

# Reverse Transcriptases

## DBscript 2.0

## DBscript Turbo

Engineered to Improve  
cDNA Synthesis



# DBscript Reverse Transcriptases



**Reverse Transcriptases** are essential enzymes in molecular biology applications that enable synthesis of complementary DNA from RNA templates. Conventional reverse transcriptases suffer from limited thermostability and speed, leading to reduced yields and insufficient sensitivity. Highly thermostable DBscript Reverse Transcriptases solve these issues and offer outstanding sensitivity and speed, as well as specificity and high yields from structured RNA.

## Advantages of DBscript Reverse Transcriptases

DBscript 2.0 and DBscript Turbo are our latest proprietary highly engineered M-MLV Reverse Transcriptases.

They bring substantial improvements over current enzymes across multiple parameters in RT-PCR and RNA-seq.

They combine superior thermostability, high cDNA yield, speed, sensitivity and specificity in one enzyme. Both enzymes exhibit template switching activity.

Available as stand-alone enzymes or in ready-to-use cDNA synthesis kits.

Patent pending

### Exceptional thermostability

Highly efficient reverse transcription up to 65 °C.

### High-yield cDNA synthesis

Quantitative cDNA yield, including structured RNAs, such as ribosomal RNA.

### High speed and processivity

High yields of all cDNAs, including long transcripts in short protocols.

### Superior sensitivity and specificity

Detection of low-copy-number targets in RT-qPCR and RNA-seq workflows.

### Inhibitor tolerance

Resistant to common reverse transcription and PCR inhibitors.

## Key Features and Applications

### DBscript 2.0

Ultra-sensitive with optimal performance in most applications

A new version of DBscript, showing gains across the performance parameters tested.

Enzyme of choice for one-step RT-PCR and maximum sensitivity (e.g., in diagnostics), with strong performance in all applications.

Better alternative to SuperScript™ III and SuperScript™ III Flash.

One-step RT-PCR and diagnostic applications

Reverse transcription (RT) at up to 65 °C

RT workflows with template switching

RT with low copy number targets (down to ~1 copy)

Ultra-fast for full-length cDNA and RNA-seq

### DBscript Turbo

Full-length RNA-seq library preparation

cDNA synthesis with long RNA templates (>5 kb)

The fastest M-MLV reverse transcriptase available.

Enzyme of choice for full-length cDNA synthesis with a synthesis rate of up to 1 kb per 30 sec.

Better alternative to SuperScript™ IV due to higher thermostability and specificity.

