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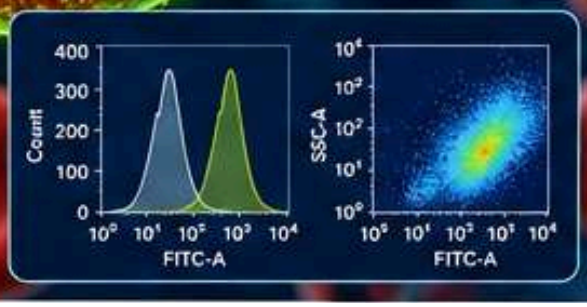
ErythroStep™ EMA

EMA labeling, simplified



Pre-dosed, desiccated Eosin-5-maleimide (EMA) reagent for erythrocyte membrane analysis by flow cytometry. Ready to reconstitute. No weighing. No stock solution.

WHY ErythroStep™ EMA?

Pre-dosed format
A defined amount of EMA per vial, avoiding manual weighing and preparation of stock solutions.

Two reactions per vial
Reconstitute with 20 µL of PBS to obtain two 10 µL labeling aliquots.

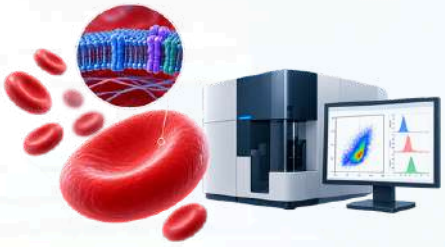
Desiccated presentation
Convenient dry format for refrigerated storage, protected from light.

Flow cytometry compatible
Excitation at 488 nm, with fluorescence emission at approximately 540-570 nm.

APPLICATIONS

- **Hereditary spherocytosis-related research**
- **Erythrocyte membrane protein characterization**
- **Studies of red cell membrane disorders**
- **Investigation of altered membrane fluorescence patterns**

EMA fluorescence analysis is therefore widely described in scientific literature as a useful approach for investigating hereditary spherocytosis and related erythrocyte membrane abnormalities.

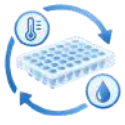


SIMPLE PREPARATION AND ANALYSIS

1 Reconstitute
Add 20 µL of sterile PBS (pH 7.2-7.4) to the desiccated EMA vial.

2 Label
Prepare washed erythrocytes and add 10 µL of reconstituted EMA reagent to each labeled reaction.

3 Incubate & wash
Incubate for 60 min at room temperature, protected from light. Wash the labeled cells according to the protocol.



4 Acquire & compare
Acquire erythrocyte fluorescence by flow cytometry and compare mean fluorescence intensity (MFI) with appropriately processed control samples.

Characterize erythrocyte membrane fluorescence with confidence.

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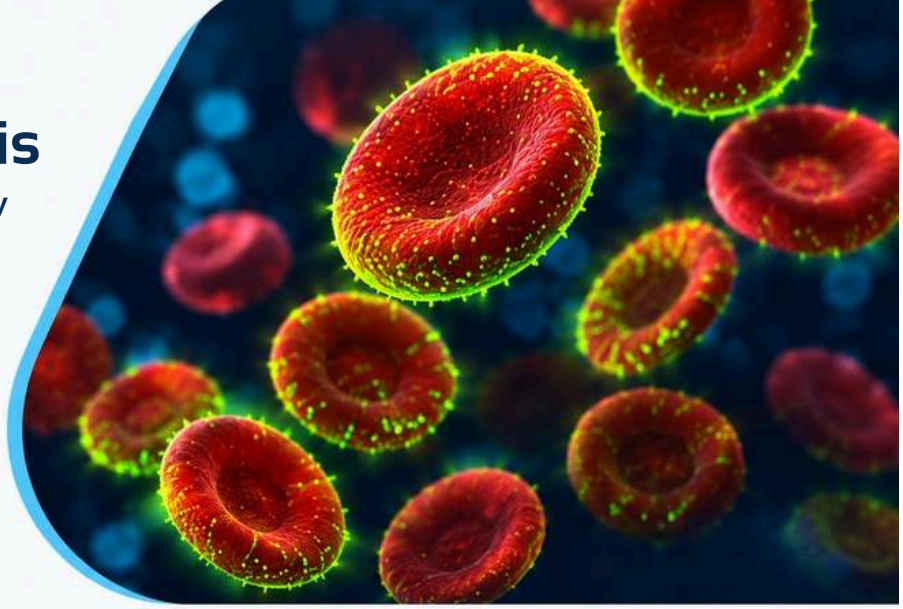
EMA fluorescence and hereditary spherocytosis



