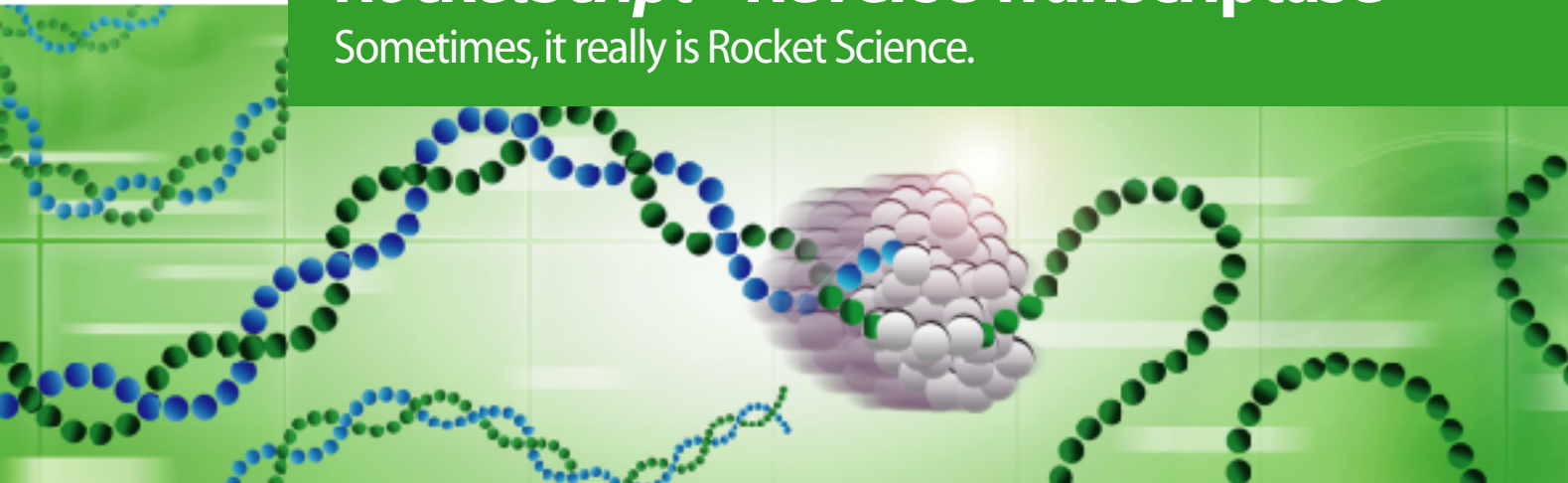


RocketScript[™] Reverse Transcriptase

Sometimes, it really is Rocket Science.



Introducing the powerful *RocketScript*[™] series products from Bioneer ▶▶

- *RocketScript*[™] Reverse Transcriptase
- *AccuPower*[®] *RocketScript*[™] RT PreMix
- *AccuPower*[®] *RocketScript*[™] RT-PCR PreMix
- *AccuPower*[®] *RocketScript*[™] Cycle RT PreMix

BIONEER
Innovation • Value • Discovery

- **The Problem:**

Complex secondary structures in RNA molecules prevent efficient cDNA synthesis.

- **The Solution:**

Melt the stems and loops so the reverse transcriptase can do its job.

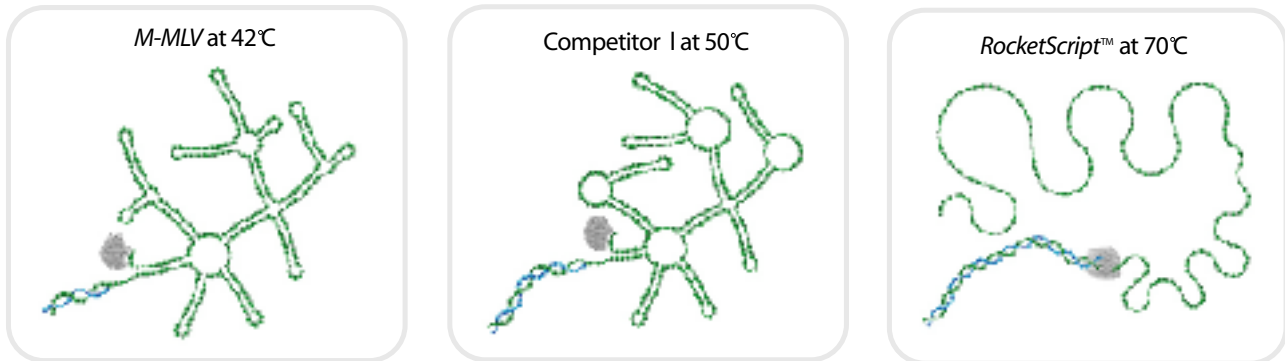


Figure 1. Schematic representation of the 5' UTR of a gene, with complex secondary structure, at three different temperatures. Note that *RocketScript™* shows full activity at 70°C allowing it to synthesize the complete gene sequence where *M-MLV* and other reverse transcriptases fail.

