Biotin anti-mouse/human CD45R/B220 Antibody

Catalog# / Size	103203 / 50 µg 103204 / 500 µg
Clone	RA3-6B2
Regulatory Status	RUO
Other Names	B220
Isotype	Rat IgG2a, κ
Description	CD45R, also known as B220, is an isoform of CD45. It is a member of the protein tyrosine phosphatase (PTP) family with a molecular weight of approximately 180-240 kD. CD45R is expressed on B cells (at all developmental stages from pro-B cells through mature B cells), activated B cells, and subsets of T and NK cells. CD45R (B220) is also expressed on a subset of abnormal T cells involved in the pathogenesis of systemic autoimmunity in MRL-*Fas*^{lpr} and MRL-*Fas*^{gld} mice. It plays a critical role in TCR and BCR signaling. The primary ligands for CD45 are galectin-1, CD2, CD3, and CD4. CD45R is commonly used as a pan-B cell marker; however, CD19 may be more appropriate for B cell specificity.

Product Details

Verified Reactivity	Mouse, Human
Reported Reactivity	Cat
Antibody Type	Monoclonal
Host Species	Rat
Immunogen	Abelson murine leukemia virus-induced pre-B tumor cells
Formulation	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide.
Preparation	The antibody was purified by affinity chromatography, and conjugated with biotin under optimal conditions.
Concentration	0.5 mg/ml
Storage & Handling	The antibody solution should be stored undiluted between 2°C and 8°C. **Do not freeze.**
Application	FC - *Quality tested* IHC-F - *Verified*
Recommended Usage	Each lot of this antibody is quality control tested by immunofluorescent staining with flow cytometric analysis. For flow cytometric staining, the suggested use of this reagent is ≤ 0.25 µg per 10^6 cells in 100 µl volume. For immunohistochemistry, a concentration range of 5.0 - 10 µg/mL is suggested. It is recommended that the reagent be titrated for optimal performance for each application.
Application Notes	Clone RA3-6B2 has been described to react with an epitope on the extracellular domain of the transmembrane CD45 glycoprotein which is dependent upon the expression of exon A and specific carbohydrate residues. Additional reported applications (for the relevant formats) include: immunoprecipitation[1], *in vitro* and *in vivo* modulation of B cell responses[2-4], immunohistochemistry of acetone-fixed frozen sections and formalin-fixed paraffin-embedded sections[5,6], and spatial biology (IBEX)[14,15].

Application References

(PubMed link indicates BioLegend citation)

1. Coffman RL. 1982. *Immunol. Rev.* 69:5. (IP)
2. George A, *et al.* 1994. *J. Immunol.* 152:1014. (Activ)
3. Asensi V, *et al.* 1989. *Immunology* 68:204. (Activ)
4. Domiati-Saad R, *et al.* 1993. *J. Immunol.* 151:5936. (Activ)
5. Hata H, *et al.* 2004. *J. Clin. Invest.* 114:582. (IHC)
6. Monteith CE, *et al.* 1996. *Can. J. Vet. Res.* 60:193. (IHC)
7. Shih FF, *et al.* 2006. *J. Immunol.* 176:3438. (FC)
8. Chang C L-T, *et al.* 2007. *J. Immunol.* 178:6984.
9. Fazilleau N, *et al.* 2007. *Nature Immunol.* 8:753.

10. Lang GL, *et al.* 2008. *Blood* 111:2158. PubMed
11. Charles N, *et al.* 2010. *Nat. Med.* 16:701. (FC) PubMed
12. del Rio ML, *et al.* 2011. *Transpl. Int.* 24:501. (FC) PubMed
13. Murakami R, *et al.* 2013. *PLoS One.* 8:73270. PubMed
14. Radtke AJ, *et al.* 2020. *Proc Natl Acad Sci U S A.* 117:33455-65. (SB) PubMed
15. Radtke AJ, *et al.* 2022. *Nat Protoc.* 17:378-401. (SB) PubMed

