# Cell Frequency

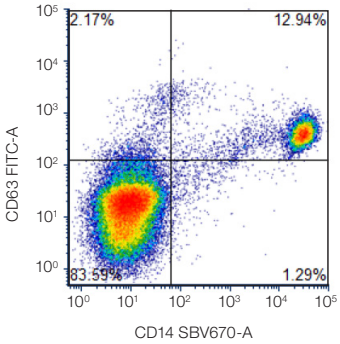
## Quick Guide

Knowing the frequency of cells in your flow assay is important to enable acquisition of sufficient cells.

These handy reference tables for human, mouse, and rat tissues, commonly used in flow cytometry, will help determine starting cell numbers for staining and cell sorting, allowing you to optimize your experiments.

**Table 1. Human cell frequency in peripheral blood.**

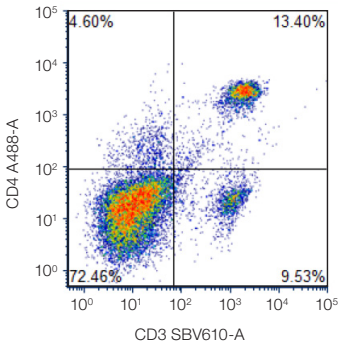
| Leukocytes | | Lymphoid Cells | | Myeloid Cells | |
|---|---|---|---|---|---|
| **Cell Type** | **Percent** | **Cell Type** | **Percent** | **Cell Type** | **Percent** |
| T cells | 10–25 | CD4+ | 10–20 | Neutrophils | 40–65 |
| B cells | 3–10 | CD8+ | 3–10 | Eosinophils | 0.1–2 |
| Granulocytes | 45–65 | Tregs | 0.2–1.4 | Basophils | 0.1–2 |
| Monocytes | 3–10 | γδ T cells | 1–5 | Dendritic cells | 0.5–1 |
| NK cells | 2–5 | Naïve B cells | 0.5–5 | Monocyte DCs | 0.2–0.4 |
| Dendritic cells (DC) | 0.5–1 | Memory B cells | 0.4–2 | Plasmacytoid DCs | 0.1–0.2 |
| Stem cells | 0.01–0.05 | NKT cells | 0.01–0.5 | Innate lymphoid cells | 0.01–0.1 |




**Staining human mononuclear cells.** Viable cells were identified by PureBlu DAPI (Cat. #1351303) staining. Human peripheral blood was stained with CD63 FITC (#MCA2142F) and CD14 SBV670 (#MCA1568SBV670) and gated on mononuclear cells. Data acquired on the ZE5 Cell Analyzer.

**Table 2. Mouse cell frequency.**

| Spleen | | Thymus | | Peripheral Blood | | Lymph Node | |
|---|---|---|---|---|---|---|---|
| **Cell Type** | **Percent** | **Cell Type** | **Percent** | **Cell Type** | **Percent** | **Cell Type** | **Percent** |
| T cells | 21–35 | CD4+ | 4–6 | T cells | 17–20 | T cells | 65–78 |
| CD4+ | 13–20 | CD8+ | 1–2 | CD4+ | 8–12 | CD4+ | 35–64 |
| CD8+ | 7–15 | CD4+/8+ | 85–95 | CD8+ | 7–10 | CD8+ | 19–30 |
| γδ T cells | 0.5–1 | | | B cells | 35–58 | B cells | 9–15 |
| B cells | 44–58 | | | Monocytes | 2–3 | Tregs | 2–3 |
| Monocytes | 3.5–5 | | | Neutrophils | 4–6 | Dendritic cells | 0.5–1 |
| Granulocytes | 1–2 | | | Eosinophils | 1–2 | | |
| NK cells | 1–5 | | | NK cells | 4–7 | | |
| iNKT | 1–2 | | | iNKT cells | 0.2–0.5 | | |
| Myeloid DC | 0.5–2 | | | | | | |
| Lymphoid DC | 0.5–1 | | | | | | |
| Plasmacytoid DC | 0.1–0.3 | | | | | | |




**Staining mouse lymphocytes.** Viable cells were identified by DRAQ7 staining. Mouse peripheral blood was stained with CD4 A488 (#MCA2691A488) and CD3 SBV610 (#MCA500SBV610) and gated on lymphocytes to identify T cells. Data acquired on the ZE5 Cell Analyzer.

Visit **bio-rad-antibodies.com/cell-frequency** for more information.

BIO-RAD

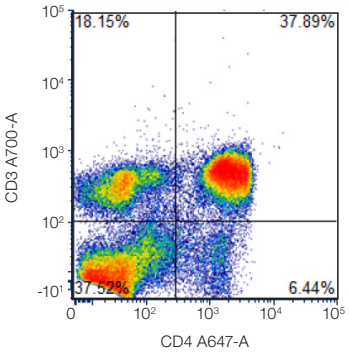
**Table 3. Rat cell frequency.**

| Spleen | | Thymus | | Peripheral Blood | |
|---|---|---|---|---|---|
| **Cell Type** | **Percent** | **Cell Type** | **Percent** | **Cell Type** | **Percent** |
| T cells | 31.5–33.5 | $CD4^+$ | 5.7–9.4 | T cells | 51.5–66.5 |
| $CD4^+$ | 21.5–26.5 | $CD8^+$ | 2.3–6.9 | $CD4^+$ | 32–40 |
| $CD8^+$ | 14–18 | $CD4^+/8^+$ | 83–87.6 | $CD8^+$ | 18–26 |
| B cells | 51–59 | $CD4^-/8^-$ | 1.4–2.2 | B cells | 22.7–40.7 |
| | | | | Monocytes | 1–6 |
| | | | | Neutrophils | 14–20 |
| | | | | Eosinophils | 1–4 |
| | | | | Basophils | Rare |
| | | | | γδ T cells | 1–2 |
| | | | | NK cells | 6–10 |

These values are for reference only and there may be variation due to sample preparation, individual variation, and the strain of animal used.

Values are percentages of total leukocytes in each sample.

Visit **bio-rad-antibodies.com/cell-frequency** for more information.




**Staining rat lymphocytes.** Viable cells were identified by PI (#1351101) staining. Rat peripheral blood was stained with CD3 A700 (#MCA772A700) and CD4 A647 (#MCA55A647) and gated on lymphocytes to identify T cells. Data was acquired on the ZE5 Cell Analyzer.

Sign up to receive our emailers at **bio-rad-antibodies/signup**, to be the first to know when we launch new resources and products.




**Bio-Rad Laboratories, Inc.**

*Life Science Group*

*bio-rad-antibodies.com*