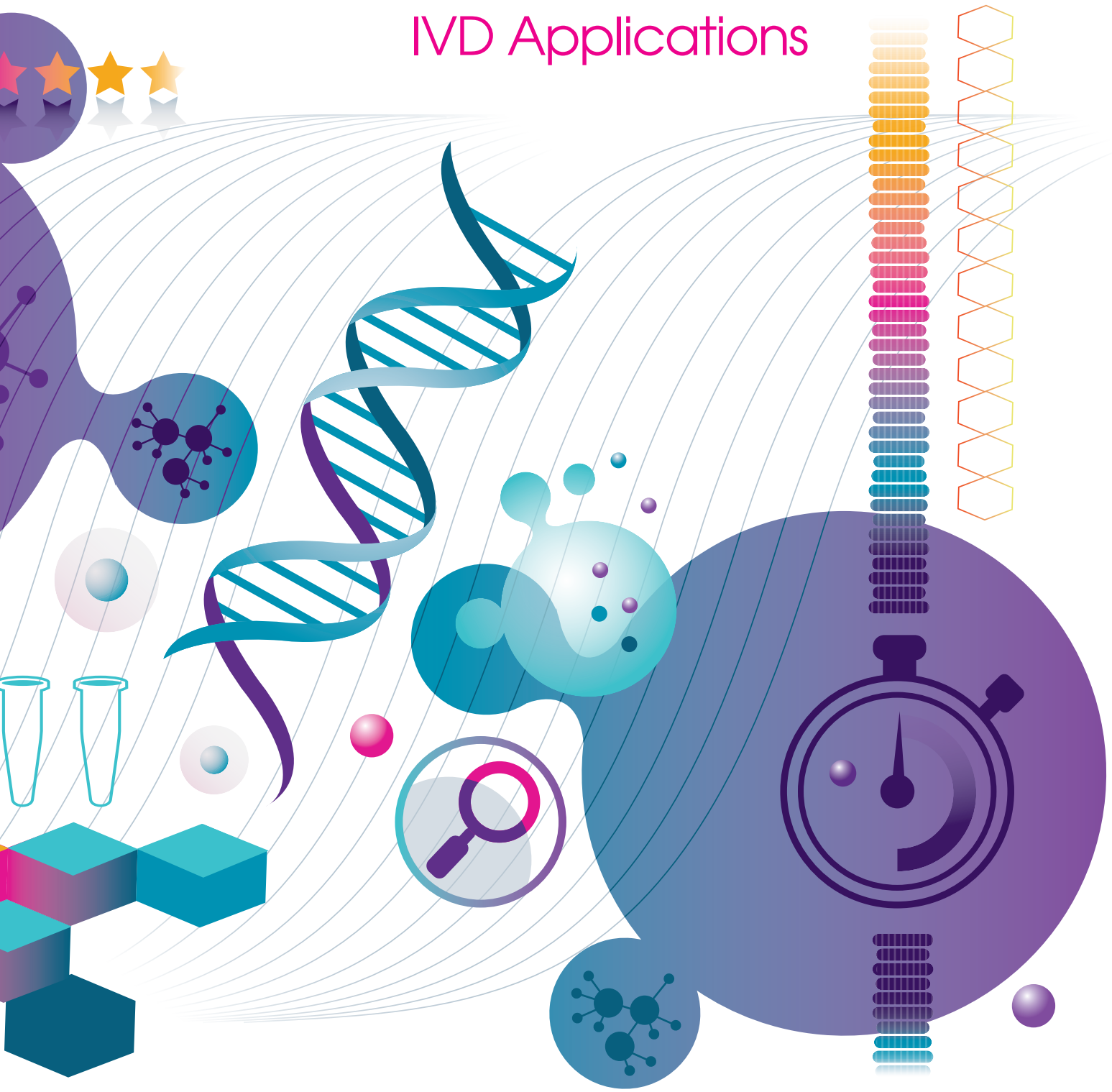
PCR Enzymes and Materials for Molecular IVD Applications