Product Citations

1. Grigsby SM, *et al.* 2021. Cancers (Basel). 13:. PubMed
2. Hutter K, *et al.* 2022. Front Immunol. 13:967914. PubMed
3. Hu J, *et al.* 2019. Am J Transl Res. 3.043055556. PubMed
4. Drobek A, *et al.* 2015. J Immunol. 195: 3416 - 3426. PubMed
5. Florentin J, *et al.* 2022. Front Immunol. 13:882484. PubMed
6. Schloss MJ, *et al.* 2022. Nat Immunol. 23:605. PubMed
7. Guo F, *et al.* 2022. Front Immunol. 13:833100. PubMed
8. Zhou L, *et al.* 2021. Cell Mol Immunol. 18:698. PubMed
9. Lidak T, *et al.* 2021. Int J Mol Sci. 22: . PubMed
10. Domingues AF, *et al.* 2020. Elife. 9:e51754. PubMed
11. Wang L, *et al.* 2019. Cell Rep. 29:1848. PubMed
12. Thierry GR, *et al.* 2018. J Exp Med. 215:2972. PubMed
13. Zhu C, *et al.* 2018. Sci Rep. 5.113194444. PubMed
14. Tanimura N *et al.* 2018. Developmental cell. 46(5):581-594 . PubMed
15. Davis FM, *et al.* 2020. J Immunol. 2503:204. PubMed
16. Bouchareychas L, *et al.* 2021. iScience. 24(8):102847. PubMed
17. Chappaz S, *et al.* 2021. Cell Reports. 36(3):109430. PubMed
18. Geiger SS, *et al.* 2021. Nature Communications. 12(1):2745. PubMed
19. Boyd DF, *et al.* 2020. Nature. 587:466. PubMed
20. Han X, *et al.* 2017. Int J Mol Sci. 10.3390/ijms18050942. PubMed
21. Matsumoto R, *et al.* 2021. Front Pharmacol. 12:715752. PubMed
22. Yu VWC *et al.* 2016. Cell. 167(5):1310-1322 . PubMed
23. Matson CA, *et al.* 2020. Proc Natl Acad Sci U S A. 117:14342. PubMed
24. Yang X, *et al.* 2020. Blood Sci. 2:89. PubMed
25. Castellanos CA, *et al.* 2021. Sci Immunol. 6:eabh0707. PubMed
26. Álvaro de Mingo Pulido *et al.* 2018. Cancer cell. 33(1):60-74 . PubMed
27. de Mingo Pulido , *et al.* 2021. Immunity. 54(6):1154-1167.e7. PubMed
28. Browning LM, *et al.* 2020. Cell Rep. 33:108219. PubMed
29. Zong L, *et al.* 2021. NPJ Aging Mech Dis. 7:25. PubMed
30. Li Q *et al.* 2018. Immunity. 48(2):258-270 . PubMed
31. Mann M, *et al.* 2018. Cell Rep. 25:2992. PubMed
32. Bian Y, *et al.* 2017. PLoS Pathog. 13:e1006384. PubMed
33. Davis FM, *et al.* 2019. Arterioscler Thromb Vasc Biol. 39:2353. PubMed
34. Fukushima T, *et al.* 2019. Cell Rep. 29:4144. PubMed
35. Nagaoka M, *et al.* 2014. J Immunol. 193:2812. PubMed
36. Van de Velde L, *et al.* 2016. Cell Rep. 17:2247-2258. PubMed
37. Jing Zhou, Jun Jin, Toshihisa Kawai 2016. Sci Rep. 6:39105. PubMed
38. Xu X, *et al.* 2020. J Cell Biol. 219:00:00. PubMed
39. Liu X, *et al.* 2021. eLife. 0.416666666666667. PubMed
40. Yamamoto K, *et al.* 2021. Cell Reports. 36(8):109576. PubMed
41. Dey A *et al.* 2019. The EMBO journal. 38(7) pii: e100293. PubMed
42. Liu YY, *et al.* 2020. Chin Med J (Engl). 133:1688. PubMed
43. Olsson A, *et al.* 2016. Nature. 10.1038/nature19348. PubMed
44. Kitano M, *et al.* 2016. Proc Natl Acad Sci U S A. 113: 1044 - 1049. PubMed
45. Wang L, *et al.* 2021. Cancer Immunol Res. 9:348. PubMed
46. Charmsaz S, *et al.* 2015. PLoS One. 10:130692. PubMed
47. Kurkewich J, *et al.* 2016. PLoS One. 11: 0161468. PubMed
48. Davidson S, *et al.* 2016. EMBO Mol Med. 8: 1099 - 1112. PubMed
49. Jassinskaja M, *et al.* 2021. Cell Reports. 34(12):108894. PubMed
50. Levine LS, *et al.* 2021. Immunity. 54(4):829-844.e5. PubMed
51. Zhang Y, *et al.* 2020. J Immunol. 204:3248. PubMed
52. Kotaki R, *et al.* 2020. Sci Rep. 10:13554. PubMed
53. Prados A, *et al.* 2021. Nat Immunol. 22:510. PubMed
54. Hurrell BP, *et al.* 2019. Cell Rep. 29:4509. PubMed
55. Yu VWC, *et al.* 2017. Cell. 168:944. PubMed
56. Onodera T, *et al.* 2019. J Immunol. 203:3282. PubMed
57. Xu L *et al.* 2017. Immunity. 47(3):538-551 . PubMed
58. Matsumura T *et al.* 2019. Cell Rep. 27(2):561-571 . PubMed
59. Chen X *et al.* 2017. Cell stem cell. 21(6):747-760 . PubMed
60. Ishisono K, Yabe T, and Kita K 2017. J Nutr Biochem. . 10.1016/j.jnutbio.2017.07.016. PubMed
61. Dong S, *et al.* 2021. Nature. 591:117. PubMed
62. Dietmar Herndler-Brandstetter *et al.* 2018. Immunity. 48(4):716-729 . PubMed
63. Vural A, *et al.* 2019. J Immunol. 202:1510. PubMed
64. Hulsmans M *et al.* 2017. Cell. 169(3):510-522 . PubMed
65. Nishime C, *et al.* 2015. J Immunol. 195: 1883-1890. PubMed
66. Derecka M, *et al.* 2020. Nat Immunol. 261:21. PubMed
67. D'Agostino MR, *et al.* 2022. STAR Protoc. 3:101652. PubMed
68. Chen M, *et al.* 2021. Cancer Discov. 11:194. PubMed
69. Perez E, *et al.* 2020. J Immunol. 205:2489. PubMed
70. Frodermann V, *et al.* 2019. Nat Med. 25:1761. PubMed
71. Chauveau A, *et al.* 2020. Immunity. 52:794. PubMed

