

## 20q Gene Deletion Probe Detection Kit (CW-020)

### Intended use

This kit uses orange fluorescein labeled 20q12 orange probe and green fluorescein labeled 20q13.1 green probe. 20q12 / 20q13.1 probe can be combined with the target detection site by in situ hybridization.

### Product composition

The kit consists of 20q12/20q13.1 dual color probe 100µl/tube.

### Storage condition

Keep sealed away from light at  $-20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ . The product is valid for 20 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  $2\sim 8^{\circ}\text{C}$  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 under  $0^{\circ}\text{C}$ .

### Applicable instruments

Fluorescence microscope imaging system, including fluorescence microscope and filter set suitable for DAPI (367/452), green (495/517) and orange (547/565).

### Sample requirements

1. Applicable specimen types: Fresh bone marrow samples that have not been fixed are stored at  $4^{\circ}\text{C}$  for less than 24 hours and are used for FISH testing after culture.
2. When specimens are stored at too high or too low a temperature (eg, frozen), the specimen will not be used for culture and should be discarded.
3. Bone marrow cell suspension for karyotyping should be stored at  $-20^{\circ}\text{C}$  for FISH detection.
4. If the cells suspension is excessively volatile or contaminated during storage, the sample should be discarded.

### 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 20xSSC, 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. 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.

**4. 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.

**5. BS buffer, pH 7.4 ± 0.2**

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

Components: Sodium chloride (8g), Potassium chloride (0.2g), Sodium hydrogen phosphate (3.58g), Potassium dihydrogen phosphate (0.27g).

Dissolve the above reagents in 800mL deionized water, mix, adjust the pH to 7.4 ± 0.2 at room temperature, with deionized water complete to a volume of 1000mL. Stored at room temperature for 6 months. Discard if the reagent appears cloudy (turbid) or contaminated.

**6. 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.

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### 7. 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.

### 8. HCl solution

Measure 8.2ml of concentrated HCl, add deionized water to 100 ml to dilute, and store at room temperature to obtain 1M HCl. Dilute to 0.01M according to needs by 10-fold dilution method.

### 9. Diamidinyl phenylindole (DAPI) counterstain

Use commercially available anti-queching DAPI counterstain.

#### Sample collection and slides preparation

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 3-5µl of cell suspension drop onto the slides, put at 56°C for 30min.

### **Slides pretreatment**

1. At room temperature with 2×SSC (pH 7.0) solution, rinse the slide 2 times for 5min each time.
2. Place the slides in 70% ethanol, 85% ethanol and 100% ethanol for 2min each time, dehydrate and air dry.
3. Carry out the hybridization experiment according to the hybridization procedure.

### **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 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 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.

### **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.

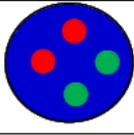
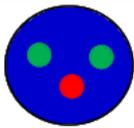
### **Counterstaining**

The following operations should be performed in a darkroom.

Drop 10-15µl DAPI compound dye in the hybridization area of the glass slide and immediately covered for 10-20min. Select the suitable filter for glass slide observation under the fluorescence microscope.

### FISH results observation

Place the stained sections under a fluorescence microscope and the cells area is first confirmed under a low magnification objective (10×); under magnification objective (40×) a uniform cells distribution is observed; then the nucleus size uniformity, nuclear boundary integrity, DAPI staining uniformity, no nuclei overlapping, cells clear signal are observed in the high magnification objective (60x, 100x). Select randomly 200 cells at least and count the orange and green signals in the nuclei.

● 20q12 gene site signal	● 20q13.1 gene site signal
	<p><b>Negative:</b> 2 Orange and 2 Green (2R ; 2G)</p>
	<p><b>Positive:</b> 1 Orange and 2 Green (1R ; 2G)</p>

### Test method limitations

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 limitations of current molecular biology technology, which may lead to erroneous results.
2. The user must understand the potential errors and accuracy limitations that may exist in the detection process

### Precautions

1. Please read this manual carefully before testing. The testing personnel shall receive professional technical training. The signal counting personnel must be able to observe and distinguish orange red and green signals.
2. When testing clinical samples, if it is difficult to count the hybridization signals and the samples are not enough to repeat the retest, the test will not provide any test results. If the amount of cells is insufficient for analysis, again, the test will not provide test results.

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3. The formamide and DAPI counterstaining agent used in this experiment have potential toxicity or carcinogenicity, so they need to be operated in the fume hood and wear masks and gloves to avoid direct contact.
4. The results of this kit will be affected by various factors of the sample itself, but also limited by enzyme digestion time, hybridization temperature and time, operating environment and limitations of current molecular biology technology, which may lead to wrong results. The user must understand the potential errors and accuracy limitations that may exist in the detection process.
5. All chemicals are potentially dangerous. Avoid direct contact. Used kits are clinical wastes and should be properly disposed of.
6. This product is for clinical diagnosis and scientific research.

[Manuscript version and approval date]

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