RT workflows with template switching

RT workflows with short protocols

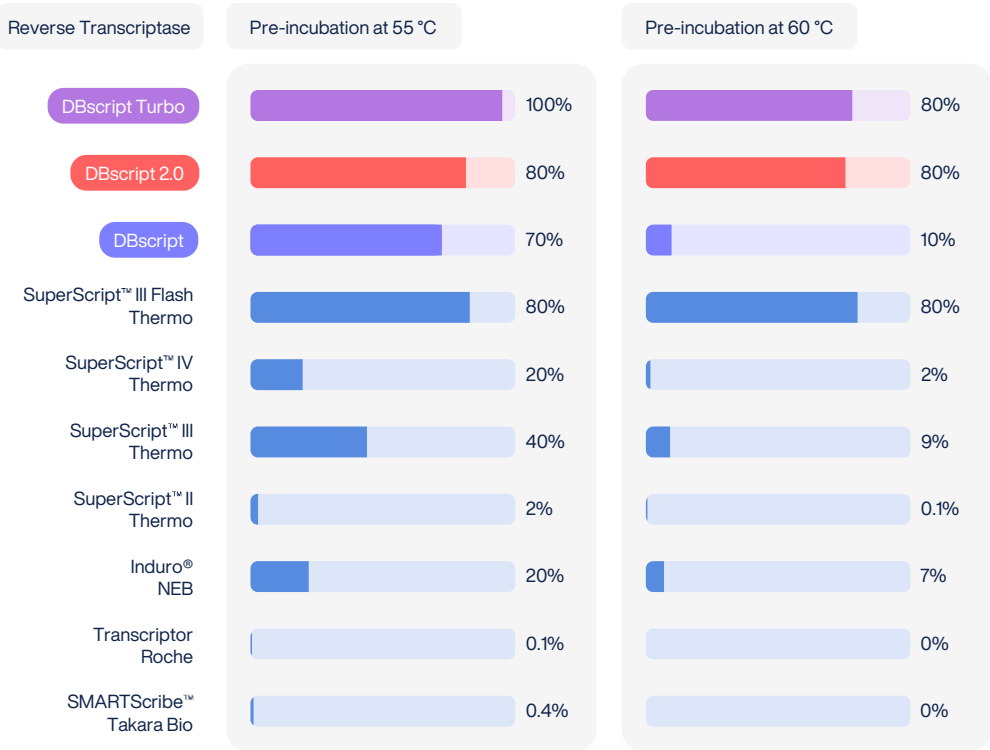
# Exceptional Thermostability



Approximate cDNA yield (%)  
after 5 min pre-incubation at various temperatures  
followed by transcription for 10 min at 55 °C

DBscript 2.0 and DBscript Turbo  
show excellent thermostability

DBscript 2.0 and DBscript Turbo ensured efficient  
cDNA synthesis after pre-incubation up to 60 °C



One-step RT-qPCR performed with 0.3 U/μL reverse transcriptase. The values are rounded to one significant figure for clarity.

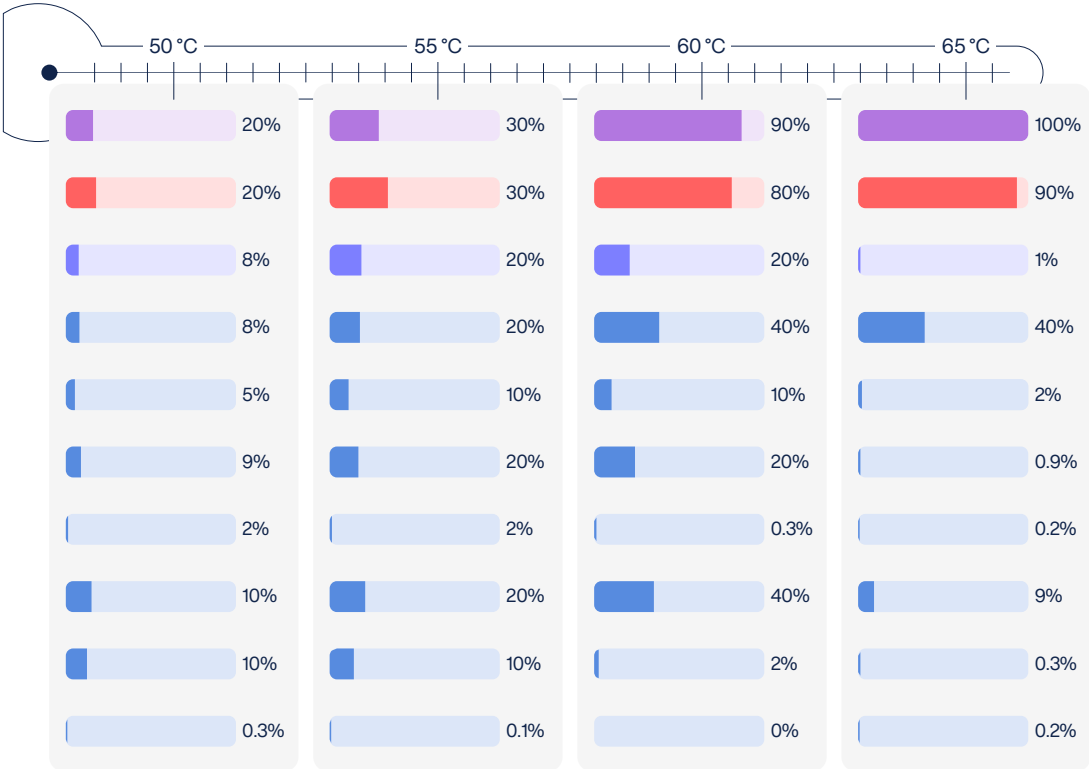
# High Yield from Structured RNA



Approximate cDNA yield (%)  
from bacterial ribosomal RNA (~200 bases)  
at various temperatures after 10 min

DBscript 2.0 and DBscript Turbo  
provide the highest cDNA yields

DBscript 2.0 and DBscript Turbo enabled reverse  
transcription at 60 °C and 65 °C under the tested conditions



One-step RT-qPCR performed with 0.15 U/μL reverse transcriptase. The values are rounded to one significant figure for clarity.