72. Khanom US, *et al.* 2019. J Immunol. 203:881. PubMed
73. Milner JJ, *et al.* 2020. Immunity. 52(5):808-824.e7. PubMed
74. Zhou Z, *et al.* 2022. Infect Immun. 90:e0045321. PubMed
75. Wang F, *et al.* 2021. Cell. 184(2):422-440.e17. PubMed
76. Au-Yeung BB, *et al.* 2017. J Immunol. 198:2445. PubMed
77. Leyva-Castillo JM *et al.* 2019. Immunity. 50(5):1262-1275 . PubMed
78. Sevin M, *et al.* 2018. Nat Commun. 9:1431. PubMed
79. Yi W, *et al.* 2021. Cell Reports. 34(13):108922. PubMed
80. Gally F, *et al.* 2013. Am J Physiol Lung Cell Mol Physiol. 305:64. PubMed
81. Aichinger M, *et al.* 2013. J Exp Med. 210:287. PubMed
82. Zhai X, *et al.* 2021. Sci Adv. 7:eabk0490. PubMed
83. Gamrekelashvili J, *et al.* 2021. Bio Protoc. 11:e4007. PubMed
84. Galle-Treger L, *et al.* 2019. Nat Commun. 10:713. PubMed
85. Balzano M *et al.* 2019. Cell reports. 26(12):3257-3271 . PubMed
86. Yang BH, *et al.* 2020. Cell Reports. 27(12):3629-3645.e6.. PubMed
87. Akkaya B, *et al.* 2017. J Immunol Methods. 441:67. PubMed
88. Gao Y, *et al.* 2020. Immunity. 52(6):1007-1021.e8. PubMed
89. Tian Q, *et al.* 2021. Infect Immun. 89:e0020521. PubMed
90. Zeis P, *et al.* 2020. Immunity. 53:775. PubMed
91. Shih F, *et al.* 2006. J Immunol. 176:3438. PubMed
92. Frohner IE, *et al.* 2020. Cell Rep. 30:3171. PubMed
93. Kamata T, *et al.* 2020. Cell Reports. 31(12):107802. PubMed
94. Bagadia P, *et al.* 2019. Nat Immunol. 20:1174. PubMed
95. Duarte D, *et al.* 2018. Cell Stem Cell. 22:64. PubMed
96. Soukupova M, *et al.* 2021. Mol Ther Methods Clin Dev. 21:399. PubMed
97. Haase P, *et al.* 2020. Eur J Immunol. 50:558. PubMed
98. Scortegagna M, *et al.* 2020. Nat Commun. 11:99. PubMed
99. Schönberger K, *et al.* 2022. STAR Protoc. 3:101408. PubMed
100. Zhang MH, *et al.* 2020. Front Immunol. 11:560. PubMed
101. Oliveira AC *et al.* 2017. eLife. 6 pii: e30883. PubMed
102. Bajaña S, *et al.* 2022. iScience. 25:103732. PubMed
103. Iwata A, *et al.* 2017. Nat Immunol. 18:563. PubMed
104. Rohrbeck L, *et al.* 2020. Immunol Cell Biol. . PubMed
105. Mohrin M, *et al.* 2021. Aging Cell. 20:e13313. PubMed
106. Rai S, *et al.* 2022. Nat Commun. 13:5346. PubMed
107. Zhang C, *et al.* 2018. Cell Res. 28:323. PubMed
108. Park DS, *et al.* 2019. PLoS Comput Biol. 15:e1006913. PubMed
109. Yoshida H, *et al.* 2019. Cell. 176:897. PubMed
110. Lefkopoulos S, *et al.* 2020. Immunity. 53(5):934-951.e9. PubMed
111. Wang J, *et al.* 2020. Cell Stem Cell. 27(1):81-97. PubMed
112. Han P, *et al.* 2020. Sci Adv. 6:eaaz1580. PubMed
113. Säwen P *et al.* 2018. eLife. 7 pii: e41258. PubMed
114. Hsia HC, *et al.* 2017. J Leukoc Biol. 101:1053. PubMed
115. Luo H, *et al.* 2019. Cell Rep. 26:945. PubMed
116. Riedel SS, *et al.* 2021. Molecular Cell. 81(11):2332-2348.e9. PubMed
117. Rossnagl S, *et al.* 2016. PLoS Biol. 14: 1002562. PubMed
118. Matsuzaki Y, *et al.* 2015. Biomed Rep. 1: 91 - 97. PubMed
119. Rappe JCF, *et al.* 2021. J Exp Med. 218:. PubMed
120. Waldman MM, *et al.* 2022. Front Immunol. 13:856977. PubMed
121. Qin J, *et al.* 2007. J Immunol. 179:6799. PubMed
122. Shen H, *et al.* 2020. Sci Rep. 10:19453. PubMed
123. Heyde A, *et al.* 2021. Cell. 184(5):1348-1361.e22. PubMed
124. Li ZG, *et al.* 2020. Chin Med J (Engl). 1943:133. PubMed
125. Celias DP, *et al.* 2022. STAR Protoc. 3:101464. PubMed
126. Johnson JL *et al.* 2018. Immunity. 48(2):243-257 . PubMed
127. Nabekura T, *et al.* 2020. Immunity. 96:52. PubMed
128. Bae S, *et al.* 2021. Cell Reports. 35(11):109264. PubMed
129. Young K, *et al.* 2021. Cell Stem Cell. . PubMed
130. Becklund B, *et al.* 2016. Sci Rep. 6:30842. PubMed

