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S C I E N T I F I C

# Performance Comparison of Platinum SuperFi II and Platinum SuperFi DNA Polymerases

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# Platinum SuperFi II DNA Polymerase in Comparison to Platinum SuperFi DNA Polymerase

- **Comparable benefits:**

- Same enzyme with exceptional >300x *Taq* fidelity
- High yield, specificity, sensitivity, and benchtop stability

- **Improved benefits:**

- Universal annealing temperature for different primer sets
- Co-cycling of PCR targets of different lengths
- More robust amplification of 20–40 kb sequences
- Enhanced performance in GC-rich PCR (supplementary enhancer not required)
- Increased tolerance to common PCR inhibitors



[thermofisher.com/platinumsuperfi](https://thermofisher.com/platinumsuperfi)



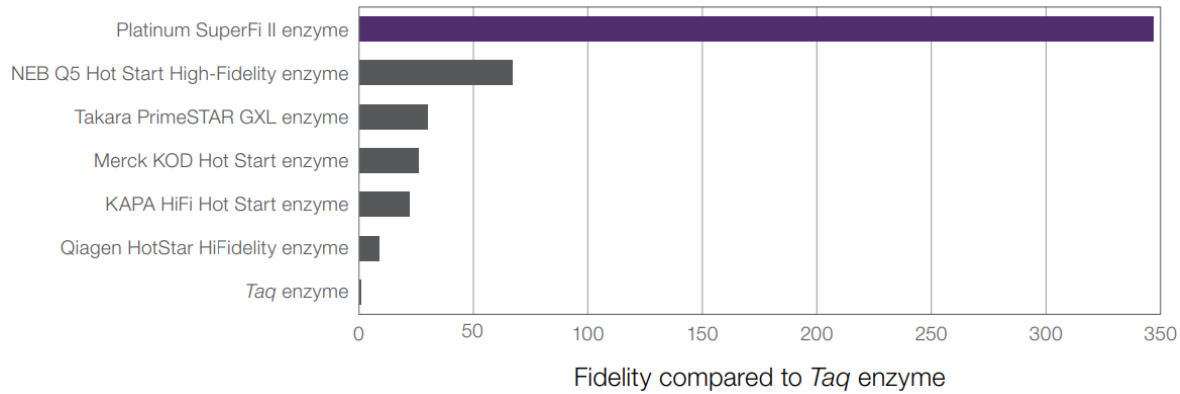
**Not required**

T<sub>m</sub> calculator no longer needed



## Comparable Benefits

# Enzyme with Exceptional >300x *Taq* Fidelity



**Highest-fidelity enzyme  
on the market**

**Fidelity of Invitrogen™ Platinum™ SuperFi™ II DNA Polymerase compared to other DNA polymerases.**

Fidelity of DNA polymerases was measured by next-generation sequencing and normalized to *Taq* DNA polymerase.

**With its extremely low error rate, Platinum SuperFi II DNA Polymerase offers the highest level of confidence for preserving DNA sequence accuracy.**

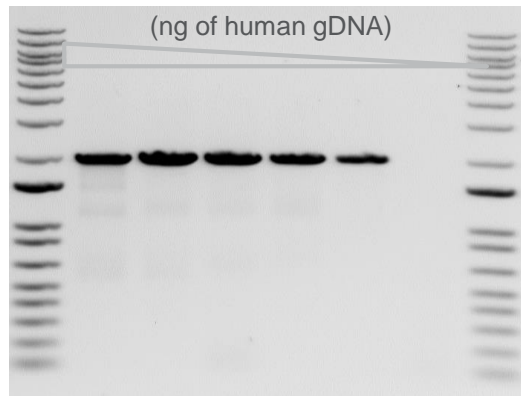
# Comparisons of Yield, Specificity, and Sensitivity



