

# Human CD4+ T Cell Isolation Kit

with Akadeum BACS™ Microbubbles



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## Components of Human CD4+ T Cell Isolation Kit (Full Kit #13210-130) (Trial Kit #23210-130):

### IN THE BOX:

1. BACS™ Streptavidin Microbubbles
2. Human CD4+ T Cell Antibody Cocktail

### PACKAGED SEPERATELY:

1. Separation Buffer Ca<sup>2+</sup> and Mg<sup>2+</sup> free PBS containing 2 mM EDTA, 0.5% biotin-free BSA, and 0.09% sodium azide
2. 5 mL Eppendorf Tubes

### Additional Recommended Supplies:

1. Low retention 1 mL pipet tips VWR Part #89174-530
2. Centrifuge with swinging bucket rotor
3. Vacuum aspirator

## PRODUCT OVERVIEW

- > Akadeum's Human CD4+ T Cell Isolation Kit uses streptavidin- conjugated BACS™ microbubbles and biotinylated antibodies to negatively select CD4+ T cells from peripheral blood mononuclear cells (PBMCs).
- > Non-CD4+ T cells (unwanted cells) are labelled with biotinylated antibodies targeting CD8, CD11b, CD14, CD16, CD19, CD36, CD56, CD123, CD235a, and TCR- $\gamma\delta$ , and subsequently mixed with microbubbles.
- > Once bound to unwanted cells, microbubbles enable rapid cell removal without a column or magnet.
- > High purity human CD4+ T cells are left untouched and ready for downstream applications.

**Storage:** Store microbubbles, antibody cocktail, and Separation Buffer at 4°C

**Cell Type:** Naive/resting CD4+ T cells

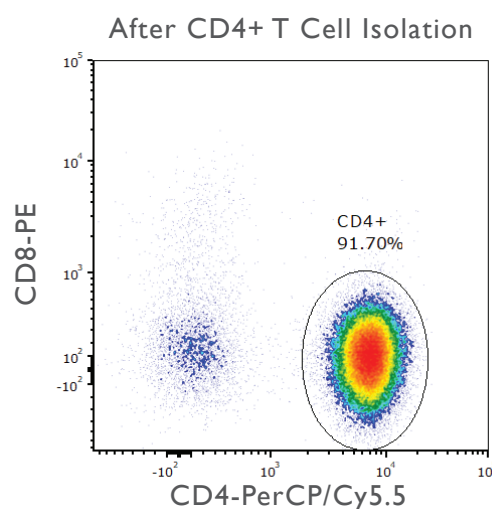
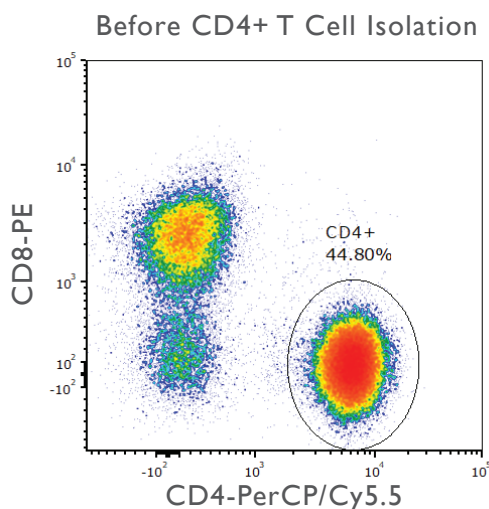
**Sample Species and Source:** Human PBMCs

**Cell Separation Method:** Negative Selection

**Capacity:** Full Kit = 1 billion cells; Trial Kit = 300 million cells

## EXAMPLE OF A HUMAN CD4+ T CELL ISOLATION

Isolation of human CD4+ T cells from PBMCs was performed using Akadeum Life Sciences Human CD4+ T Cell Isolation Kit (#13210-130). Cells were labeled with CD4-PerCP/Cy5.5 and CD8-PE. Dead cells and debris were excluded from analysis.



## SAFETY INFORMATION

For research use only. Not intended for any animal or human therapeutic or diagnostic use.

