

# Package ‘sisti’

May 9, 2026

**Title** Real-Time PCR Data Sets by Sisti et al. (2010)

**Version** 0.0.1

**Description** This data package contains four datasets of quantitative PCR (qPCR) amplification curves that were used as supplementary data in the research article by Sisti et al. (2010), <[doi:10.1186/1471-2105-11-186](https://doi.org/10.1186/1471-2105-11-186)>. The primary dataset comprises a ten-fold dilution series spanning copy numbers from  $3.14 \times 10^7$  to  $3.14 \times 10^2$ , with twelve replicates per concentration. These samples are based on a pGEM-T Promega plasmid containing a 104 bp fragment of the mitochondrial gene NADH dehydrogenase 1 (MT-ND1), amplified using the ND1/ND2 primer pair. The remaining three datasets contain qPCR results in the presence of specific PCR inhibitors: tannic acid, immunoglobulin G (IgG), and quercetin, respectively, to assess their effects on the amplification process. These datasets are useful for researchers interested in PCR kinetics. The original raw data file is available as Additional File 1:

<[https://static-content.springer.com/esm/art%3A10.1186%2F1471-2105-11-186/MediaObjects/12859\\_2009\\_3643\\_MOESM1\\_ESM.XLS](https://static-content.springer.com/esm/art%3A10.1186%2F1471-2105-11-186/MediaObjects/12859_2009_3643_MOESM1_ESM.XLS)>.

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**Encoding** UTF-8

**RoxygenNote** 7.3.1

**Imports** tibble

**Depends** R (>= 2.10)

**LazyData** true

**URL** <https://rmagno.eu/sisti/>, <https://github.com/ramiromagno/sisti>

**BugReports** <https://github.com/ramiromagno/sisti/issues>

**NeedsCompilation** no

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### Description

One single tabular tidy data set in long format, encompassing four data sets of amplification curves: (i) six-point, ten-fold dilution series, (ii) tannic acid inhibition, (iii) IgG inhibition and (iv) quercitin inhibition. The target amplicon consisted of a 104 bp fragment of the mitochondrial gene NADH dehydrogenase 1 (MT-ND1). Please read the Methods section of Sisti et al. (2010) for more experimental details.

#### Dilution series:

A six-point, ten-fold dilution series spanning an amplicon copy number range  $3.14 \times 10^7$  thru  $3.14 \times 10^2$ . Each concentration is replicated twelve times. Each reaction has been amplified through 50 cycles.

```
dplyr::filter(sisti, plate == "calibration")
#> # A tibble: 3,600 x 13
#>   plate    well target dye  sample sample_type inhibitor inhibitor_conc
#>   <fct>    <fct> <fct> <fct> <fct> <fct>      <fct>          <dbl>
#> 1 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 2 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 3 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 4 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 5 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 6 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 7 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 8 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 9 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> 10 calibration <NA> MT-ND1 SYBR  pGEM-T std      none            0
#> # i 3,590 more rows
#> # i 5 more variables: replicate <fct>, copies <int>, dilution <int>,
#> #   cycle <int>, fluor <dbl>
```

#### Tannic acid inhibition:

A series of reactions subjected to inhibition by tannic acid with concentrations: 0.000391, 0.000781, 0.00156, 0.00312, 0.00625, 0.0125, 0.025, 0.05 and 0.1 mg/mL. Each tannic acid concentration sample is replicated six times. Each reaction has been amplified through 40 cycles.

```
dplyr::filter(sisti, plate == "tannic acid")
#> # A tibble: 2,160 x 13
#>   plate    well target dye  sample sample_type inhibitor inhibitor_conc
#>   <fct>    <fct> <fct> <fct> <fct> <fct>      <fct>          <dbl>
```

```

#> 1 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 2 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 3 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 4 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 5 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 6 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 7 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 8 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 9 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> 10 tannic acid <NA> MT-ND1 SYBR pGEM-T std tannic acid 0.1
#> # i 2,150 more rows
#> # i 5 more variables: replicate <fct>, copies <int>, dilution <int>,
#> # cycle <int>, fluor <dbl>

```

### Immunoglobulin G (IgG) inhibition:

A series of reactions subjected to inhibition by IgG with concentrations: 0.00781, 0.0156, 0.0312, 0.0625, 0.125, 0.25, 0.5, 1 and 2 mg/mL. Each IgG concentration sample is replicated six times. Each reaction has been amplified through 40 cycles.

```

dplyr::filter(sisti, plate == "IgG")
#> # A tibble: 2,160 x 13
#>   plate well target dye sample sample_type inhibitor inhibitor_conc
#>   <fct> <fct> <fct> <fct> <fct> <fct> <fct> <dbl>
#> 1 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 2 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 3 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 4 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 5 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 6 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 7 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 8 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 9 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> 10 IgG <NA> MT-ND1 SYBR pGEM-T std IgG 2
#> # i 2,150 more rows
#> # i 5 more variables: replicate <fct>, copies <int>, dilution <int>,
#> # cycle <int>, fluor <dbl>

```

### Quercetin inhibition:

A series of reactions subjected to inhibition by quercetin with concentrations: 0.000312, 0.000625, 0.00125, 0.0025, 0.005, 0.01, 0.02, and 0.04 mg/mL. Each quercetin concentration sample is replicated six times. Each reaction has been amplified through 40 cycles.

```

dplyr::filter(sisti, plate == "quercetin")
#> # A tibble: 1,920 x 13
#>   plate well target dye sample sample_type inhibitor inhibitor_conc
#>   <fct> <fct> <fct> <fct> <fct> <fct> <fct> <dbl>
#> 1 quercetin <NA> MT-ND1 SYBR pGEM-T std quercetin 0.04
#> 2 quercetin <NA> MT-ND1 SYBR pGEM-T std quercetin 0.04
#> 3 quercetin <NA> MT-ND1 SYBR pGEM-T std quercetin 0.04

```

```

#> 4 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 5 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 6 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 7 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 8 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 9 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> 10 quercitin <NA> MT-ND1 SYBR pGEM-T std quercitin 0.04
#> # i 1,910 more rows
#> # i 5 more variables: replicate <fct>, copies <int>, dilution <int>,
#> # cycle <int>, fluor <dbl>

```

### Format

A **tibble** providing amplification curve data in long format. Each row is for an amplification curve point.

**plate** Plate identifier. There is one identifier for each of the four data sets.

**well** Well identifier, i.e. the position within a PCR plate. This information was not available from the original publication, thus all values are NA.

**target** Target identifier. In all data sets the target is an amplicon consisting of a 104 bp fragment of the mitochondrial gene NADH dehydrogenase 1 (MT-ND1), thus the values are all "MT-ND1".

**dye** Type of fluorescence dye, in this data set it is always SYBR Green I master mix (Roche) ("SYBR").

**sample** Name of the biological sample. All samples are based on a pGEM-T Promega plasmid, so all values are "pGEM-T".

**sample\_type** Sample type. All reactions are standard curves, i.e. "std".

**inhibitor** Name of the molecule used as PCR inhibitor. In the case of the dilution series the value is "none".

**inhibitor\_conc** Inhibitor concentration in mg/mL.

**replicate** Replicate identifier.

**copies** Standard copy number of the amplicon.

**dilution** Dilution factor. Higher number means greater dilution, e.g. 10 means a 1:10 (ten-fold) dilution.

**cycle** PCR cycle.

**fluor** Raw fluorescence values.

### Source

[doi:10.1186/14712105111186](https://doi.org/10.1186/14712105111186)

### Examples

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