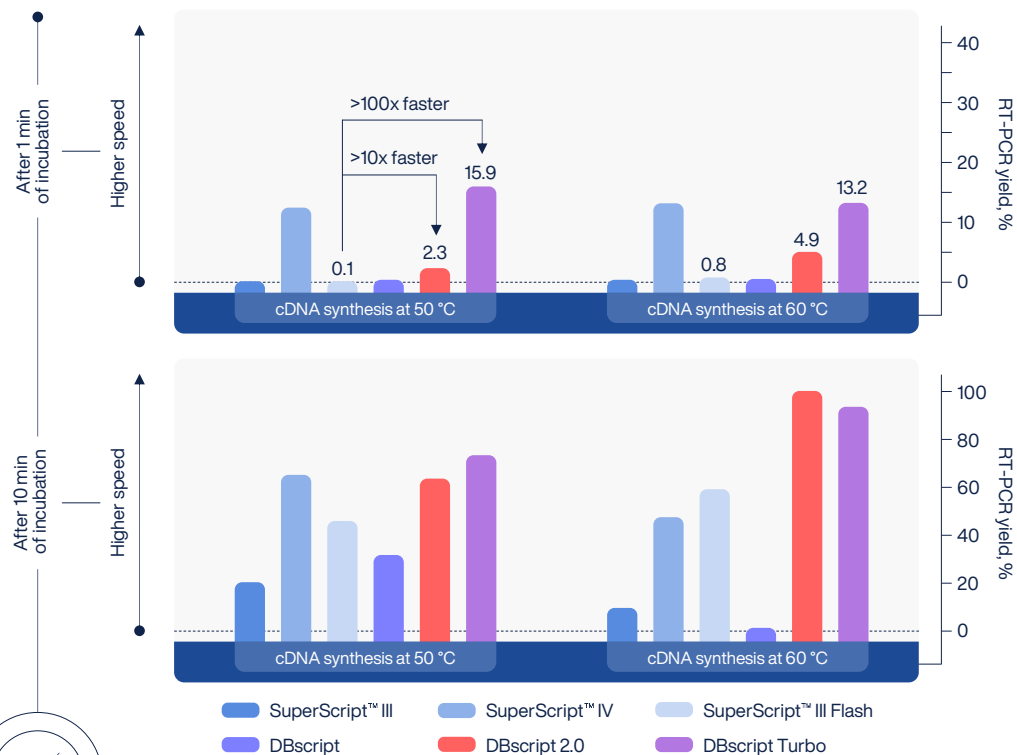
# High Speed and Processivity



Approximate cDNA yield (%)  
for a 2,000-base cDNA transcript  
at various temperatures

DBscript 2.0 and DBscript Turbo  
are ultra-fast and highly processive

DBscript 2.0 is >10 times faster than SuperScript™ III Flash  
DBscript Turbo is >100 times faster than SuperScript™ III Flash