RocketScript™ is a recombinant form of *M-MLV* Reverse Transcriptase that has been specifically engineered to work at temperatures up to 70°C. By increasing the temperature at which *RocketScript™* functions, more full length transcript can be obtained for RNAs with complex secondary structure. The enzyme shows full activity from 42-70°C, allowing you to optimize the best temperature for your gene(s) of interest, we even have a *RocketScript™* optimized for "cyclic-RT" to amplify rare transcripts.

Applications

- **First-strand synthesis of cDNA from RNA molecules (Reverse Transcription)**
- **RT-PCR**
- **Random priming reactions**
- **Library construction**
- **Probe labeling**
- **mRNA 5'-end mapping by primer extension analysis**
- **Real time PCR**



RocketScript™ Reverse Transcriptase

Thermostable

Native *M-MLV* RTase has low thermostable activity, therefore restricting reverse transcription reactions to relatively low temperatures (42°C). This attribute prevents RNA molecules containing many stems and loops (complex secondary structures) from being efficiently reverse transcribed. To resolve this shortcoming, Bioneer has utilized synthetic biotechnology to develop a RTase that is active even at high temperatures of 55°C and above. By removing the traditional reaction temperature limit of 42°C, you are now able to choose your reaction temperature from 42 to 70°C and optimize your cDNA synthesis experiments.

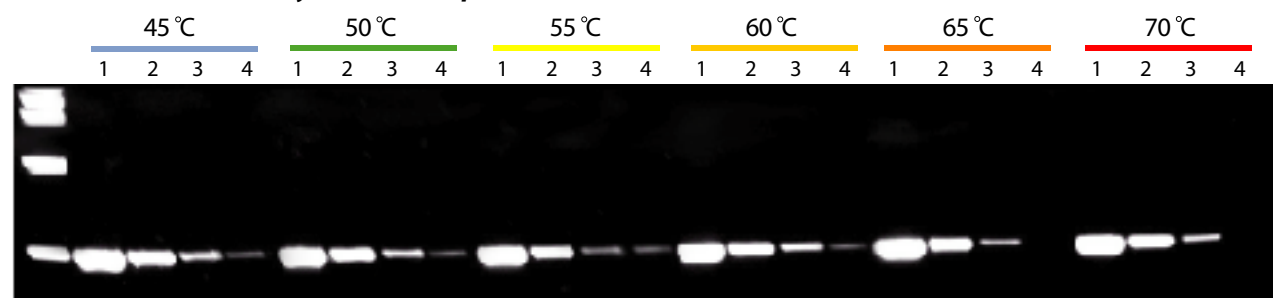
Convenient

All components necessary for cDNA synthesis including thermostable RTase and RNase inhibitor are included in the product for ease-of-use. All you need is source RNA and primers, and preparation for your reverse transcription reaction is complete.

Reproducible

Each batch is produced under strict quality controls. Errors that commonly occur during mass production are eliminated during the individual packaging process. Bioneer's current batch processing system allows for the production of more accurate and reproducible end-product yield.

A. Thermostable activity of RocketScript™



B. Thermostable activity of competitor I's reverse transcriptase

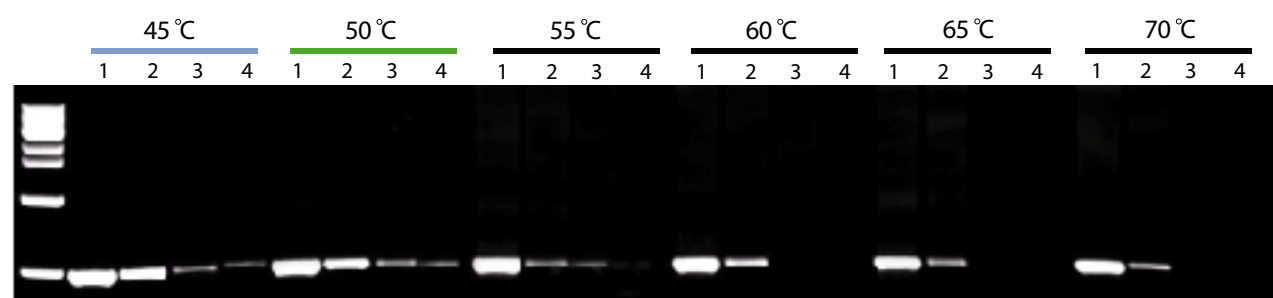
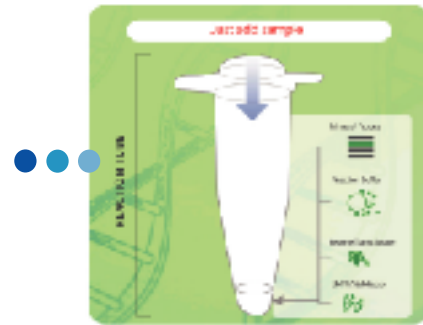


