

## Alexa Fluor<sup>®</sup> 647 anti-mouse CD45 Antibody

<b>Catalog# / Size</b>	103123 / 25 µg 103124 / 100 µg
<b>Clone</b>	30-F11
<b>Regulatory Status</b>	RUO
<b>Other Names</b>	T200, Ly-5, LCA
<b>Isotype</b>	Rat IgG2b, κ
<b>Description</b>	CD45 is a 180-240 kD glycoprotein also known as the leukocyte common antigen (LCA), T200, or Ly-5. It is a member of the protein tyrosine phosphatase (PTP) family, expressed on all hematopoietic cells except mature erythrocytes and platelets. There are different isoforms of CD45 that arise from variable splicing of exons 4, 5, and 6, which encode A, B, and C determinants, respectively. CD45 plays a key role in TCR and BCR signal transduction. These isoforms are very specific to the activation and maturation state of the cell as well as cell type. The primary ligands for CD45 are galectin-1, CD2, CD3, CD4, TCR, CD22, and Thy-1.

### Product Details

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<b>Verified Reactivity</b>	Mouse
<b>Antibody Type</b>	Monoclonal
<b>Host Species</b>	Rat
<b>Immunogen</b>	Mouse thymus or spleen
<b>Formulation</b>	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide.
<b>Preparation</b>	The antibody was purified by affinity chromatography and conjugated with Alexa Fluor <sup>®</sup> 647 under optimal conditions.
<b>Concentration</b>	0.5 mg/mL
<b>Storage &amp; Handling</b>	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. <b>Do not freeze.</b>
<b>Application</b>	<a href="#">FC - Quality tested</a> <a href="#">ICC, 3D IHC - Verified</a> <a href="#">IHC, SB - Reported in the literature, not verified in house</a>
<b>Recommended Usage</b>	Each lot of this antibody is quality control tested by <a href="#">immunofluorescent staining with flow cytometric analysis</a> . For flow cytometric staining, the suggested use of this reagent is ≤ 0.25 µg per 10 <sup>6</sup> cells in 100 µl volume. For 3D immunohistochemistry on formalin-fixed tissues, a concentration of 5.0 µg/mL is suggested. It is recommended that the reagent be titrated for optimal performance for other applications.  * Alexa Fluor <sup>®</sup> 647 has a maximum emission of 668 nm when it is excited at 633nm / 635nm.  Alexa Fluor <sup>®</sup> and Pacific Blue™ are trademarks of Life Technologies Corporation.  <a href="#">View full statement regarding label licenses</a>
<b>Excitation Laser</b>	Red Laser (633 nm)
<b>Application Notes</b>	Clone 30-F11 reacts with all isoforms and both CD45.1 and CD45.2 alloantigens of CD45.  Additional reported applications (for relevant formats) include: immunoprecipitation <sup>3</sup> , complement-dependent cytotoxicity <sup>1,5</sup> , immunohistochemistry (acetone-fixed frozen sections, zinc-fixed paraffin-embedded sections and formalin-fixed paraffin-embedded sections) <sup>4,6</sup> , Western blotting <sup>7</sup> , and spatial biology (IBEX) <sup>10,11</sup> . The Ultra-LEAF™ purified antibody (Endotoxin < 0.01 EU/µg, Azide-Free, 0.2 µm filtered) is recommended for functional assays (Cat. No. 103163 and 103164).
<b>Additional Product Notes</b>	Iterative Bleaching Extended multi-pleXity (IBEX) is a fluorescent imaging technique capable of

highly-multiplexed spatial analysis. The method relies on cyclical bleaching of panels of fluorescent antibodies in order to image and analyze many markers over multiple cycles of staining, imaging, and, bleaching. It is a community-developed open-access method developed by the Center for Advanced Tissue Imaging (CAT-I) in the National Institute of Allergy and Infectious Diseases (NIAID, NIH).