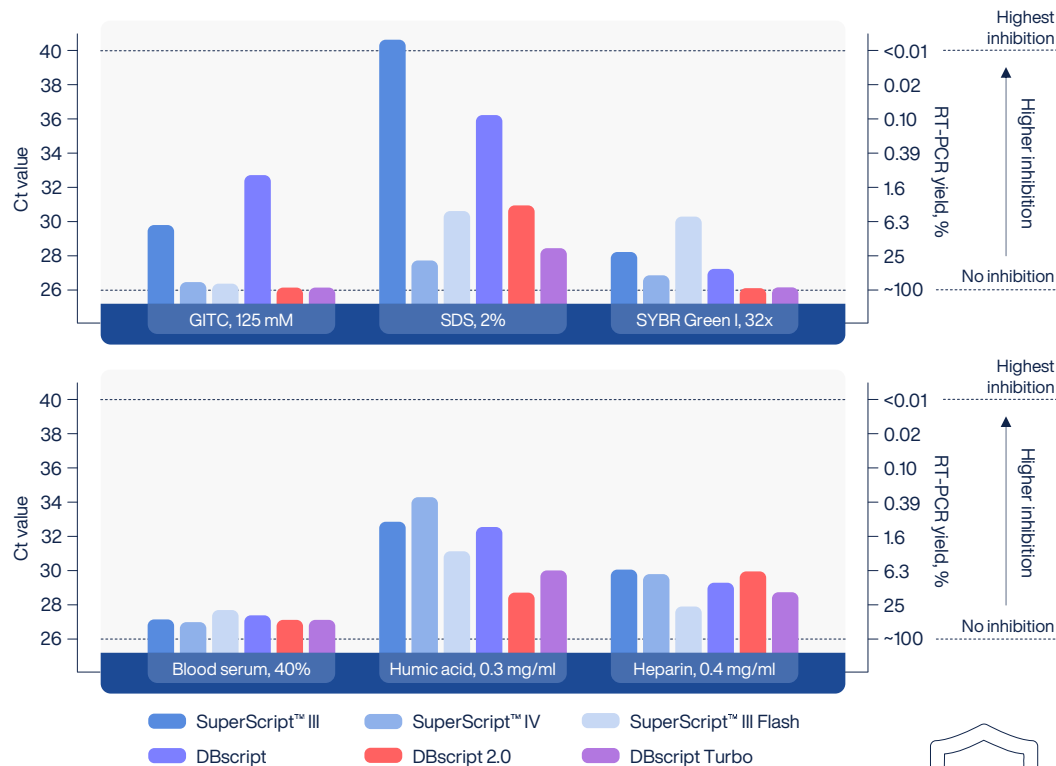
One-step RT-qPCR performed with 0.15 U/μL reverse transcriptase.

# Resistance to inhibitors

DBscript 2.0 and DBscript Turbo rank among the  
best-performing RTs across the inhibitors tested

DBscript 2.0 and DBscript Turbo show exceptional resistance  
to GITC, SYBR Green I and humic acid

cDNA synthesis efficiency  
in the presence of common inhibitors  
of reverse transcription



Two-step RT-qPCR performed with 0.3 U/μL reverse transcriptase.



