FACS Buffer and MACS Buffer

Abdullah Lab, IMMEI, University Hospital Bonn

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Version: v1.1
Author: Dillon Corvino

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.

Table of contents

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.

Buffer definitions (important)

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

> **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.

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

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

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"

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^2 /Mg^2 -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