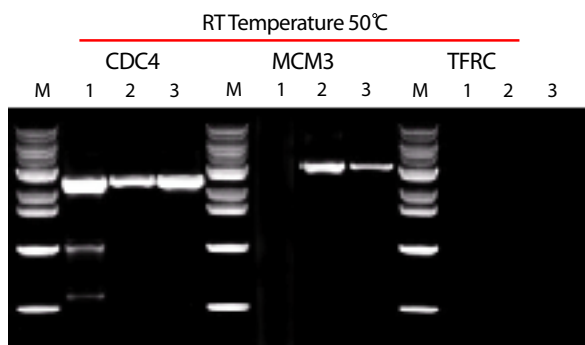
Figure 2. Compared to a competitor's RTase, *RocketScript*™ shows excellent stability at all tested temperatures. Target gene: Human myc (495 bp). Lanes 1-4 are 100, 10, 1 and 0.1 ng human total RNA from HeLa cells, respectively.

AccuPower® RocketScript™ RT PreMix

Taking full advantage of Bioneer's patented AccuPower® technology, we have designed a product to solve the inconveniences associated with concocting master mixes. The lyophilized premix contains all components necessary for a successful reverse transcription reaction, including RTase, RNase inhibitor and buffer components. Just add template RNA, primers and water, and the RT reaction is ready to go.



A) M-MLV Reverse Transcriptase



B) AccuPower® RocketScript™ RT PreMix

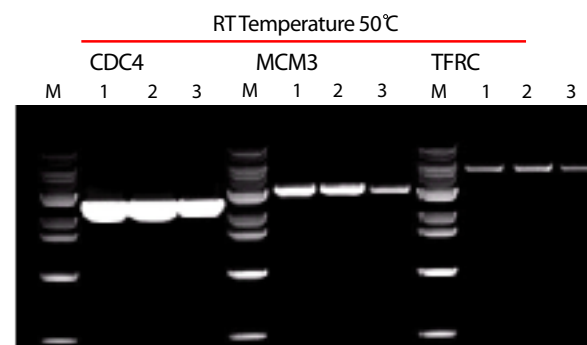


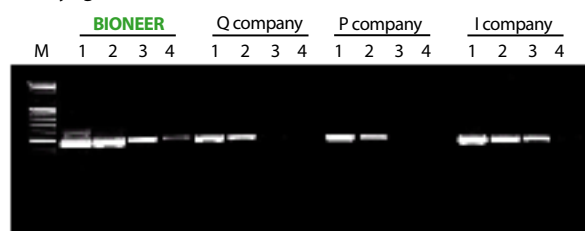
Figure 3. RocketScript™ shows enhanced performance compared to M-MLV RTase. RocketScript™ is able to handle varying sample concentrations (high AND low) and transcript lengths so your downstream applications are minimally effected by the reverse transcription step. Lanes 1-3: 1,000 ng, 100 ng and 10 ng of total RNA from HeLa cells, respectively.

AccuPower® RocketScript™ RT-PCR PreMix

Experience the convenience of high-performance one-step RT-PCR in AccuPower® format. Optimized to maximize sensitivity and long target synthesis performance in an easy to use, all-in-one tube product, AccuPower® RocketScript™ RT-PCR PreMix will leave you with more time to do science, not grunt work.

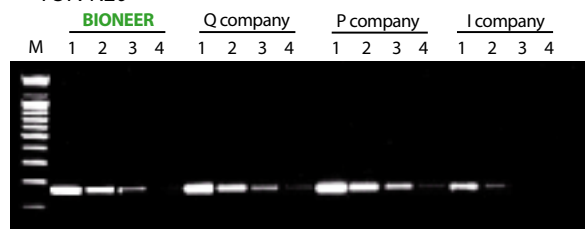
A) Sensitivity

Myc gene



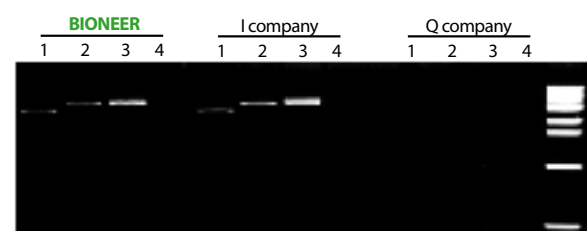
Lane 1: Human Total RNA 10 ng, Lane 2: Human Total RNA 1 ng, Lane 3: Human Total RNA 100 pg, Lane 4: Human Total RNA 10 pg

