Gold Standard Technology for MicroRNA Research

Based on gold standard TaqMan® probe 5’ nuclease chemistry and using a novel stem-loop RT primer, individual pre-designed TaqMan® MicroRNA Assays are probe and primer sets that help enable accurate quantitation of the biologically active mature miRNA, delivering unsurpassed data quality with off-the-shelf convenience.

Features and Benefits

1. Performance

**Sensitivity**
TaqMan® MicroRNA Assays can detect as few as ten copies of transcript in a sample, even small changes are detected.

**Specificity**
Quantify only the miRNA target of interest; specifically targets only the more biologically significant mature form. Designed using a proprietary assay design algorithm, QC’d *in silico*, and mapped against the most recent Sanger version.

**Minor Groove Binder (MGB) moiety** (5’ FAM™ reporter dye/3’ MGB/nonfluorescent quencher [NFQ])
- Stabilizes the hybridized probe, resulting in better assay design
- Allows the probe to be shorter than traditional dual-labeled probes, enabling you to effectively target difficult sequences and increase specificity
- Effectively raises the melting temperature—ideal for detecting single base-pair mismatches

**Dynamic Range**
Greater than seven logs of dynamic range ensures accurate quantitation of targets ranging from a few copies to millions of copies in the same experiment.

2. Quality

We perform mass spec identity verification, yield testing, and a “No Template Control” (NTC) on every assay. Our chemistry and design pipeline were validated on over 1,500 assays through functional wet bench testing.

3. Convenience

Assays are shipped in a preformulated (5X for RT, and 20X for TaqMan® Assay) liquid format on dry ice and arrive ready to use (no need to resuspend or mix different components).

<table>
<thead>
<tr>
<th>Species</th>
<th>Available Assays</th>
<th>Total miRBase (Sanger v13.0)</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. sapiens</td>
<td>811</td>
<td>885</td>
<td>92%</td>
</tr>
<tr>
<td>M. musculus</td>
<td>583</td>
<td>689</td>
<td>85%</td>
</tr>
<tr>
<td>R. norvegicus</td>
<td>349</td>
<td>349</td>
<td>100%</td>
</tr>
</tbody>
</table>

Expansive miRNA inventory coverage—Sanger miRBase driven
Universal cycling conditions—no optimization required; any assays can be run together on a single plate
Complete validated workflow—TaqMan® MicroRNA Assays are part of a complete validated miRNA workflow that includes Ambion® and Applied Biosystems® reagents for sample preparation, reverse transcription of RNA, singleplex real-time PCR assay reactions, and real-time PCR amplification and data analysis

4. Formats/Flexibility

Easily scale up and down with various formats
- Single-tube inventoried assays for target quantitation
- TaqMan® MicroRNA Arrays for profiling studies (available for human, mouse, and rat) along with Megaplex® RT Pools
A wide selection of endogenous controls and short amplicon assays are available; custom service is also available to provide assays with different dyes and in various scales. An early-access Custom TaqMan® Small RNA Assays Tool (www4.appliedbiosystems.com/beta/smallrna) enables submitting a sequence for an assay design to any small RNA.

5. Workflow

Applied Biosystems offers a complete collection of TaqMan® MicroRNA Assays. These convenient, pre-designed, functionally validated products are available in a variety of formats to best meet a wide range of research needs. Spend your valuable time generating results, not designing and troubleshooting assays.
**TaqMan® MicroRNA Assays Product Overview**

**Competitive Data Comparisons**

These data figures are from the “TaqMan® MicroRNA Assays—The Gold Standard” presentation, available at mirna.appliedbiosystems.com in the “Product Information” section. Please refer to this presentation for the complete benchmarking data.

![Figure 2](image)

**Figure 2.** The high biological significance of mature miRNAs merits the need for TaqMan® MicroRNA Assays' high level of discrimination between precursor and mature forms.

**Ordering Information**

<table>
<thead>
<tr>
<th>Assay Type</th>
<th>Number of 20 µL PCR Reactions (20X concentration)</th>
<th>Reporter/Quencher Dye</th>
<th>Approximate Delivery Time</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventoried</td>
<td>150</td>
<td>FAM™/MGB-NFO</td>
<td>1–4 business days</td>
<td>4427975</td>
</tr>
</tbody>
</table>

**Ordering Method**

**Quick Assay Search**

Assays can be ordered online by searching by gene name, gene symbol, or any other Sanger gene annotation information. Links to assay pages are available at mirna.appliedbiosystems.com.

**GeneAssist™ miRNA Workflow Builder**

Simplify your assay selection by using the GeneAssist™ miRNA Workflow Builder. Satisfy your experimental needs for functional analysis with Ambion® Pre-miR™ miRNA Precursors and Ambion® Anti-miR™ miRNA Inhibitors, available for each miRNA of interest at www5.appliedbiosystems.com/tools/mirna.

**Instrument Compatibility**

- 7900HT Fast Real-Time PCR System
- 7500 and 7500 Fast Real-Time PCR Systems
- 7300 Real-Time PCR System
- StepOne™ and StepOnePlus™ Real-Time PCR Systems
- Legacy ABI Sequence Detection Systems
- Can also be used on other real-time PCR instruments

**Resources**

- Microsite URL: mirna.appliedbiosystems.com
- Technical Support: 800.327.3002, prompt 5

**Competitive Data Comparisons**

**TaqMan® MicroRNA Assays—The Gold Standard (127M170)**

**Application Notes**

High Correlation of miRNA Quantitation Data from Matched FFPE and Snap-Frozen Tissues Using TaqMan® MicroRNA Assays (130AP03)

Endogenous Controls for Real-Time Quantitation of miRNA Using TaqMan® MicroRNA Assays (127AP11)

**Scientific Posters**

MicroRNA expression signature in human glioblastoma multiforme brain tumor (127PR07)

TaqMan®-based miRNA profiles classify mouse ES and differentiated cells (127PR08)

MicroRNA quantitation by RT-PCR (127PR05)

**References and Additional Reading**


For Research Use Only. Not for use in diagnostic procedures.

A license to perform the patented 5’ Nuclease Process for research is obtained by the purchase of (i) both Licensed Probe and Authorized 5’ Nuclease Core Kit, (ii) a Licensed 5’ Nuclease Kit, or (iii) license rights from Applied Biosystems.

The TaqMan® MicroRNA Assay contains Licensed Probe. Use of this product is covered by US patent claims and patent claims outside the US. The purchase of this product includes a limited, non-transferable immunity from suit under the foregoing patent claims for using only this amount of product for the purchaser’s own internal research. Separate purchase of an Authorized 5’ Nuclease Core Kit would convey rights under the applicable claims of US patents, and corresponding patent claims outside the United States, which claim 5’ nuclease methods. No right under any other patent claim and no right to perform commercial services of any kind, including without limitation reporting the results of purchaser’s activities for a fee or other commercial consideration, is conveyed expressly, by implication, or by estoppel. This product is for research use only. Diagnostic uses under Roche patents require a separate license from Roche. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

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