

BCL11B gene break apart probe reagent Instructions Manual

[Product Name] BCL11B gene break apart probe reagent

[Package Specifications] 10 Tests/box

[Product Introduction]

This kit uses Orange fluorescein to label the BCL11B orange probe and Green fluorescein to label the BCL11B green probe, and the BCL11B dual color probe can be combined at the target detection site by fluorescence in situ hybridization.

[Product Main Components]

The kit consists of BCL11B dual color probe as shown in Table 1.

Table 1 Kit composition

Component name	Specifications	Quantity	Main components
BCL11B dual color probe	100μl/Tube	1	BCL11B Orange probe ; BCL11B Green probe



[Storage conditions & Validity]

Keep sealed away from light at $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The product is valid for 12 months. Avoid unnecessary repeated freezing and thawing that should not exceed 10 times. After opening, within 24 hours for short-term preservation, keep sealed at $2-8^{\circ}\text{C}$ in dark. For long-term preservation after opening, keep the lid sealed at $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ away from light. The kit is transported below 0°C .

[Applicable Instruments]

Fluorescence microscopy imaging systems, including fluorescence microscopy and filter sets suitable for DAPI (367/452), Green (495/517), and Orange (547/565).

[Sample Requirements]

1. Applicable specimen type: unfixed fresh bone marrow specimen (stored at $2-8^{\circ}\text{C}$ for no more than 24 hours).
2. Sample collection: Take 1-3 mL of heparin sodium anticoagulated bone marrow cell sample.
3. Sample storage: After fixation, the cell suspension can be stored at $-20 \pm 5^{\circ}\text{C}$ for no more than 12 months. The prepared cell slides can be stored at $-20 \pm 5^{\circ}\text{C}$ for no more than 1 month. When the storage temperature of the specimen is too high or too low, or when the cell suspension is excessively volatile or contaminated during storage, the sample should not be used for testing.

[Related Reagents]

The following reagents are required for the experiment but not provided in this kit

① 20×SSC, pH 5.3±0.2

Weigh 176g of sodium chloride and 88g of sodium citrate, dissolve in 800mL of deionized water, adjust the pH to 5.3 ± 0.2 at room temperature, and complete to 1 L with deionized water. High-pressure steam sterilization, stored at $2-8^{\circ}\text{C}$, the solution shelf life is of 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

② 2×SSC, pH 7.0±0.2

Take 100mL of the above 20×SSC, dilute with 800mL deionized water, mix, adjust the pH to 7.0 ± 0.2 at room temperature, complete to 1L with deionized water, stored at $2-8^{\circ}\text{C}$, the shelf life is of 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

③ Ethanol Solution: 70% ethanol, 85% ethanol

Dilute 700ml, 850ml of ethanol with deionized water to 1L. The shelf life is of 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

④ 0.3% NP-40/0.4xSSC solution, pH 7.0-7.5

Take 0.6mL NP-40 and 4mL 20×SSC, add 150mL deionized water, mix, adjust the pH to 7.0-7.5 at room temperature, with deionized water complete to a volume of 200mL. Stored at 2-8°C, the shelf life is of 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

⑤ Fixation solution (methanol: glacial acetic acid = 3:1)

Prepare a ready to use fixation solution by mixing thoroughly 30ml of methanol and 10ml of glacial acetic acid.

⑥ 0.075M KCl solution

Weigh 2.8g of potassium chloride, dissolve in 400mL of deionized water and complete to 500mL with deionized water. Stored at room temperature, the solution shelf life is of 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

⑦ DiamidinyI phenylindole (DAPI) counterstain

Use commercially available anti-quenching DAPI counterstain.

