**Table S2: Ligand Panel**

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| --- | --- | --- | --- |
| Isotope | Ligand Panel | Source | Clone |
| 89Y | HLA-DR  | Biolegend | L243 |
| Qdot | CD19 | Life technologies | SJ25-C1 |
| 115In | CD3 | Biolegend | UCHT1 |
| 139La | CD7 | Biolegend | 6B7 |
| 141Pr | CRACC | Biolegend | 162.1 |
| 142Nd | CD304 (BDCA-4) | Biolegend | I2C2 |
| 143Nd | PAN HLA | Biolegend | W6/32 |
| 144Nd | HLA-C | Millipore | DT9 |
| 145Nd | CD8 | Biolegend | SK1 |
| 146Nd | CD48 | Biolegend | BJ40 |
| 147Sm | CD303 (BDCA-2) | Fluidigm | 201A |
| 148Nd | ICAM1 (CD54) | Biolegend | HA58 |
| 149Sm | HLA-G | Biolegend | 87G |
| 150Nd | p24 | Abcam | ab9071 |
| 151Eu | CD4 | Biolegend | OKT4 |
| 152Sm | CD123 | Biolegend | 6H6 |
| 153Eu | CXCL13 | R&D Systems | 53610 |
| 154Sm | CCR2 | Biolegend | K036C2  |
| 155Gd | HLA-E | Biolegend | 3D12 |
| 156Gd | CD95 | Biolegend | DX2 |
| 157Gd | Nectin-1 (CD111) | Biolegend | R1.302 |
| 158Gd | MICA | R&D | 159227 |
| 159Tb | DR4 (CD261) | Biolegend | DJR1 |
| 159Tb | DR5 (CD262) | Biolegend | DJR2-2 |
| 160Gd | CD1c | Biolegend | L161 |
| 161Dy | ULBP-1 | R&D Systems | 170818 |
| 162Dy | CD11c | Fluidigm | Bu15 |
| 163Dy | ULBP-2-5-6 | R&D Systems | 165903 |
| 164Dy | Nectin-2 (CD112) | Biolegend | TX31 |
| 165Ho | PVR (CD155) | Biolegend | SKII.4 |
| 166Er | HLA-Bw4 | Miltenyi | REA274 |
| 167Er | NKp80 | Biolegend | 5D12 |
| 168Er | HLA-Bw6 | Miltenyi | REA143 |
| 169Tm | CD14 | Biolegend | M5E5 |
| 170Er | CD11b | Biolegend | ICRF44 |
| 171Yb | LFA-3 (CD58) | Biolegend | TS2/9 |
| 172Tb | CD33 | Biolegend | WM53 |
| 173Yb | CD141 | Fluidigm | 1A4 |
| 174Yb | CD56 | BD Pharmingen | NCAM16.2 |
| 175Lu | CD64 | Biolegend | 10.1 |
| 176Yb | MICB | R&D Systems | 236511 |
| 209Bi | CD16 | Fluidigm | 3G8 |