

# FACS Buffer and MACS Buffer

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**Protocol ID:** BUF-FACS-MACS-v1.1

**Version:** v1.1

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## Purpose

These buffers are used for washing, resuspending, and handling cells during **flow cytometry staining and sorting (FACS)** and **magnetic-activated cell sorting (MACS)**.

- **FACS Buffer** is optimized for antibody staining and cytometric analysis.
- **MACS Buffer** includes EDTA to prevent cell clumping and nonspecific aggregation during magnetic separation.

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## Linked protocols

These buffers are used in:

- **Mouse Liver Dissociation to Single-Cell Suspension** – LIV-001 (v1.0)
  - Additional staining, sorting, and enrichment protocols as required.
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## Buffer definitions (important)

- **FACS Buffer**
  - **PBS + FCS**
  - *No EDTA*
- **MACS Buffer**
  - **PBS + FCS + EDTA**

### **i** Note

EDTA is excluded from FACS buffer by default to avoid potential interference with certain staining reagents or downstream functional assays.  
EDTA is included in MACS buffer to minimize cell clumping and improve recovery during magnetic separation.

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## Composition

### **FACS Buffer (1×)**

Typical preparation for **500 mL**:

Component	Stock concentration	Volume for 500 mL	Final concentration	Notes
PBS 1×	—	490 mL	—	Base buffer
FCS	—	10 mL	2% (v/v)	Heat-inactivated if required

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## MACS Buffer (1×)

Typical preparation for **500 mL**:

Component	Stock concentration	Volume for 500 mL	Final concentration	Notes
PBS 1×	—	488 mL	—	Base buffer
FCS	—	10 mL	2% (v/v)	Heat-inactivated if required
EDTA	0.5 M	2 mL	2 mM	Sterile stock

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## Preparation

### General

1. Start with sterile **PBS 1×** in an appropriate bottle.
2. Add **FCS** to achieve **2% (v/v)**.
3. For **MACS buffer only**, add **EDTA** to a final concentration of **2 mM**.
4. Mix gently by inversion.
5. If sterility is required, filter through a **0.22 µm filter** into a sterile storage bottle.
6. Label clearly with:
  - “FACS Buffer” **or** “MACS Buffer”
  - Date of preparation
  - Initials
  - “Sterile” **or** “Non-Sterile”

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## Storage and stability

- Store buffers at **4 °C**.
- Recommended use within **4–6 weeks**, subject to internal QC and sterility checks.
- Invert gently before use to resuspend any settled components.
- Avoid repeated temperature cycling; prepare smaller working aliquots if buffers are accessed frequently.

## Reagent details

Component	Supplier	Cat#	Notes
PBS 1×	TBD	TBD	Sterile, Ca <sup>2</sup> /Mg <sup>2</sup> -free recommended
FCS	TBD	TBD	Heat-inactivated if required
EDTA 0.5 M	TBD	TBD	Sterile stock; pH ~8.0

## Safety (brief)

- Handle biological samples in FACS and MACS buffers according to institutional biosafety rules.
- FCS is of animal origin and should be treated as a potential biohazard.
- EDTA is of low toxicity at working concentrations but should be handled with standard laboratory PPE.

## Version history

Version	Date	Author	Change summary
v1.0	2025-11-20	Dillon Corvino	Initial buffer definition
v1.1	2025-12-29	Dillon Corvino	Explicit separation of FACS vs MACS buffer usage