## Application References

(PubMed link indicates BioLegend citation)

1. Podd BS, *et al.* 2006. *J. Immunol.* 176:6532. (FC, CMCD) [PubMed](#)
2. Haynes NM, *et al.* 2007. *J. Immunol.* 179:5099. (FC)
3. Ledbetter JA, *et al.* 1979. *Immunol. Rev.* 47:63. (IP)
4. Simon DI, *et al.* 2000. *J. Clin. Invest.* 105:293. (IHC)
5. Seaman WE. 1983. *J. Immunol.* 130:1713. (CMCD)
6. Cornet A, *et al.* 2001. *P. Natl. Acad. Sci. USA* 98:13306. (IHC)
7. Tsuboi S and Fukuda M. 1998. *J. Biol. Chem.* 273:30680. (WB) [PubMed](#)
8. Liu F, *et al.* 2012. *Blood.* 119:3295. [PubMed](#)
9. Pelletier AN, *et al.* 2012. *J. Immunol.* 188:5561. [PubMed](#)
10. Radtke AJ, *et al.* 2020. *Proc Natl Acad Sci U S A.* 117:33455-65. (SB) [PubMed](#)
11. Radtke AJ, *et al.* 2022. *Nat Protoc.* 17:378-401. (SB) [PubMed](#)

## Product Citations

1. Osterloh A, *et al.* 2016. *Infect Immun.* . [PubMed](#)
2. Moderzynski K, *et al.* 2016. *PLoS Negl Trop Dis.* . [PubMed](#)
3. Yan Y, *et al.* 2021. *Immunity.* 54:499. [PubMed](#)
4. Cho J, *et al.* 2016. *Nat Commun.* 7:13373. [PubMed](#)
5. Donato C, *et al.* 2020. *Cell Reports.* 32(10):108105. [PubMed](#)
6. Boal-Carvalho I, *et al.* 2020. *EMBO Rep.* 21:e50421. [PubMed](#)
7. Hu X, *et al.* 2016. *Nat Commun.* 7:13095. [PubMed](#)
8. Moore SM, *et al.* 2019. *Transl Psychiatry.* 9:24. [PubMed](#)
9. Biffi G, *et al.* 2018. *Cancer Discov.* 2:282. [PubMed](#)
10. Hu K, *et al.* 2015. *PLoS One.* 10: 0137123. [PubMed](#)
11. Perner C, *et al.* 2020. *Immunity.* 53(5):1063-1077.e7. [PubMed](#)
12. Sutton NR, *et al.* 2019. *Arterioscler Thromb Vasc Biol.* 40:61. [PubMed](#)
13. Lin JR *et al.* 2018. *eLife.* 7 pii: e31657. [PubMed](#)
14. Fang EF, *et al.* 2019. *Nat Neurosci.* 22:401. [PubMed](#)
15. Ruhland MK, *et al.* 2020. *Cancer Cell.* 37(6):786-799.e5. [PubMed](#)
16. Piedrafita G, *et al.* 2020. *Nat Commun.* 11:1429. [PubMed](#)
17. Donato C, *et al.* 2021. *STAR Protocols.* 2(2):100480. [PubMed](#)
18. Pineda CM, *et al.* 2019. *J Cell Biol.* 218:3212. [PubMed](#)
19. Kang MH, *et al.* 2020. *Nat Commun.* 3.186805556. [PubMed](#)
20. Levesque S, *et al.* 2019. *Oncoimmunology.* 8:e1657375. [PubMed](#)
21. Kuhn JA, *et al.* 2021. *Elife.* 10:. [PubMed](#)
22. Simões FC, *et al.* 2020. *Nat Commun.* 0.875. [PubMed](#)
23. Tummers B, *et al.* 2020. *Immunity.* 52(6):994-1006.e8. [PubMed](#)
24. Huang L, *et al.* 2018. *Exp Neurol.* 300:41. [PubMed](#)
25. Sakamoto K, *et al.* 2021. *Immunity.* 54:2321. [PubMed](#)
26. Wang S, *et al.* 2021. *Commun Biol.* 22:. [PubMed](#)
27. Shibuya M, *et al.* 2021. *iScience.* 24:103131. [PubMed](#)
28. de Winde CM, *et al.* 2021. *J Cell Sci.* 134: . [PubMed](#)
29. Ovadya Y, *et al.* 2018. *Nat Commun.* 9:5435. [PubMed](#)
30. Yomtoubian S, *et al.* 2020. *Cell Reports.* 30(3):755-770.e6.. [PubMed](#)
31. Lu YJ, *et al.* 2021. *Cell Rep.* 36:109696. [PubMed](#)
32. Thacker VV, *et al.* 2020. *Elife.* 9:00. [PubMed](#)
33. Sanders K, *et al.* 2015. *Cancer Immunol Res.* 3: 891-901. [PubMed](#)
34. Clemente-Casares X, *et al.* 2017. *Immunity.* 47:974. [PubMed](#)
35. Bakalar MH *et al.* 2018. *Cell.* 174(1):131-142 . [PubMed](#)
36. Chen W, *et al.* 2016. *Nat Commun.* 7: 11302. [PubMed](#)
37. Xiong J *et al.* 2018. *Molecular cell.* 69(4):689-698 . [PubMed](#)
38. Williams IM, *et al.* 2018. *J Clin Invest.* 128:699. [PubMed](#)
39. Koyama M *et al.* 2019. *Immunity.* 51(5):885-898 . [PubMed](#)
40. Oni TE, *et al.* 2020. *J Exp Med.* :217. [PubMed](#)
41. Prabakaran T, *et al.* 2021. *EBioMedicine.* 66:103314. [PubMed](#)