**High yield, specificity, and sensitivity in detection of target DNA**

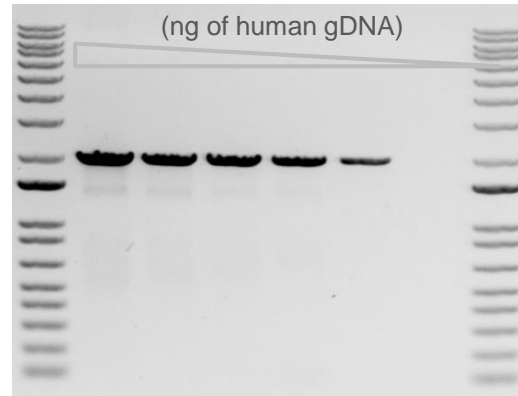
## Platinum SuperFi II DNA Polymerase

250 50 10 2 0.4 NTC



## Platinum SuperFi DNA Polymerase

250 50 10 2 0.4 NTC

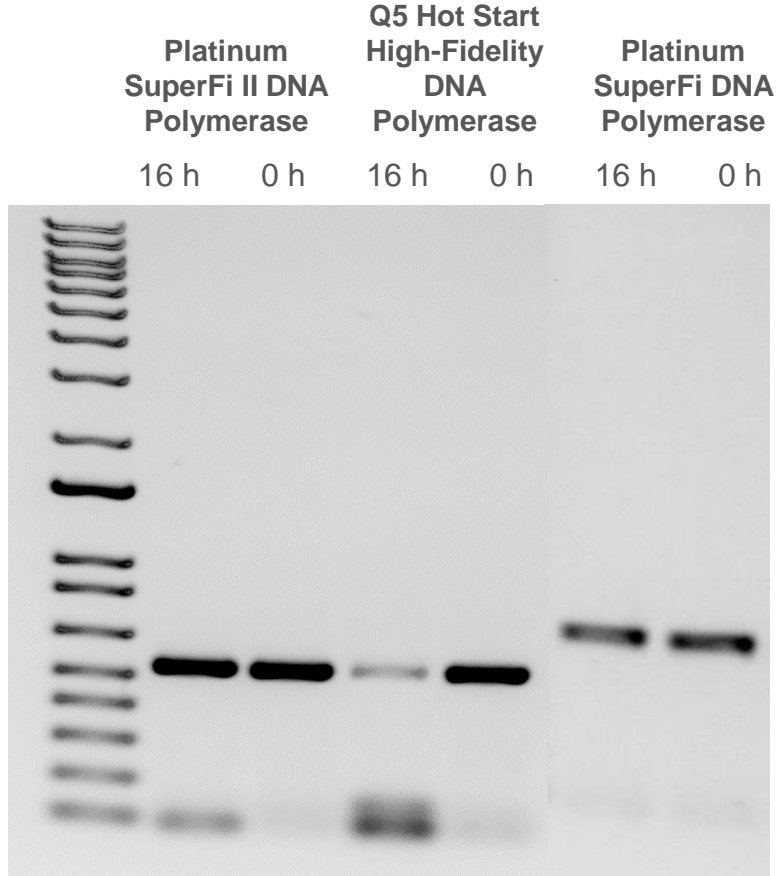


**Comparable PCR performance in amplification of human genomic DNA (gDNA).**

A 2 kb fragment from 0.4, 2, 10, 50, and 250 ng of human gDNA was amplified, using Platinum SuperFi II and Invitrogen™ Platinum™ SuperFi™ DNA Polymerases according to their recommended protocols. The estimated copy number is ~100 copies per 0.4 ng of human gDNA. The molecular weight marker is Invitrogen™ TrackIt™ 1 Kb Plus DNA Ladder.

**High PCR yield, specificity, and sensitivity was obtained with both Platinum SuperFi II and Platinum SuperFi DNA Polymerase.**

# Stability of Assembled Reactions



**High benchtop stability for high-throughput applications**

**Comparable stability of reactions assembled with Platinum SuperFi II and Platinum SuperFi DNA Polymerases.**

Reactions were set up and incubated at room temperature for 0 hr or 16 hr before loading in the thermal cycler. The same experiment run with NEB™ Q5™ Hot Start High-Fidelity DNA Polymerase is shown for comparison.

