

Product Catalogue Number FP-022 For clinical diagnosis and scientific research.

1q21 Gene Amplification Probe Detection Kit

[Product Name] 1q21 Gene Amplification Probe Detection Kit (Fluorescence In Situ Hybridization Method).

[Intended use]

The reagent carries out in situ hybridization staining on the basis of routine staining to provide doctors with auxiliary information for diagnosis. The test results are only for clinical reference and should not be used as the only basis for clinical diagnosis. Clinicians should comprehensively judge the test results in combination with the patient's condition, drug indications, treatment response and other laboratory test indicators.

[Detection principle]

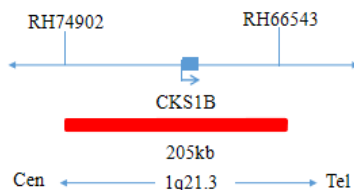
Fluorescence in situ hybridization is a technique for directly observing specific nucleic acids in cells in vitro. According to the principle of base complementary pairing, the specific probe is complementary to the target sequence in the cell. Due to the fluorescence of the probe, the gene state of the hybrid probe and the target sequence can be clearly observed under the fluorescence microscope under the appropriate excitation light.

[Product Composition]

The kit consists of 1q21 orange probe as shown in Table 1.

Table 1: Kit composition

Component name	Specifications	Quantity	Main components
1q21 orange probe	100μL/Tube	1	1q21 Orange 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. Sample collection: take 1-3ml of bone marrow cells anticoagulated with heparin sodium.
2. Sample preservation: unfixed fresh bone marrow cell samples shall be stored at $2-8^{\circ}\text{C}$ for no more than 24 hours. After fixation, the cell suspension was stored at $-20\pm 5^{\circ}\text{C}$ for no more than 12 months. When the sample storage temperature is too high or too low, or the cell suspension is volatilized excessively or polluted during storage, the sample will not be used for detection.

[Testing method]

1.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°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°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-40/0.4×SSC 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 **Diamidinyl phenylindole (DAPI) counterstain**

Use commercially available anti-quenching DAPI counterstain.

2. Sample processing before hybridization:

① **Sample collection:** Take 3mL of anticoagulated bone marrow cell samples.

② **Cell harvesting:** Place 3 mL of anticoagulated peripheral blood in a 15 mL centrifuge tube, centrifuge at 300 g for 5 min, carefully discard the supernatant, and resuspend about 500μL of the residue.

③ **Cell washing:** Add 5 mL of 1×PBS buffer, mix and resuspend the cell pellet, centrifuge at 300 g for 5 min, carefully discard the supernatant, and resuspend the cells with about 500μL of the residue; repeat 1 time.

④ **Cells hypotonicity:** Add 10mL of hypotonic solution pre-warmed to 37°C and place in an water bath at 37°C for 10-15min.

⑤ **Cells pre-fixation:** Pre-fix the cells by adding 1mL (10% by volume) of fixative solution to the cell suspension after the completion of hypotonic osmosis. Gently pipette, mix and centrifuge for 5 min at 300 g, discard the supernatant, and resuspend about 500μL of the residue.

⑥ **Cell fixation:** Slowly add 10mL of fixative solution to the cell suspension at room temperature for 10 min, centrifuge at 300 g for 5 min, and resuspend the cells with about 500μL of the residue; repeat once (the cells may be fixed several times until the cells pellet is washed and cleaned).

⑦ **Cell suspension preparation:** Pipet the supernatant and add the appropriate amount of fixative solution to prepare the appropriate cell suspension concentration.

⑧ **Slides preparation:** Pipet 10μL of cell suspension drop onto the slides, put at 56°C for 30min.

⑨ **Pretreatment:** the cell drops were placed at room temperature for 2 hours × Rinse the slide twice in SSC solution for 5min each time.

⑩ **Dehydration:** the cell drops were placed in 70% ethanol, 85% ethanol and 100% ethanol for 2min respectively, and dried naturally after dehydration.

3. Denaturation and Hybridization

The following operations should be performed in a darkroom.

① Take out the probe put at room temperature for 5min. Mix and centrifuge briefly. Take 10μl droplet in the cell and drop in the hybridization zone, immediately cover 22mm×22mm 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 slides 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 immerse the slides in a 2×SSC solution for 5 seconds and remove the coverslip.

- ② Place the slides in a 2×SSC at room temperature for 1 min.
- ③ Take out the slides and immerse in a preheated at 68°C 0.3% NP-40/0.4×SSC solution and wash for 2min.
- ④ Remove the slides and immerse in a 37°C preheated deionized water, wash for 1min and dry the slides 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 (10x) Confirm the cell area under the microscope; Go to 40x Under the objective lens, find a position where the cells are evenly distributed; Then in the high-power objective (100x) The FISH results of nuclei were observed.

[Common Signal Type Interpretation]

● 1q21	
	Negative: 2 orange
	Positive: 3 orange

[Limitations of test methods]

- ① The results of this kit will be affected by various factors of the sample itself, but also limited by hybridization temperature and time, operating environment and the limitations of current molecular biology technology, which may lead to wrong results.
- ② Users must understand the potential errors and accuracy limitations that may exist in the detection process.

[Precautions]

1. This product is only used for in vitro diagnosis.
2. Please read this manual carefully before testing. The testing personnel shall receive professional technical training, and the signal counting personnel must be able to observe and distinguish orange and green signals.
3. When testing clinical samples, when the hybridization signal counting is difficult and the sample is not enough to repeat the retest or the cell volume is not enough for analysis, the test will not provide test results.
4. DAPI counterstaining agent used in this experiment has potential toxicity or carcinogenicity, so it is necessary to operate in the fume hood, wear masks and gloves to avoid direct contact.

All chemicals are potentially dangerous. Avoid direct contact. Used kits are clinical waste and should be properly disposed of.

[Manuscript version and approval date]

Manual version: V1.1 reviewed on 07 December 2021

Approval date: 28 October 2019