A RANGE OF PCR ENZYMES AND OPTIMISED BUFFERS, HOTSTART ANTIBODIES, RNASE INHIBITOR, AND REALTIME PCR MIXES—EVERYTHING YOU NEED TO DEVELOP MOLECULAR IVD KITS

SEKISUI DIAGNOSTICS

Because every result matters™

Sekisui Diagnostics has a wide range of enzymes for formulating Molecular Diagnostic PCR Mixes

Material Choices

A range of DNA Polymerases, from traditional Taq DNA Polymerase to KOD exo(-) DNA Polymerase, suitable for long templates and whole blood samples, to Tth DNA Polymerase, which also has Reverse Transcriptase activity in the presence of Mn^{2+}, all of which can be supplied with corresponding optimized buffers and Hotstart antibodies.

DNA POLYMERASE	PRODUCT FORMAT-ENZYME	PRODUCT FORMAT-MASTER MIX	FIDELITY (3'→5' EXONUCLEASE ACTIVITY)	VELOCITY (EXTENSION TIME)	TARGET SIZE	AMPLIFICATION FROM CRUDE SAMPLES	REVERSE TRANSCRIPTASE ACTIVITY	GC-RICH TARGETS	LOW COPY
KOD DNA Polymerase	NA	KOD One PCR Master Mix	+++ (80)	(5 sec/kb)	~40kb	++++	-	++	+++
	NA	KOD One PCR Master Mix-Blue							
	KOD Multi & Epi	NA	++ (11)	+++ (≤15 sec/kb)	~40kb	+++	-	+++	+++
	KOD exo(-)	KOD SYBR qPCR Master Mix GenNext NGS Library Quantification Kit	+ (1)	+++ (≤0.5 min/kb)	~10kb	++	-	++	++
Tth DNA Polymerase	rTth DNA Polymerase	THUNDERBIRD Probe One-step qRT-PCR Kit RNA-direct Realtime PCR Master Mix RNA-direct SYBR Green Realtime PCR Master Mix	+ (1)	+ (1 min/kb)	~2kb	+	✓ (Mn^{2+})	++	++
TTx DNA Polymerase	TTx DNA Polymerase	NA	+	+++ (≤0.5 min/kb)	~4kb	++	✓ (Mn^{2+})	++	++
Taq DNA Polymerase	rTaq DNA Polymerase	Realtime PCR Master Mix SYBR Green Realtime PCR Master Mix	+	+ (1 min/kb)	~2kb	+	-	+	+

( ): Accuracy of each PCR enzyme (reagent) when the accuracy of Taq DNA polymerase is set to 1.

++++: Best
+++: Excellent or Strong
++: Good or Moderate
+: Satisfactory
-: Not good or minus
✓: Applicable
NA: Not Applicable

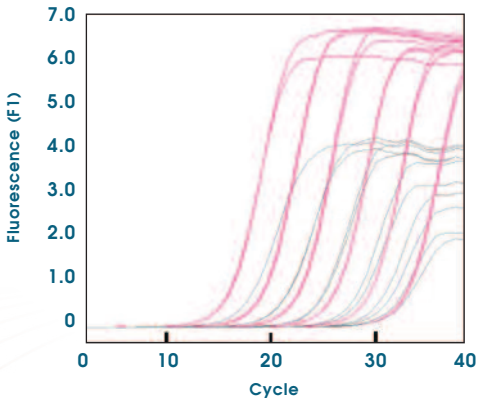
For our master mixes, please inquire about customization options. Our experienced technical team can work with you to optimize mixes for your requirements.

Technical support for our enzymes is available from our experienced R&D scientists and Technical Services team. We are open to discuss product customization if our current products do not fully meet your requirements.