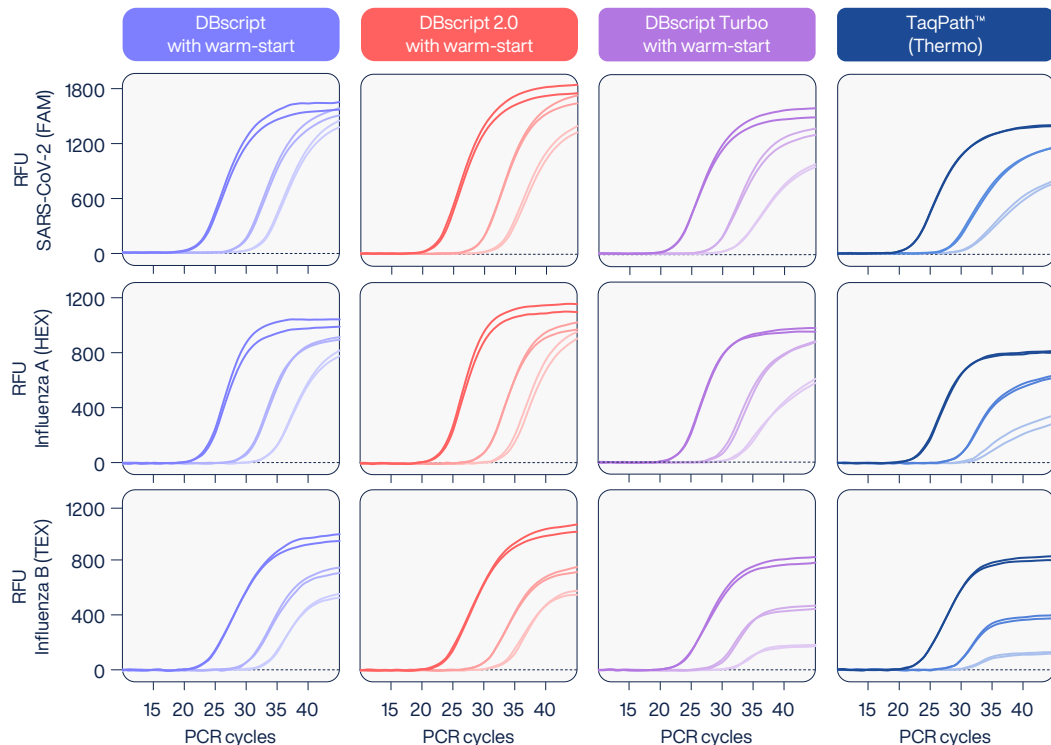
# Superior Sensitivity



## Sensitivity in multiplex RT-PCR

Multiplex one-step RT-PCR after 24 h pre-incubation with primers, no RNA template (UDG + dUTP included)

Viral RNA template: 20,000–200–20 copies/rxn



One-step RT-qPCR performed with 0.5 U/μL reverse transcriptase.

## DBscript RTs show higher sensitivity than TaqPath™ one-step RT-qPCR Master Mix

All DBscript RTs detected low-copy-number targets even after 24-hour pre-incubation with the primers. This is the result of their high efficiency and outstanding specificity.

# DB Warm-Start RT Additive

## An optional warm-start enhancement for the DBscript RTs family

DB Warm-Start RT Additive is a complementary reagent that adds temperature-gated control of reverse transcriptase activity to your existing RT workflow. Used together with DBscript 2.0, DBscript Turbo, or other M-MLV reverse transcriptases, it reversibly inhibits RT activity at ambient temperature - limiting non-specific primer extension and primer-dimer formation during reaction assembly. Inhibition is fully released at  $\geq 50^{\circ}\text{C}$ , where the enzyme reaches full activity for specific and efficient cDNA synthesis. It is designed for assays that benefit from an added warm-start step, such as prolonged setups, handling at room temperature, or applications demanding enhanced specificity.

## Add to your RT of choice

Compatible with all DBscript RTs and other M-MLV RTs\* in one- and two-step RT-PCR

## Ordering information

Size

Catalogue #

50 rxns

DB-1336-50rxns

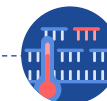
250 rxns

DB-1336-250rxns



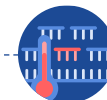
## Fully reversible inhibition

RT activity is fully restored at  $\geq 50^{\circ}\text{C}$ , with no measurable loss of yield under the tested conditions.