Before use, please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

## GENERAL NOTES

For tips concerning sample preparation, cell labeling and separation, visit [www.akadeum.com/technology/](http://www.akadeum.com/technology/)

For product-specific background information and applications of this product, refer to the respective product page at [www.akadeum.com/products/](http://www.akadeum.com/products/)

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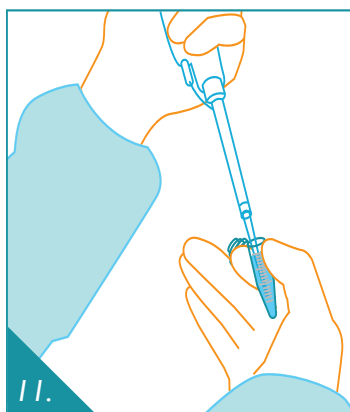
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## Protocol: Human CD4+ T Cell Isolation

The protocol below is for samples containing between  $10^7$  and  $10^8$  cells. If a sample is larger than  $10^8$  cells, split the sample into two. For a protocol optimized for samples fewer than  $10^7$  cells, contact us: [info@akadeum.com](mailto:info@akadeum.com)

**Note:** Work quickly using pre-chilled Separation Buffer (2-8°C)



### PREPARE YOUR CELLS

1. Begin with human PBMCs.
2. Centrifuge PBMC suspension (5 min, 400 × g), aspirate supernatant, and wash once with 5 mL of Separation Buffer.
3. Centrifuge samples (5 min, 400 × g) and aspirate supernatant.
4. Resuspend cells at  $1 \times 10^7$  cells per 50  $\mu\text{L}$  of Separation Buffer (see Table I) and transfer to 5 mL Eppendorf tubes.

### LABEL CELLS

5. Add 10  $\mu\text{L}$  of biotin-antibody cocktail per  $1 \times 10^7$  cells (see Table I). Mix briefly.
6. Incubate sample for 20 min at 4°C.
7. Add 1 mL Separation Buffer and centrifuge (5 min, 400 × g). Aspirate supernatant.
8. Resuspend cells at  $1 \times 10^7$  cells per 50  $\mu\text{L}$  of Separation Buffer (see Table I).



### BIND MICROBUBBLES

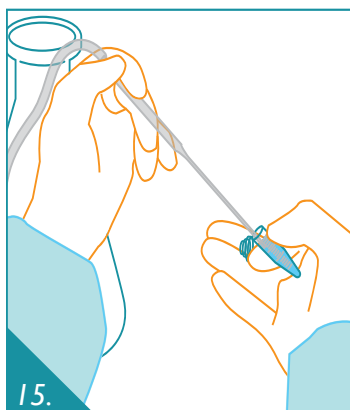
9. Prepare microbubbles by resuspending in solution (microbubble mixture should be a homogenous white solution, i.e. look like milk). Vigorously mix or pipet. Immediately proceed to next step.
10. Add 175  $\mu\text{L}$  of microbubbles per  $1 \times 10^7$  cells to first sample (see Table I).
11. Set the pipet volume to ~50% of the total sample volume (cell suspension + microbubbles) and mix with gentle trituration for 30 pipet strokes using a low retention 1000  $\mu\text{L}$  pipet tip (see Table I).

**Note:** This pipet setting ensures adequate mixing of microbubbles and cells for binding.

12. Immediately add 3 mL Separation Buffer to sample.

**Note:** This facilitates separation of microbubbles from the cell pellet.

13. Repeat steps 10-12 for remaining samples making sure to **resuspend microbubbles before each sample**.



### SEPARATE CELLS

14. Centrifuge samples (5 min, 400 × g). **Note:** Akadeum recommends using a swinging bucket rotor for this step to facilitate microbubble aspiration.
15. Use vacuum aspirator to aspirate off white microbubble layer and supernatant. Take care not to aspirate cell pellet.
16. Resuspend cells at  $1 \times 10^7$  cells per 50  $\mu\text{L}$  of Separation Buffer (see Table I) by pipetting. Transfer cells to a new tube if desired due to residual microbubbles stuck to tube.
17. Continue to flow cytometry or other downstream processing or handling.



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Table I. Example Volumes For Cell Isolation

Total Cells	Resuspension Volume	Antibody	Microbubbles	Mixing Volume
$1 \times 10^7$	50 $\mu\text{L}$	10 $\mu\text{L}$	175 $\mu\text{L}$	113 $\mu\text{L}$
$5 \times 10^7$	250 $\mu\text{L}$	50 $\mu\text{L}$	875 $\mu\text{L}$	563 $\mu\text{L}$
$1 \times 10^8$	500 $\mu\text{L}$	100 $\mu\text{L}$	1750 $\mu\text{L}$	1000 $\mu\text{L}$