# mRNA QC Service Quote Request

Please select your assays in the table, then enter the specific mRNA details required below. Return this form to your sales representative or to [gene@genscript.com](mailto:gene@genscript.com) to receive a quote for your QC analysis project.

|  |  |  |  |
| --- | --- | --- | --- |
| **mRNA QC Services** | **Estimated**  **Days** | **mRNA Required** | **Assay Requested**  (Enter “X” to select) |
| 1. PolyA Tail Length Assay | 7 | 300 pmol |  |
| 1. Capping Efficiency Assay | 14-21 | 300 pmol |  |
| 1. dsRNA Assay | 10 | 40 µg |  |
| 1. RNA Capillary Electrophoresis | 5 | 10 µg |  |
| 1. Total Protein Residue Assay | 7 | 10 µg |  |
| 1. Plasmid DNA Residue Assay | 14 | 5 µg |  |
| 1. Quantitative Endotoxin Assay | 5 | 5 µg |  |
| 1. BioBurden Assay | 14 | 200 µg |  |
| 1. Sanger Sequencing | 7 | 5 µg |  |
| 1. NGS | 7-10 | 5 µg |  |
| 1. mRNA aggregation assay | 7 | 30 µg |  |

## Poly A tail Length Assay (14 days)

**Method**: RNase digestion and purification to recover the polyA tail fragment, followed by polyA tail length analysis by small RNA bio-analyzer kit assay or LC-MS.

**mRNA required**: 300 pmol

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | polyA tail sequence +10 extra nucleotide before A |  |
| b. | Chemical modifications in mRNA |  |
| c. | Do you perform bioanalyzer ($1500) or LC-MS method ($2000) for the polyA tail assay? |  |
| d. | mRNA length in nt |  |
| e. | mRNA sample concentration in µg/ul |  |

## Capping Efficiency Assay (14-21 days – based on time to order new probe)

**Method**: RNase digestion to isolate a short oligo from the 5’ end of the mRNA sample to be analyzed by LC-MS to calculate the capping efficiency.

**mRNA required**: 300pmol of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | First 60nt sequence from the 5’end of your mRNA sample |  |
| b. | What kind of Cap was used in your mRNA |  |
| c. | Chemical modifications in mRNA |  |
| d. | Capping method used in preparation |  |
| e. | Did you perform dephosphorylation on your mRNA |  |
| f. | mRNA length in nt |  |
| g. | mRNA sample concentration in µg/ul |  |

## dsRNA residue content Assay (10 days)

**Method**: Slot-blot assay using a dsRNA-specific antibody to test for dsRNA residues in mRNA sample.

**mRNA required**: 40 µg of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | Chemical modifications in mRNA |  |
| b. | mRNA length in nt |  |
| c. | mRNA sample concentration in µg/ul |  |

## RNA Capillary Electrophoresis (5 days)

**Method**: Bioanalyzer assay to test RNA length and purity.

**mRNA required**: 10 µg of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | mRNA length in nt |  |
| b. | Chemical modifications in mRNA sample |  |
| c. | mRNA sample concentration in µg/ul |  |

## Protein residue content Assay (7 days)

**Method**: Nano-orange assay to test the residual protein amount in mRNA sample.

**mRNA required**: 10 µg of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | mRNA length in nt |  |
| b. | Chemical modifications in mRNA sample |  |
| c. | mRNA sample concentration in µg/ul |  |

## Plasmid DNA Residue Assay (14 days)

**Method**: q-PCR assay to test the residual plasmid DNA residue amount in mRNA sample.

**mRNA required**: 5 µg of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | mRNA length in nt |  |
| b. | Plasmid map for mRNA production |  |
| c. | mRNA sample concentration in µg/ul |  |

## Quantitative Endotoxin Assay (5 days)

**Method**: GenScript ToxinSensor™ Chromogenic LAL Endotoxin Assay to test endotoxin level in mRNA sample.

**mRNA required**: 5 µg of mRNA

**Information required**:

|  |  |  |
| --- | --- | --- |
| a. | mRNA length in nt |  |
| b. | mRNA sample concentration in µg/ul |  |

## BioBurden Assay (14 days)

**Method Introduction**: TSA plate to recover a broad range of microorganisms such as aerobic and anaerobic bacteria from liquid.

**mRNA required**: 200 µg of mRNA

**Information required:**

|  |  |  |
| --- | --- | --- |
| a. | mRNA length in nt |  |
| b. | mRNA sample concentration in µg/ul |  |

## Sanger Sequencing (7 days)

**Method Introduction**: RT-PCR and sanger sequencing, alignment with target sequence for data analysis​.

**mRNA required**: 5 µg of mRNA

**Information required:**

|  |  |  |
| --- | --- | --- |
| a. | mRNA target sequence |  |
| b. | mRNA sample concentration in µg/ul |  |

## NGS (7-10 days)

**Method Introduction**:

**NGS:** mRNA random interruption, reverse transcription, end repair, add A, adapter ligation, Next generation sequencing by Illumina platform.

**Sanger (*Optional*):** for mRNA without a linker in polyA, the number of A bases can be obtained by sanger.

**mRNA required**: 5 μg

**Information required:**

|  |  |  |
| --- | --- | --- |
| a. | mRNA reference sequence |  |
| b. | If there is a linker within polyA |  |
| c. | If mRNA was modified |  |
| d. | mRNA sample concentration in µg/ul |  |

## mRNA Aggregation Assay (7 days)

**Method Introduction**: Size exclusion HPLC method with UV detector to measure the ratio of mRNA in aggregated form​.

**mRNA required**: 30 µg of mRNA

**Information required:**

|  |  |  |
| --- | --- | --- |
| a. | mRNA length |  |
| b. | mRNA sample concentration in µg/ul |  |
| c. | mRNA modification and ratio for each modifier |  |