PSTv N20



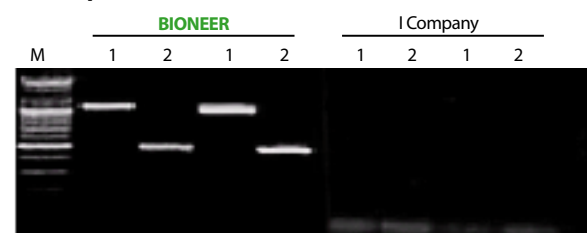
Lane 1: 10⁵ copies Lane 2: 10⁴ copies Lane 3: 10³ copies Lane 4: 10² copies

B) Long kb test



Lane 1: 2.5 kb Lane 2: 3 kb Lane 3: 4.5 kb Lane 4: 5.2 kb

C) Complex RNA detection

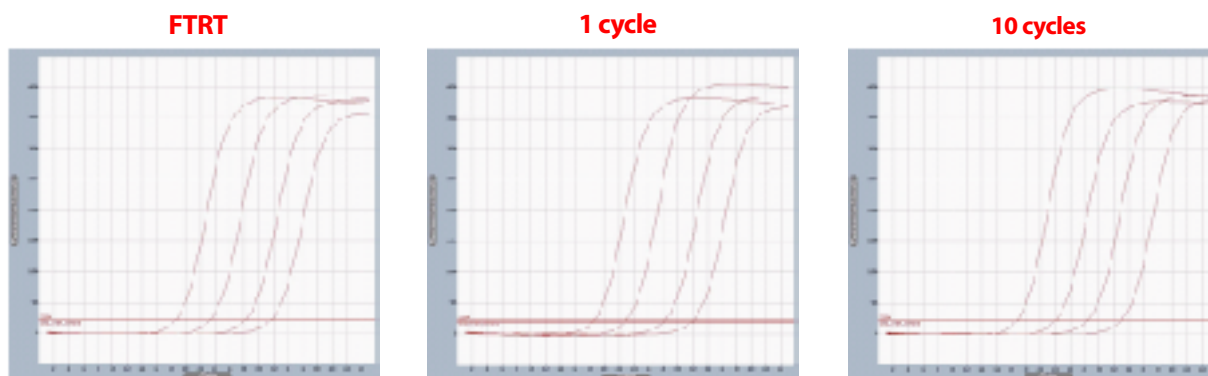


Lane 1: Complex RNA A Lane 2: Complex RNA B

Figure 4. Performance comparison between AccuPower® RocketScript™ RT-PCR PreMix and competitor RT-PCR kits. A) Sensitivity comparison shows excellent low-copy gene performance. B) Long transcript comparison shows performance on par or exceeding those of competitors. C) AccuPower® RocketScript™ RT-PCR PreMix is able to handle RNA species with complex secondary structures by virtue of the thermostable performance of RocketScript™.

AccuPower® RocketScript™ Cycle RT PreMix

Bioneer's patent pending Cyclic Temperature Reverse Transcription (CTRT) empowers you to dictate your reverse transcription conditions so your experiments work. Need to detect low copy species Perform CTRT and enrich those hard-to-detect transcripts. Having problems with complex secondary structures Increase the reaction temperature and melt the problem away. Either it be first-strand cDNA synthesis or CTRT you decide to run, the AccuPower® lyophilization technology simplifies the reaction preparation process so all you need to add is template and primers. CTRT is the new concept for reverse transcription that will never have you looking back.



Concentration (copies/rxn)	FTRT (Ct)	CTRT 1 cycle (Ct)	CTRT 10 cycles (Ct)
10000	19.49	18.77	18.51
1000	24.11	24.04	22.93
100	29.78	28.35	28.19
10	32.87	33	31.05

Figure 5. Low copy species enrichment by cycle. Comparing FTRT (Fixed Temperature Reverse Transcription) to 1 and 10 cycle(s) of CTRT reveal progressive improvement in detected cDNA yield as input copies decrease.