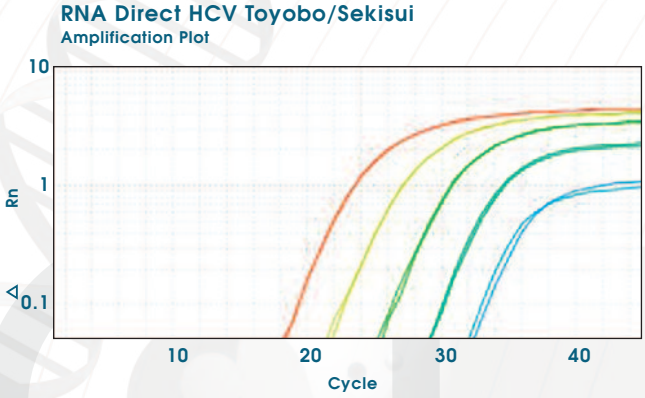
Unique Tth DNA Polymerase for One Step *RNA-direct* Realtime PCR

Enzyme Features:

- Exhibits reverse transcriptase activity in the presence of Mn^{2+} ions.
- Effective for the amplification of GC-rich targets and crude samples.
- Effective for reverse transcription of RNA with complicated secondary structure due to the reaction occurring at high temperature (i.e., 60°C).



Amplification of G3PDH mRNA was detected using serially diluted poly(A)+ RNA (10n dilution) with SYBR Green Realtime PCR kits including Tth DNA Polymerase. The *RNA-direct* SYBR Green Realtime PCR Master Mix (pink) showed greater sensitivity and signal intensity than the other kit (Company A, grey).



The sensitivity and quantitative nature of three one-step qRT-PCR master mix reagents were compared by detecting serially (10n) diluted HCV RNA using TaqMan probe.

The *RNA-direct* Realtime PCR Master Mix using Tth DNA Polymeraes exhibited higher sensitivity and PCR efficiency than other master mixes.

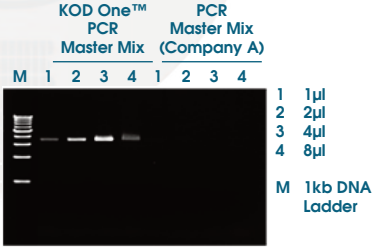
	TOYOBO/SEKISUI	QIAGEN	TAKARA
Slope	-3.452	-3.557	-4.532
Efficiency	94.8%	91.0%	66.2%
r	-0.999	-0.997	-0.999

KOD One™ PCR Master Mix

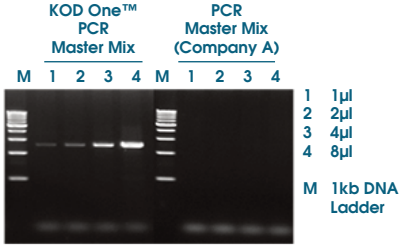
Enzyme Features:

- Fast- KOD One™ can amplify the targets using the following very short conditions: ≤1kb:1 sec
- High Fidelity KOD One™ exhibits approximately 80-fold higher fidelity than Taq DNA polymerase. These mixes can be used for various purposes where this would be an advantage (e.g., in the preparation of long target amplicons for sequencing).
- High Efficiency KOD One™ is effective for amplification from crude samples (e.g., biological samples, food-stuffs, soil extract, etc.). Various samples or lysates can be used directly as templates.
- KOD One™ series can use primers or templates containing inosines (dI) or uracils (dU), whereas conventional high-fidelity PCR enzymes cannot.

Amplification: Whole Blood



Amplification: Mouse Lysate



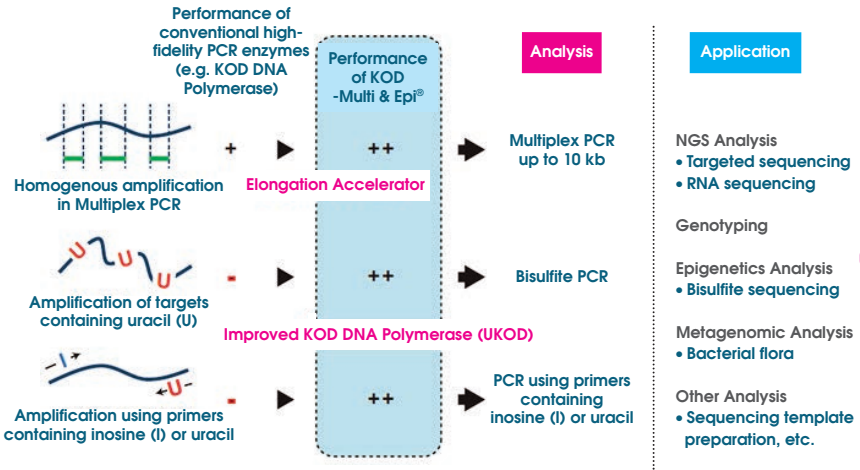
Amplification from whole blood and that from mouse lysate were compared. KOD One™ PCR Master Mix amplified the targets efficiently.

