

## INSTRUCTIONS

### 37ExpressVue® Rapid Tests for SUMO Tag (Patent Pending)



**Cat# 112400-096, 112400-050, 112400-020**

Small Ubiquitin-like **M**odifier (SUMO) is a popular tag for recombinant protein expression and production due to its excellent solubility, which in turn increases the yield of expressed proteins in soluble fractions. The 37ExpressVue® SUMO Test detects tagged protein directly from cell culture media or lysate without any special instruments or sample handling. The test is completed in 5 to 10 minutes. The rapid tests are fast, sensitive, and specific without running SDS-PAGE or Western Blotting.

#### Principles of the Procedure

37ExpressVue® SUMO Test is an immunochromatographic membrane assay that uses antibodies to detect SUMO tagged proteins in cell culture and lysate. A detection antibody and a control antibody are immobilized on a membrane support as two distinct lines. A capture antibody is labeled with colored particles (colloidal gold nanoparticles) to allow visualization of the immunocomplex formed by the antibodies and the SUMO tagged protein. The amino acid sequence of the SUMO tag used for antibody generation is: DSEVNQEAKPEVKPEVKPETHINLKVSDGSSEIFFKIKKTTPLRRLMEAFKRQGGKEMDSLTF LYDGIEIQADQTPEDLDMEDNDIIEAHREQIGG.

To perform the test, the strip is dipped into fractions of cell culture media, cell lysate or other samples. SUMO tagged protein present in the sample binds the gold-labeled capture antibody, which is specific to SUMO. The antigen-antibody-gold complexes migrate along the test strip, where they are captured by the immobilized detection antibody, forming the Test Line (T). Immobilized control antibody captures the overflow complexes, forming the Control Line (C). The appearance of both a T Line and a C Line indicates the presence of tagged protein in the sample.

#### Intended Use

The 37ExpressVue® Test strips may be used in monitoring recombinant protein expression in a variety of applications, such as optimization of protein expression conditions, real time monitoring of protein expression, determining dose response of inducer in protein expression, monitoring change of protein expression levels in response to environments, such as temperature, nutrient and/or oxygen level, etc. The rapid tests can also be used in quality control applications such as testing residual contaminating proteins after purification.

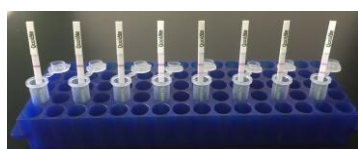
#### Test Procedure

1. All tests are performed at room temperature. Allow the package of strips warm to room temperature for 15 minutes prior to taking test strips out of the moisture barrier bags to avoid condensation.
2. Pipette ~200 ul of sample into an Eppendorf tube or ~120 ul into a well of 96-well microtiter plate. Hold the "QoolAbs" logo end of the strip, dip the other end of the strip (with stripped lines) into the

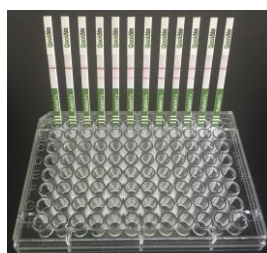
sample, making sure only the white pad below the green colored lines is immersed into the sample (Figure A and B).

**NOTE:** The linear detection range of the SUMO test strips is 0.1ng/ml to 50ng/ml. The test line is most visible for samples with the concentration between 1ng/ml and 10ug/ml. Test samples with high concentrations of SUMO tagged protein should be diluted with a neutral buffer such as PBS prior to testing.

- 5-10 minutes later, read the test result (Figure C). Results read before or after this time frame may be inaccurate.



A



B



C

### Sample Tests and Result Interpretation

Purified SUMO protein was diluted to various concentrations with sample buffer (PBST containing 0.1% BSA). Each diluted sample was tested with a SUMO tag rapid test strip. As shown in Figure C, samples for strips 1 to 16 contained SUMO protein at the following concentrations: 0, 0.04ng/ml, 0.19ng/ml, 0.75ng/ml, 1.5ng/ml, 3.12ng/ml, 6.25ng/ml, 12.5ng/ml, 25ng/ml, 50ng/ml, 100ng/ml, 200ng/ml, 400ng/ml, 1.0ug/ml, 10ug/ml, and 100ug/ml. There were no background signal when no SUMO was present in the sample (strip 1). The low detection limit of the SUMO test strips is 0.1 ng/ml of SUMO (strip 2). The linear detection range of the SUMO test strips is 0.1 ng/ml to 50 ng/ml (strips 2 to 10). The test line is most visible for samples with the concentration between 1 ng/ml and 10 ug/ml (strips 4 to 15). When protein concentration is expected to be higher than the upper limit of the linear range, it is recommended to try 2-3 different dilutions of the original samples to avoid hook effect (loss of signal when there is too much test targets present in the sample, strip 16).

### Precautions

- Keep test strips sealed in its foil pouch until just before use.
- Do not re-use the test strips.
- Do not use the strips past its expiration date.

### Storage and Stability

Store test strips dry at 4°C. Do not freeze. After opening, unused strips should be stored in a desiccator at 4°C and use within one week. Or, for test strips packed in re-closable aluminum bags, unused strips should be kept in the sealed bag at 4°C with the supplied desiccants and use within one week.

### Related Materials (Sold Separately):

37ExpressVue® SUMO Positive Controls, ready to use, 1ml. Cat # 912401-001