Understanding erythrocytes and hereditary spherocytosis

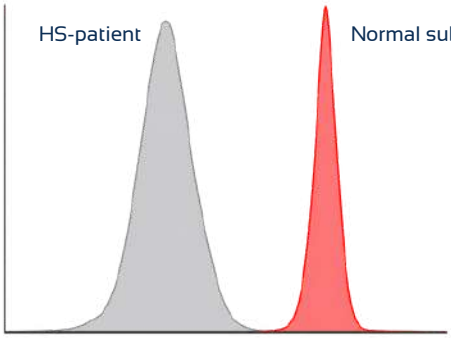
Hereditary spherocytosis (HS) is an inherited red blood cell membrane disorder associated
with abnormalities in structural membrane proteins, including spectrin, ankyrin, band 3 and protein 4.2.

Studies have shown that erythrocytes from individuals with hereditary spherocytosis frequently exhibit reduced EMA fluorescence compared with healthy control samples. This reduction is associated with changes in membrane protein composition and organization.

DATA ANALYSIS & INTERPRETATION

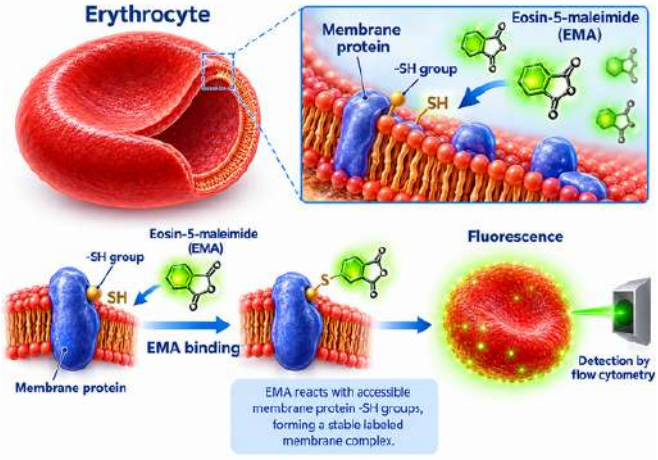
For studies supporting HS investigation:

- Patient samples are typically analyzed alongside healthy control samples processed under identical conditions.
- Decreased fluorescence relative to controls may reflect alterations in membrane protein accessibility or content.
- Results should always be interpreted in the context of additional laboratory findings and clinical information.



Fluorescence histograms of EMA-labeled red blood cells from a healthy subject and a patient with HS. Histograms were obtained using an Aurora flow cytometer (Cytek) and BD FACSDiva software (BD Biosciences). Fluorescence was measured as mean fluorescence intensity (MFI) at a wavelength of 532 nm (B3 channel).

HOW DOES EMA LABELING WORK?



Fluorescent labeling of erythrocyte membrane proteins

Eosin-5-maleimide (EMA) is a fluorescent compound that interacts with erythrocyte membrane proteins, particularly band 3 (AE1) and associated membrane components.

The maleimide group can react with accessible sulfhydryl (–SH) groups on membrane proteins, forming stable covalent thioether bonds.

These interactions produce membrane-associated fluorescence that can be measured by flow cytometry.

TECHNICAL SPECIFICATIONS

Product name	**ErythroStep™ EMA**
Application	Flow cytometry
Reagent	Eosin-5-maleimide (EMA)
Excitation	~ 488 nm
Emission	~ 540-570 nm
Detection	FITC/PE-equivalent
Tests per kit	25
Storage	2-8 °C (protected from light)
Intended use	Research use only (RUO)

RUO

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More information?
Visit our website or contact our team for technical support and product details.

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