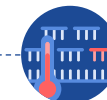
## Reduced background

Reduces non-specific extension and primer-dimer formation at room temperature



## Improved specificity

Particularly in assays with prolonged or ambient-temperature setup

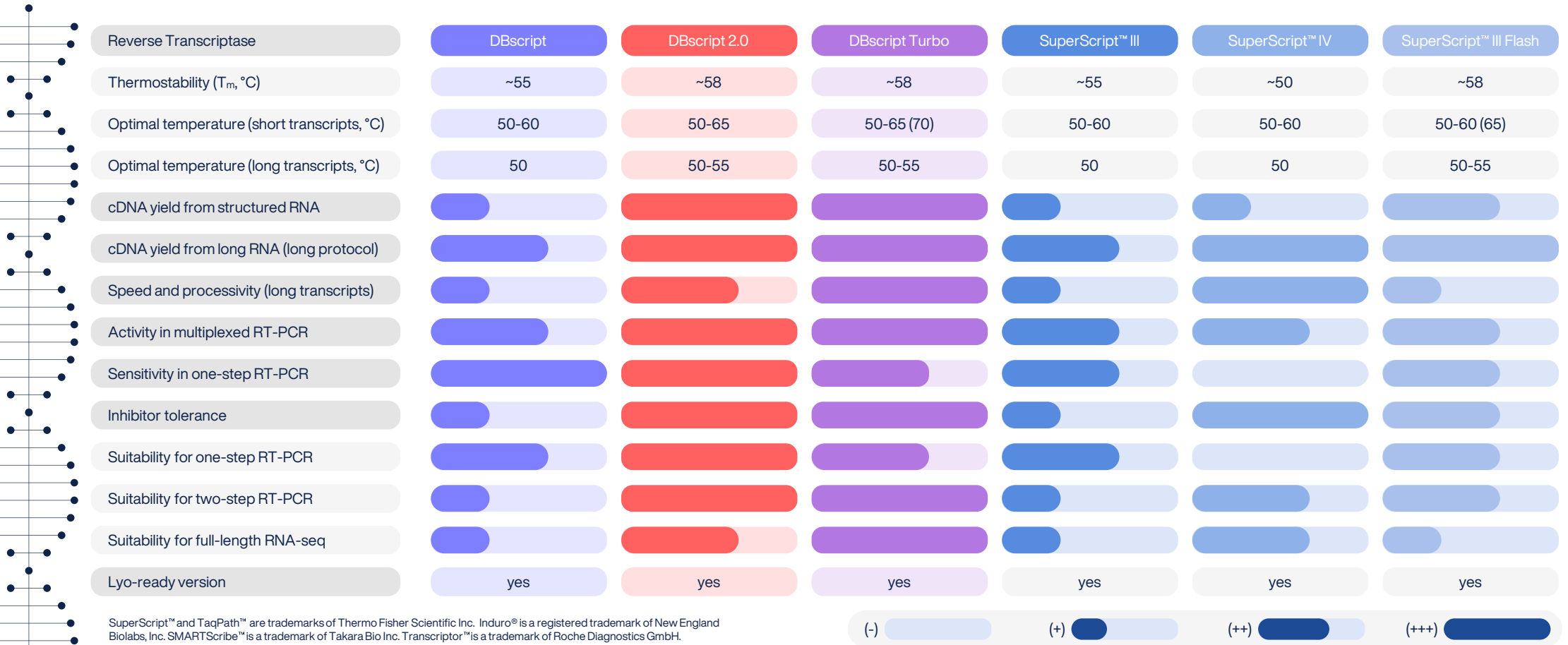


## Easy to use

Use 1 μL per 20 μL reaction mix, add before primers

*\* Compatibility with other M-MLV reverse transcriptases should be verified by the user.*

# DBscript Reverse Transcriptases: Excelling Across Key Performance Metrics



Relative performance based on internal benchmarking under standardized conditions.

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# DBscript 2.0 Reverse Transcriptase Kits



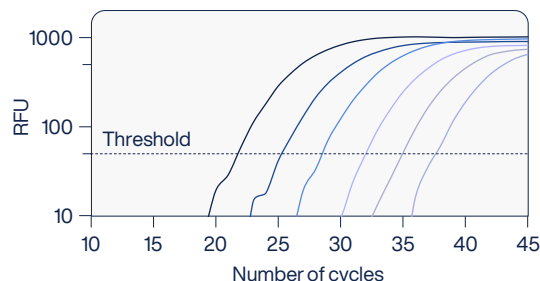
## Sensitive with wide linear range

TBP amplification with oligo(dT)<sub>20</sub>-VN primers from HEK293 total RNA at 50 °C for 10 min

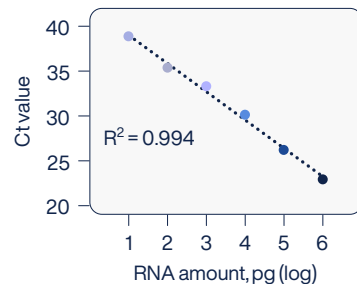
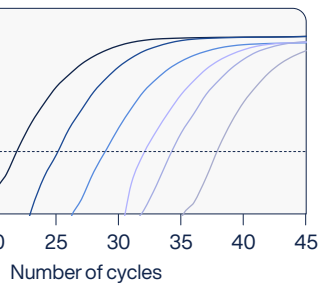
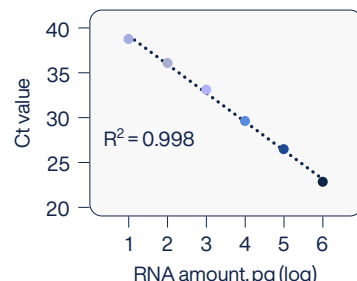
## DBscript 2.0 kits demonstrated high sensitivity and wide linear range of detection

TBP is a rare transcript, and both kits detected TBP in the range from 10 pg to 1 µg of total RNA extracted from HEK293 cells.