[Instructions]

1. Sample collection and slide preparation

- ① Sample collection: Take 1-3 mL of heparin sodium anticoagulated bone marrow cell sample.
- ② Cell harvest: Pipet uncultured bone marrow cells or cultured bone marrow cell samples into a 15mL conical centrifuge tube, centrifuge at 500g for 5 minutes, carefully aspirate and discard the supernatant, and leave about 500μL of residual liquid to resuspend the cells.
- ③ Cell washing: Add 5mL of 1×PBS solution by pipetting to mix and resuspend the cell pellet, centrifuge at 500g for 5min, carefully aspirate and discard the supernatant, keep about 500μL of residual liquid to resuspend the cells; repeat once.
- ④ Cell permeation: Add 10mL hypotonic solution to each tube (pre-warmed at 37°C bath) and place at 37°C water bath hypotonic for 20min.
- ⑤ Cell pre-fixation: Add 1mL (10% volume) of fixative to the cell suspension after permeation to pre-fix the cells, gently pipette to mix, and immediately centrifuge at 500g for 5min, and remove the supernatant, keep about 500μL of residual liquid to resuspend the cells.
- ⑥ Cell fixation: Slowly add 10 mL of fixative to the cell suspension, put at room temperature for 10 min to fix the cells. Centrifuge at 500g for 5 min, and keep about 500μL of residual liquid to resuspend the cells; repeat once (the cells can also be fixed multiple times until the cells precipitate and wash out).
- ⑦ Preparation of cell suspension: After the last cell fixation and centrifugation, aspirate the supernatant and add an appropriate amount of fixative to prepare the cell suspension with the appropriate concentration.

2. Slide pretreatment procedure

- ① Pretreatment: the slides were rinsed twice in 2×SSC solution at room temperature for 5min each time.
- ② Dehydration: the cell drops were placed in 70% ethanol, 85% ethanol and 100% ethanol for 2 minutes respectively and then dried naturally.

3. Denaturation and Hybridization

The following operations should be performed in a darkroom.

- ① Take the probe at room temperature for 5 minutes. Briefly centrifuge manually (do not use vortex or shaker instrument). Take 10μl droplet in the cell and drop in the hybridization zone, immediately cover 22mmx22mm glass slide area; spread evenly without bubbles the probe under the glass slide covered area and seal edges with rubber (edge sealing must be thorough to prevent dry film from affecting the test results during hybridization).
- ② Place the glass slide in the hybridization instrument, denature at 88°C for 2 minutes (the hybridizer should be preheated to 88°C) and hybridize at 45°C for 2 to 16 hours.

4. Washing

The following operations should be performed in a darkroom.

- ① Take out the hybridized glass slides, remove the rubber on the coverslip and immediately place the slides into 2xSSC for 5 seconds, and gently remove the coverslip.
- ② Place the glass slides in 2xSSC at room temperature for 1 min.
- ③ Remove and immerse the slides in a 0.3% NP-40/0.4×SSC solution preheated at 68°C for 2 min.
- ④ Immerse the glass slides in deionized water at 37°C for 1min, and dry naturally in the dark.

5. Counterstaining

The following operations should be performed in a darkroom

10µl DAPI compound dye is dropped in the hybridization area of the glass slide and immediately covered. The suitable filter is selected for glass slide observation under the fluorescence microscope.

6. FISH results observation

Place the counterstained film under the fluorescence microscope, and first put it under the low-power objective lens (10×) Confirm the cell area under the microscope; Go to 40× Under the objective lens, find a position where the cells are evenly distributed; Then in the high-power objective (100×) The FISH results of nuclei were observed.

[Common Signal Type Interpretation]

 BCL11B gene site 5 signal  BCL11B gene site 3 signal	
	Negative: 2 fusion
	Positive : 1 orange 1 green 1 fusion

[Precautions]

- ① The results of this reagent kit may be influenced by various factors within the sample itself, as well as limitations such as hybridization temperature and time, operating environment, and current molecular biology technology, which may lead to incorrect results.
- ② Users must understand the potential errors and limitations of accuracy that may exist during the testing process.
- ③ All chemicals have potential hazards and should be avoided from direct contact. Used reagent kits are clinical waste and should be properly disposed of.

[Approval date and revision date of the instruction manual]

V1.0 approval date: November 14, 2023

V1.1 revision date: June 11, 2024