RRID	AB_312988 (BioLegend Cat. No. 103203) AB_312989 (BioLegend Cat. No. 103204)

Antigen Details

Structure	Protein tyrosine phosphatase (PTP) family, 180-240 kD
Distribution	B cells, T cell subset, NK cell subset
Function	Phosphatase, T and B cell activation
Ligand/Receptor	Galectin-1, CD2, CD3, CD4
Cell Type	B cells, NK cells, T cells
Biology Area	Cell Biology, Immunology, Inhibitory Molecules, Neuroscience, Neuroscience Cell Markers

Molecular Family	CD Molecules
Antigen References	1. Barclay A, *et al.* 1997. The Leukocyte Antigen FactsBook Academic Press. 2. Trowbridge IS, *et al.* 1993. *Annu. Rev. Immunol.* 12:85. 3. Kishihara K, *et al.* 1993. *Cell* 74:143. 4. Pulido R, *et al.* 1988. *J. Immunol.* 140:3851.
Gene ID	19264 5788

Related Protocols

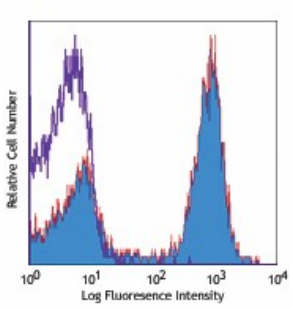
Immunohistochemistry Protocol for Frozen Sections