## RRID

AB\_493534 (BioLegend Cat. No. 103123)  
 AB\_493533 (BioLegend Cat. No. 103124)

## Antigen Details

<b>Structure</b>	Protein tyrosine phosphatase (PTP) family, 180-240 kD
<b>Distribution</b>	All hematopoietic cells except mature erythrocytes and platelets
<b>Function</b>	Phosphatase, T and B cell activation
<b>Ligand/Receptor</b>	Galectin-1, CD2, CD3, CD4, TCR, CD22, Thy-1
<b>Cell Type</b>	B cells, Dendritic cells, Mesenchymal Stem Cells, Tregs

<b>Biology Area</b>	Cell Biology, Immunology, Inhibitory Molecules, Innate Immunity, Neuroscience, Neuroscience Cell Markers, Stem Cells
<b>Molecular Family</b>	CD Molecules
<b>Antigen References</b>	<ol style="list-style-type: none"> <li>1. Barclay A, <i>et al.</i> 1997. The Leukocyte Antigen FactsBook Academic Press.</li> <li>2. Trowbridge IS, <i>et al.</i> 1993. <i>Annu. Rev. Immunol.</i> 12:85.</li> <li>3. Kishihara K, <i>et al.</i> 1993. <i>Cell</i> 74:143.</li> <li>4. Pulido R, <i>et al.</i> 1988. <i>J. Immunol.</i> 140:3851.</li> </ol>
<b>Gene ID</b>	<a href="#">19264</a>

## Related Protocols

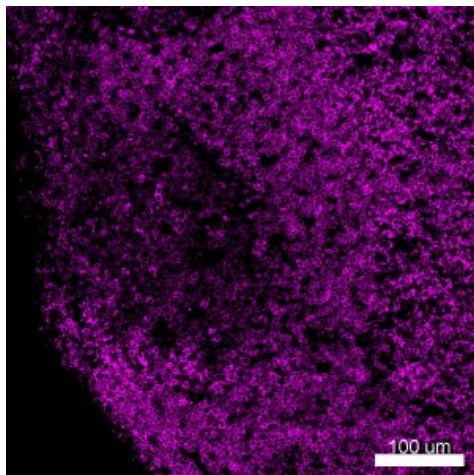
[Cell Surface Flow Cytometry Staining Protocol](#)

[Ce3D™ Tissue Clearing Kit](#)

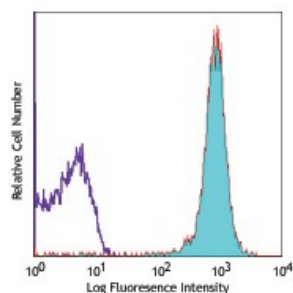
## Other Formats

APC anti-mouse CD45, Biotin anti-mouse CD45, FITC anti-mouse CD45, PE anti-mouse CD45, PE/Cyanine5 anti-mouse CD45, Purified anti-mouse CD45, PE/Cyanine7 anti-mouse CD45, APC/Cyanine7 anti-mouse CD45, Alexa Fluor® 488 anti-mouse CD45, Alexa Fluor® 647 anti-mouse CD45, Pacific Blue™ anti-mouse CD45, Alexa Fluor® 700 anti-mouse CD45, PerCP/Cyanine5.5 anti-mouse CD45, PerCP anti-mouse CD45, Alexa Fluor® 594 anti-mouse CD45, Brilliant Violet 421™ anti-mouse CD45, Brilliant Violet 570™ anti-mouse CD45, Brilliant Violet 510™ anti-mouse CD45, Brilliant Violet 605™ anti-mouse CD45, Purified anti-mouse CD45 (Maxpar® Ready), PE/Dazzle™ 594 anti-mouse CD45, Brilliant Violet 711™ anti-mouse CD45, Brilliant Violet 785™ anti-mouse CD45, Brilliant Violet 650™ anti-mouse CD45, APC/Fire™ 750 anti-mouse CD45, Brilliant Violet 750™ anti-mouse CD45, TotalSeq™-A0096 anti-mouse CD45, TotalSeq™-B0096 anti-mouse CD45, Ultra-LEAF™ Purified anti-mouse CD45, Spark Blue™ 550 anti-mouse CD45, Spark NIR™ 685 anti-mouse CD45, TotalSeq™-C0096 anti-mouse CD45, Spark YG™ 570 anti-mouse CD45, PE/Fire™ 640 anti-mouse CD45, APC/Fire™ 810 anti-mouse CD45, PE/Fire™ 700 anti-mouse CD45, Spark Violet™ 538 anti-mouse CD45, Spark YG™ 593 anti-mouse CD45, Spark Blue™ 574 anti-mouse CD45 Antibody