FTRT: 60 minute incubation at 50°C followed by 5 minute deactivation at 95°C

CTRT: Cycles of annealing for 10 seconds at 37°C, cDNA synthesis for 4 minutes at 50°C, secondary structure denaturing and cDNA synthesis for 30 seconds at 55°C

Primer set: Human myc

Template: Human total RNA from HeLa cells

qPCR performed with AccuPower® Greenstar™ qPCR PreMix (Bioneer, Cat. No. K-6210)

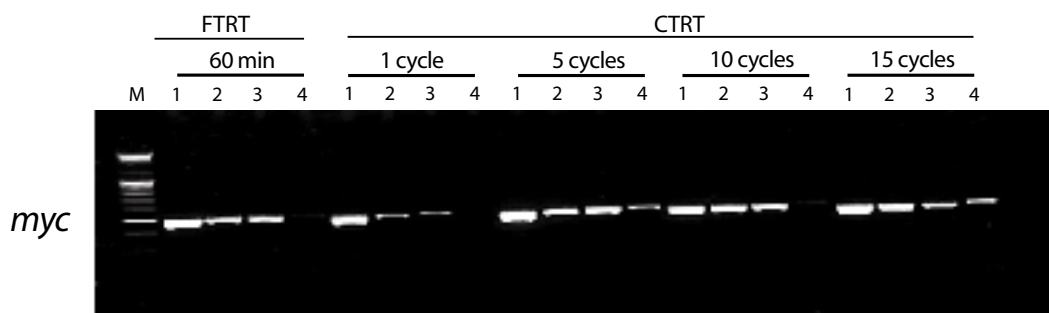


Figure 6. Progressive enrichment of target by CTRT. CTRT is able to bring out very low quantities of transcript as cycles progress. Lanes 1-4 are 100, 10, 1 and 0.1 ng human total RNA from HeLa cells, respectively. (M: 1kb ladder)

Specifications of Bioneer Enzymes

Product Name	Product size		Yield	Specificity	Fidelity	GC-rich	Heat Stability	Leaves 3'-A
	Lambda DNA	Genomic DNA						
Top DNA Polymerase	≤ 10 kb	≤ 3 kb	*****	****	***	***	***	Yes
Hotstart DNA Polymerase	≤ 12 kb	≤ 3 kb	****	****	***	****	****	Yes
TLA DNA Polymerase	≤ 20 kb	≤ 3 kb	***	***	****	***	***	No
Pfu DNA Polymerase *	≤ 10 kb	≤ 3 kb	***	***	****	***	***	No
M-MLV RTase	-	≤ 9 kb	***	-	-	***	**	-
CycleScript RTase	-	≤ 9 kb	****	-	-	***	***	-
RocketScript RTase	-	≤ 10 kb	****	-	-	***	****	-

* Not available in the US.

Ordering Information

Cat. No.	Product	Price
AccuPower® RocketScript™ RT PreMix		
K-2101	AccuPower® RocketScript™ RT PreMix, 20 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$200.00
K-2102	AccuPower® RocketScript™ RT PreMix, 20 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$700.00
K-2103	AccuPower® RocketScript™ RT PreMix, 50 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$500.00
K-2104	AccuPower® RocketScript™ RT PreMix, 50 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$1,750.00
AccuPower® RocketScript™ Cycle RT PreMix		
K-2201	AccuPower® RocketScript™ Cycle RT PreMix, 20 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$280.00
K-2202	AccuPower® RocketScript™ Cycle RT PreMix, 20 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$1,100.00
K-2203	AccuPower® RocketScript™ Cycle RT PreMix, 50 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$700.00
K-2204	AccuPower® RocketScript™ Cycle RT PreMix, 50 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$2,750.00
AccuPower® RocketScript™ RT-PCR PreMix		
K-2501	AccuPower® RocketScript™ RT-PCR PreMix, 20 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$210.00
K-2502	AccuPower® RocketScript™ RT-PCR PreMix, 20 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$735.00
K-2503	AccuPower® RocketScript™ RT-PCR PreMix, 50 ul, 12 x 0.2 ml thin-wall 8-strip tubes with attached cap, 96 rxns	\$525.00
K-2504	AccuPower® RocketScript™ RT-PCR PreMix, 50 ul, 60 x 0.2 ml thin-wall 8-strip tubes with attached cap, 480 rxns	\$1,837.50
RocketScript™ Reverse Transcriptase		
E-3141	RocketScript™ Reverse Transcriptase, 10,000U for 50 rxns supplied with Reaction Buffer, dTT, dNTP, and RNase Inhibitor	\$180.00
E-3142	RocketScript™ Reverse Transcriptase, 50,000U for 250 rxns supplied with Reaction Buffer, dTT, dNTP, and RNase Inhibitor	\$630.00

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Contact Us

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