Cell Surface Flow Cytometry Staining Protocol

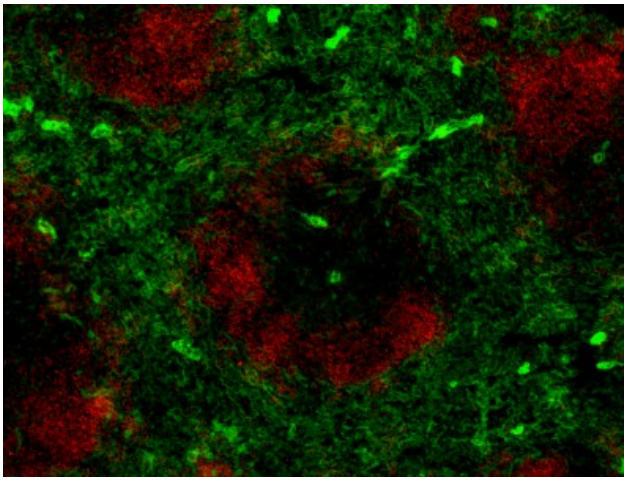
Other Formats

Alexa Fluor® 594 anti-mouse/human CD45R/B220, APC anti-mouse/human CD45R/B220, Biotin anti-mouse/human CD45R/B220, FITC anti-mouse/human CD45R/B220, PE anti-mouse/human CD45R/B220, PE/Cyanine5 anti-mouse/human CD45R/B220, Purified anti-mouse/human CD45R/B220, PE/Cyanine7 anti-mouse/human CD45R/B220, APC/Cyanine7 anti-mouse/human CD45R/B220, Alexa Fluor® 488 anti-mouse/human CD45R/B220, Alexa Fluor® 647 anti-mouse/human CD45R/B220, Pacific Blue™ anti-mouse/human CD45R/B220, Alexa Fluor® 700 anti-mouse/human CD45R/B220, PerCP anti-mouse/human CD45R/B220, PerCP/Cyanine5.5 anti-mouse/human CD45R/B220, Brilliant Violet 421™ anti-mouse/human CD45R/B220, Brilliant Violet 570™ anti-mouse/human CD45R/B220, Brilliant Violet 650™ anti-mouse/human CD45R/B220, Brilliant Violet 605™ anti-mouse/human CD45R/B220, Brilliant Violet 785™ anti-mouse/human CD45R/B220, Brilliant Violet 510™ anti-mouse/human CD45R/B220, Purified anti-mouse/human CD45R/B220 (Maxpar® Ready), Brilliant Violet 711™ anti-mouse/human CD45R/B220, PE/Dazzle™ 594 anti-mouse/human CD45R/B220, APC/Fire™ 750 anti-mouse/human CD45R/B220, Brilliant Violet 750™ anti-mouse/human CD45R/B220, TotalSeq™-A0103 anti-mouse/human CD45R/B220, Spark Blue™ 550 anti-mouse/human CD45R/B220, Spark NIR™ 685 anti-mouse/human CD45R/B220, TotalSeq™-B0103 anti-mouse/human CD45R/B220, Ultra-LEAF™ Purified anti-mouse/human CD45R/B220, TotalSeq™-C0103 anti-mouse/human CD45R/B220, PE/Fire™ 640 anti-mouse/human CD45R/B220, APC/Fire™ 810 anti-mouse/human CD45R/B220, PE/Fire™ 700 anti-mouse/human CD45R/B220, Spark Violet™ 538 anti-mouse/human CD45R/B220, Spark YG™ 581 anti-mouse/human CD45R/B220, Spark YG™ 570 anti-mouse/human CD45R/B220, PE/Fire™ 810 anti-mouse/human CD45R/B220, Spark Blue™ 574 anti-mouse/human CD45R/B220 Antibody, Spark Violet™ 423 anti-mouse/human CD45R/B220 Antibody, Spark Red™ 718 anti-mouse/human CD45R/B220

Product Data



C57BL/6 mouse splenocytes stained with biotinylated RA3-6B2, followed by Sav-PE



C57BL/6 mouse frozen spleen section was fixed with 4% paraformaldehyde (PFA) for 10 minutes at room temperature and blocked with 5% FBS for 30 minutes at room temperature. Then the section was stained with 10 µg/ml of biotin anti-mouse B220 (clone RA3-6B2) and Alexa Fluor® 488 anti-mouse CD29 (clone HMβ1-1) (green) overnight at 4°C, followed by 2.5 µg/ml of Spark YG™ 570 Streptavidin (red) for 2 hours at room temperature. The image was captured by 10X objective.

BioLegend Inc., 8999 BioLegend Way, San Diego, CA 92121 www.biolegend.com
Toll-Free Phone: 1-877-Bio-Legend (246-5343) Phone: (858) 768-5800 Fax: (877) 455-9587