect epitope structure and antibody binding, with the impact varying on the type and concentration of fixative and the protocol used. It is therefore important to perform a small, preliminary antibody staining experiment, with and without fixation, using non-critical samples.

### Applicable Protocols

Before using this product, refer to the instructions in the Maxpar® Cell Surface Staining with Fresh Fix Protocol (400276).

### References

Bandura, D.R. et al. "Mass cytometry: technique for real time single cell multitarget immunoassay based on inductively coupled plasma time-of-flight mass spectrometry." *Analytical Chemistry* 81 (2009): 6,813–22.

Ornatsky, O.I. et al. "Highly multiparametric analysis by mass cytometry." *Journal of Immunological Methods* 361 (2010): 1–20.

Gadalla, R. et al. "Validation of CyTOF against flow cytometry for immunological studies and monitoring of human cancer clinical trials." *Frontiers in Oncology* 9 (2019): 415.

Boddupalli, C.S. et al. "Interlesional diversity of T cell receptors in melanoma with immune checkpoints enriched in tissue-resident memory T cells." *JCI Insight* 1 (2016): e88955.

### Safety

Use standard laboratory safety protocols. Read and understand the safety data sheets (SDSs) before handling chemicals. To obtain SDSs, go to fluidigm.com and search for 3000000X.

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