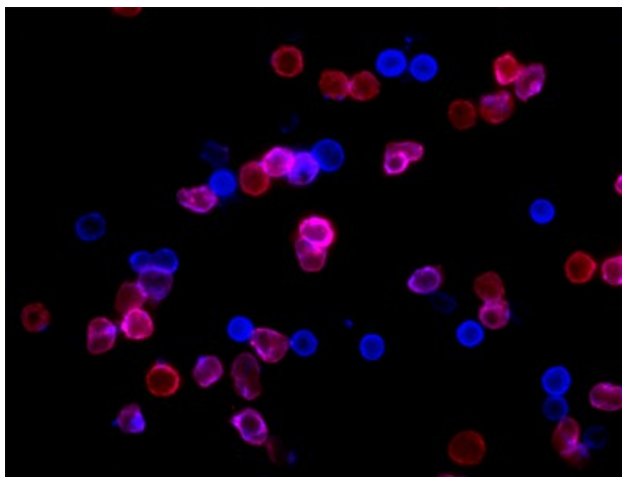
## Product Data



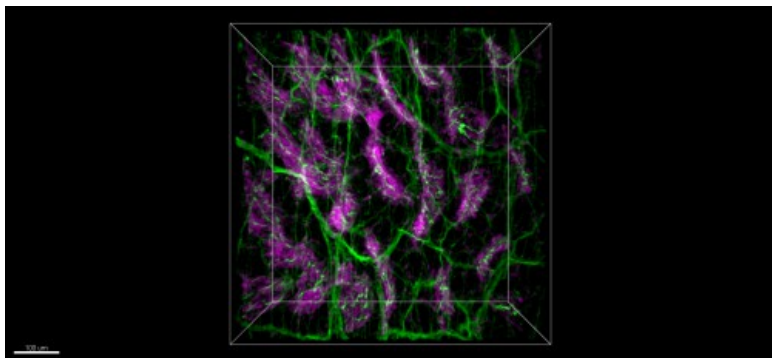
Mice were injected subcutaneously with sheep red blood cells in a volume of 25  $\mu$ l per site on days 0 and 4 and harvested on day 11. Confocal image of C57BL/6 mouse lymph node acquired using the IBEX method of highly multiplexed antibody-based imaging: CD45 (magenta) in Cycle 10. Tissues were prepared using ~1% (vol/vol) formaldehyde and a detergent. Following fixation, samples are immersed in 30% (wt/vol) sucrose for cryoprotection. Images are courtesy of Drs. Andrea J. Radtke and Ronald N. Germain of the Center for Advanced Tissue Imaging (CAT-I) in the National Institute of Allergy and Infectious Diseases (NIAID, NIH).



C57BL/6 mouse splenocytes stained with 30-F11 Alexa Fluor® 647



C57 mouse bone marrow cells were fixed with 2% paraformaldehyde (PFA), and then stained with 10 µg/ml of CD11b (clone M1/70) Brilliant Violet 510™ (red) and 10 µg/ml of CD45 (clone 30-F11) Alexa Fluor® 647 (blue) for 30 minutes at room temperature. The image was captured by 60X objective.



Paraformaldehyde-fixed (4%), mouse intestine tissue section was processed according to the Ce3DTM Tissue Clearing Kit protocol (cat. no. 427701). The section was costained with anti-Tubulin  $\beta$  3 (TUBB3) Antibody (clone TUJ1) Alexa Fluor® 594 at 5 µg/mL (green), and anti-mouse CD45 Antibody (clone 30-F11) Alexa Fluor® 647 at 5 µg/mL (magenta). The section was then optically cleared and mounted in a sample chamber. The image was captured with a 20X objective using Zeiss 780 confocal microscope and processed by Imaris image analysis software.

[Watch the video.](#)

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