

MDM4 Gene Amplification Probe Detection Kit (CW-049)

Intended use

This kit uses Red-orange fluorescein to label MDM4 Red-orange probe and Green fluorescein to label 1q21 Green probe, and the MDM4/1q21 probes can be bound to the target detection site by in situ hybridization technology.

Product composition

The kit consists of MDM4/1q21 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 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.

Applicable instruments

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

Sample requirements

1. Applicable specimen types: Surgical resection or biopsy tissue paraffin-embedded specimen.
2. The tissue should be fixed within 1 hour with 4% neutral formaldehyde fixative solution, and the tissue should be routinely dehydrated and embedded in paraffin.

Cell sample:

1. Applicable specimen types: 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 should 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°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. 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. Diamidinyl phenylindole (DAPI) counterstain

Use commercially available anti-quinching DAPI counterstain.

Sample treatment before hybridization

It is recommended to use the Cytowish pretreatment reagent (catalogue number CW-CT-FISH).

Cell sample:

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 500 μ L of the residue.
3. Cell washing: Add 5 mL of 1 \times 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 500 μ L of the residue; repeat one time.
4. Cells hypotonicity: Add 10mL of hypotonic solution pre-warmed to 37°C and place in a water bath at 37°C for 15-20min.
5. Cells pre-fixation: Pre-fix the cells by adding 1 mL (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 500 μ L 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 500 μ L 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 3-5 μ L of cell suspension drop onto the slides, put at 56°C for 30min.
9. Pretreatment: At room temperature, rinse the glass slides twice with 2xSSC (pH 7.0) solution for 5min each time.
10. Dehydration: Place the glass slides in 70% ethanol, 85% ethanol and 100% ethanol and dry for 2 minutes.

Denaturation and hybridization

The following operations need to be carried out in the darkroom.

Tissue sample:

1. Take out the probe put at room temperature for 5min. Mix and centrifuge briefly. Take 10 μ L 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 85°C for 5 minutes (the hybridizer should be preheated to 85°C) and hybridize at 42°C for 2 to 16 hours.

Cell sample:

1. Take out the probe put at room temperature for 5min. Mix and centrifuge briefly. Take 10 μ L 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. Carefully remove the sealing glue around the cover glass with tweezers to avoid sticking or moving the cover glass, immerse the sample in 2xSSC for about 5S, take it out, gently push a corner of the cover glass to the edge of the slide with tweezers, and gently remove the cover glass with tweezers.
2. Place the sample at 2xSSC room temperature for 1 min.
3. Take out the sample and immerse it in 0.3%NP-40/0.4xSSC solution preheated at 68°C for 2min.
4. Take out the sample and immerse it in deionized water preheated at 37°C in advance for 1min; dry it naturally in the dark place.

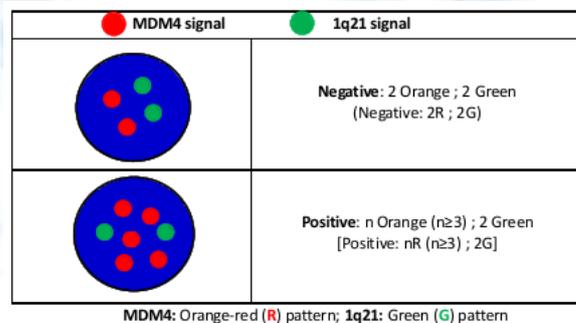
Counterstaining

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.

FISH results observation

Put the counterstained cell drops under the fluorescence microscope, first 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-magnification objective (100x) the FISH results of nuclei are observed.



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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