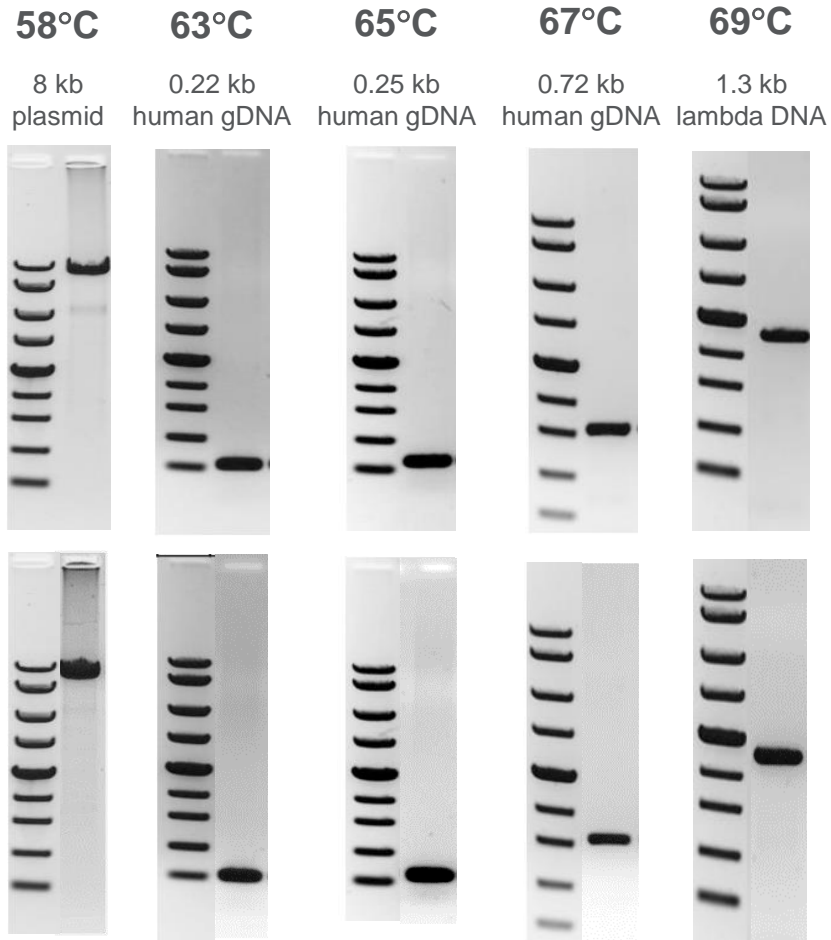
**Reactions of Platinum SuperFi II and Platinum SuperFi DNA Polymerase are comparably stable at room temperature after setup.**



## Improved Benefits

# Primer Annealing Temperature

## Primer melting temperatures



PCR with universal annealing temperature at 60°C

PCR with calculated annealing temperatures



**Universal annealing at 60°C for primers**

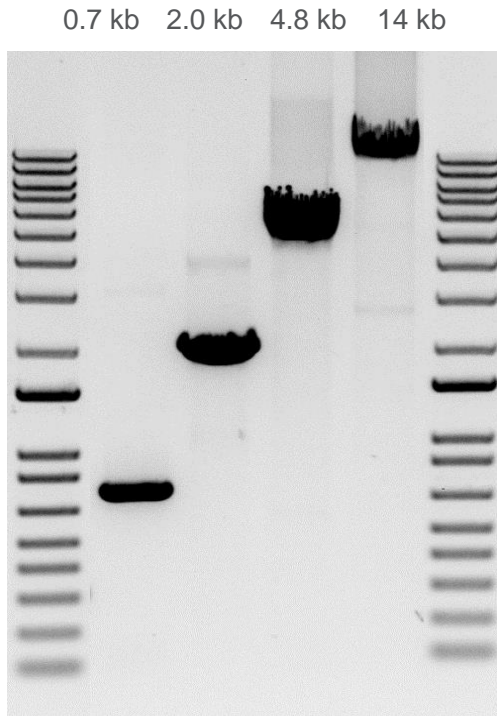
**Efficient PCR amplification at both universal and calculated annealing temperatures.**

Sequences of a bacterial plasmid, human gDNA, and lambda DNA were amplified by PCR with Platinum SuperFi II DNA Polymerase, following a universal annealing temperature at 60°C or their calculated primer annealing temperatures.

