ProMab Biotechnologies, Inc.

T-cells are functionally divided into helper T-cells, which are CD4$^+$CD8$^-$ ("T4"), and cytotoxic T-cells, which are CD8$^+$CD4$^-$ ("T8"). However, recent studies have indicated that, at least in vitro, cultured helper T-cells can exhibit similar levels of cytolytic activity as cultured cytotoxic T cells.
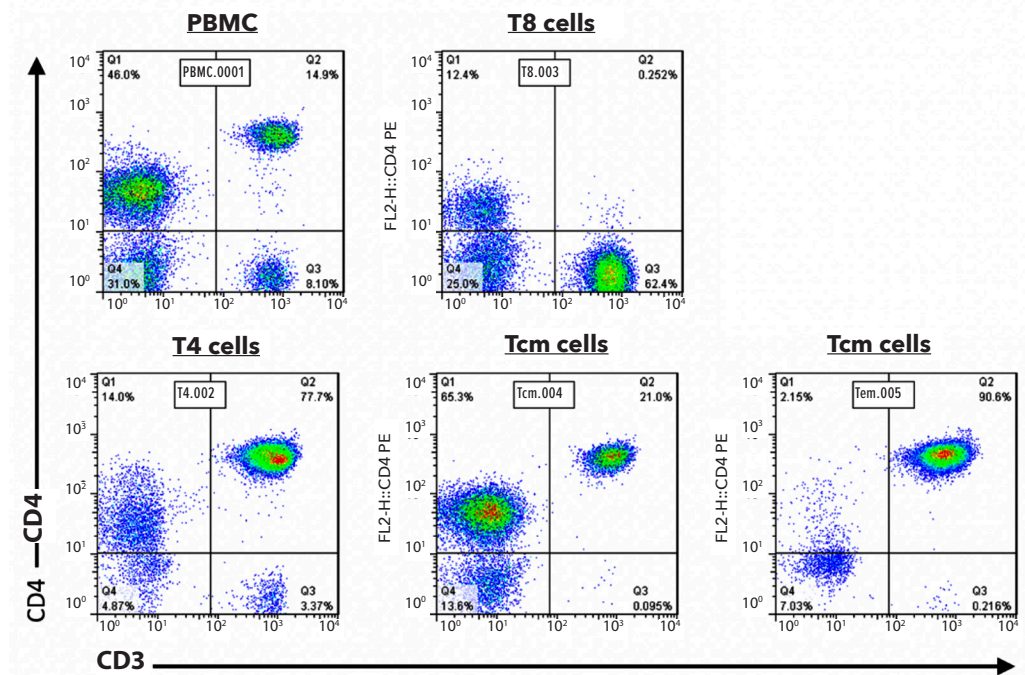
T cells can also be divided based on differentiation status into 4 subsets:

1. **Naïve ("T$_n$", containing T$_{scm}$),** which are CD27$^+$ CCR7$^+$ CD45RO$^-$

2. **Central-memory ("T$_{cm}$"),** which are CD27$^+$ CCR7$^+$ CD45RO$^+$

3. **Effector-memory ("T$_{em}$"),** which are CD27$^-$ CCR7$^-$ CD45RO$^+$

4. **Effector ("T$_{eff}$"),** which are CD27$^-$ CCR7$^-$ CD45RO$^-$.

Human PBMC are separated into 4 subsets using antibodies and magnetic beads. The subsets were: CD4$^+$CD8$^-$ T cells (T4), CD8$^+$CD4$^-$ T cells (T8), CD4$^+$ central-memory T cells (T$_{cm}$) and CD4$^+$ effector-memory T cells (T$_{em}$). Immediately after isolation, the subsets and the PBMC were analyzed by flow cytometry for the composition of the subsets. Each of the above subsets can be used for CAR transduction for functional analysis of proliferation, CAR expression, memory and cytotoxic function.

Data

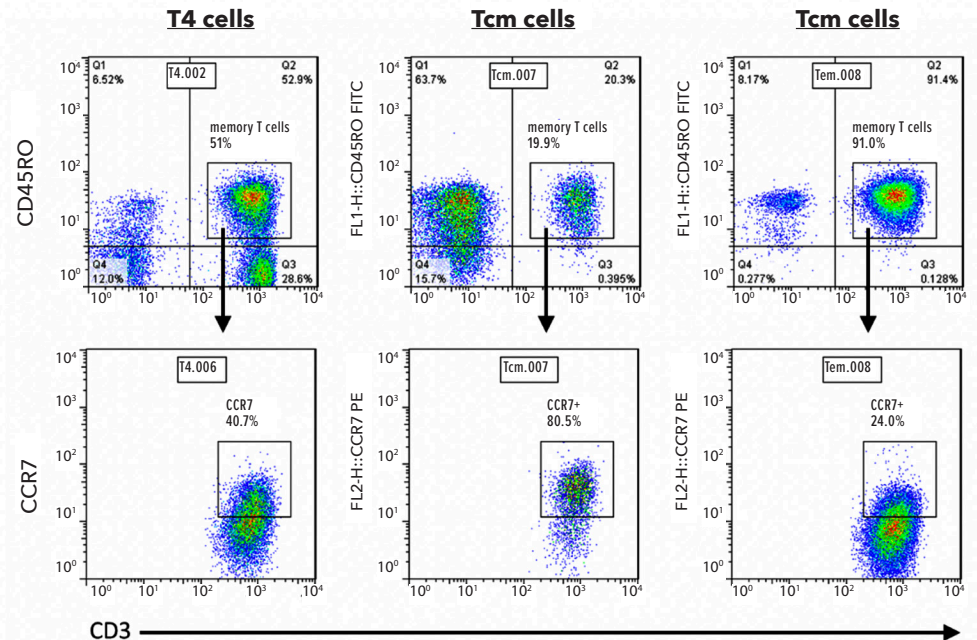**Example of separation of four fractions by FACS (Figure 1)**

Products and Services

- 🟦 **Mouse Monoclonal Antibody**
- 🟧 **Rat Monoclonal Antibody**
- 🟥 **Human Antibody**
- 🟩 **Hybridoma Sequencing**
- 🟪 **Polyclonal Antibody**

Data

(Figure 1) Flow cytometric analysis of the PBMC and T cell subsets. First, the cells are stained with antibodies against CD4 and CD3 (top panel). T cells are CD3$^+$, non-T cells are CD3$^-$, and monocytes are CD3$^-$CD4low. Then, the T4, T$_{cm}$ and T$_{em}$ subsets were stained with antibodies against CD3, CD45RO and CCR7 (lower panel).

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