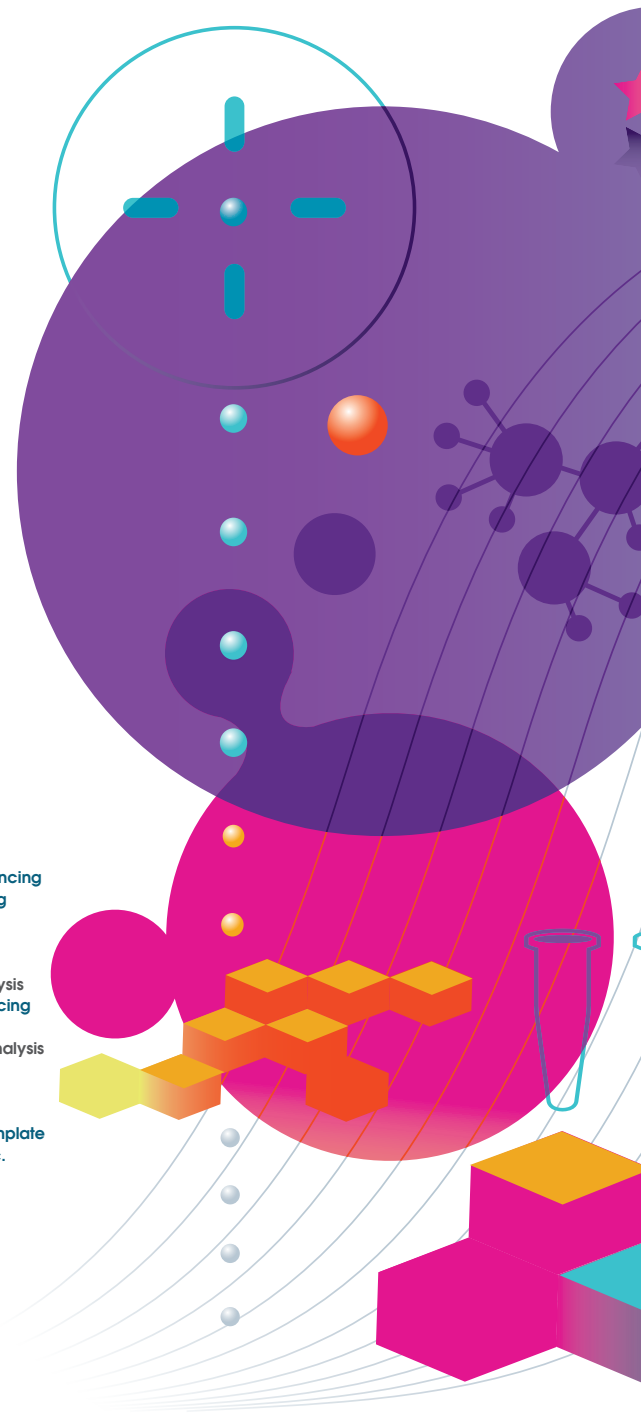
KOD -Multi & Epi- High Efficient & Performance DNA Polymerase

Enzyme Features:

- Homogeneous amplification (Low bias)
- Effective amplification from templates containing uracils (U) and primers containing uracil (U) or Inosine (I) can be used
- High fidelity
- Applicable for amplification from crude samples

Performance of KOD -Multi & Epi®/Application Range





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