Amplification plot



Standard curve



Amount of total RNA from HEK293 cells

10<sup>6</sup> pg 10<sup>5</sup> pg 10<sup>4</sup> pg 10<sup>3</sup> pg 10<sup>2</sup> pg 10<sup>1</sup> pg

Experiments were performed according to the products' instructions for use.

## DBscript 2.0 Reverse Transcriptase

Our stand-alone enzyme is suitable for both first-strand cDNA synthesis and one-step RT-qPCR, including *in vitro* diagnostic applications.

Supplied with optimized 5× RT Buffer B; only primers and an RNase inhibitor need to be added.



DBscript 2.0 Reverse Transcriptase



Optimized reaction buffer

## DBscript 2.0 cDNA Synthesis Kit

Our high-yield cDNA Synthesis Kit provides all components required for fast and efficient cDNA synthesis.

To streamline your protocol, the kit contains a unique reaction mix (2×) with all necessary components including DBscript 2.0 RT and an RNase inhibitor; only primers need to be added.

An oligo(dT)<sub>20</sub> primer and random hexamers are also included in the kit.



DBscript 2.0 Reverse Transcriptase



DB Ultima H RNase Inhibitor



Oligo(dT)<sub>20</sub> primer Random hexamers

# Ordering information

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| Size  | Catalogue #  |
|-------|--------------|
| 2 kU  | DB-1332-2kU  |
| 10 kU | DB-1332-10kU |
| 40 kU | DB-1332-40kU |

Also available in glycerol-free (lyo-ready) formulation.

## Ordering information

| Size    | Catalogue #    |
|---------|----------------|
| 10 rxns | DB-1334-10rxns |
| 50 rxns | DB-1334-50rxns |

A free sample size is available upon request.

For bulk inquiries, contact us via [lifescience@dianabiotech.com](mailto:lifescience@dianabiotech.com)

# DBscript Turbo Reverse Transcriptase Kits



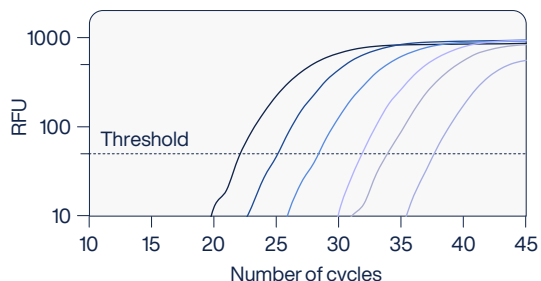
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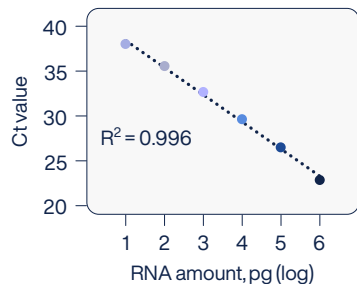
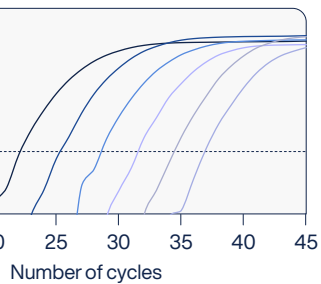
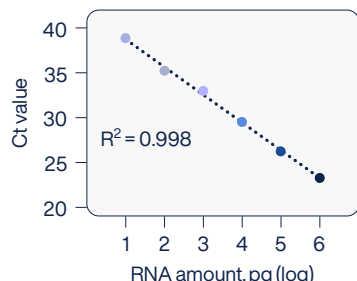
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An oligo(dT)<sub>20</sub> primer and random hexamers are also included in the kit.



DBscript Turbo Reverse Transcriptase



DB Ultima H RNase Inhibitor



Oligo(dT)<sub>20</sub> primer Random hexamers

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For bulk inquiries, contact us via [lifescience@danabiotech.com](mailto:lifescience@danabiotech.com)



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