**Both the universal annealing at 60°C and the calculated annealing temperature can be used for PCR with Platinum SuperFi II DNA Polymerase.**



## Platinum SuperFi II DNA Polymerase



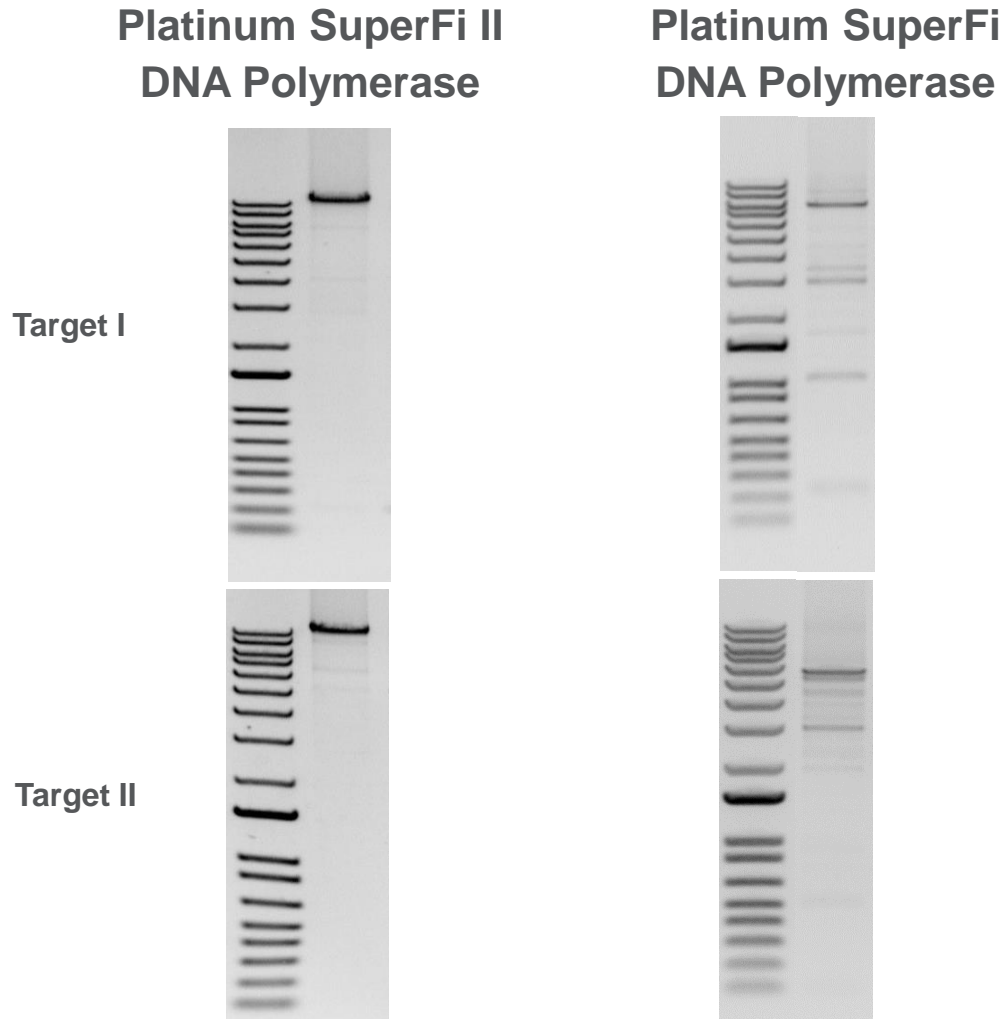
## Universal protocol for different PCR targets

**Enabling co-cycling of short and long amplicons together.**

0.7 kb, 2.0 kb, 4.8 kb, and 14 kb fragments were amplified from 100 ng of human gDNA using the same protocol for all four targets. Extension time of the longest amplicon (7 min at 72°C) was used without compromising PCR specificity.

**Different PCR assays can be cycled together using the same universal protocol with Platinum SuperFi II DNA Polymerase, allowing significant time savings.**

# Amplification of Long Sequences



**More robust amplification of long DNA templates**

**Amplification of DNA sequences up to 20 kb.**

Two 20 kb fragments from 200 ng of human gDNA were amplified using Platinum SuperFi II and Platinum SuperFi DNA Polymerases, following their recommended protocols.

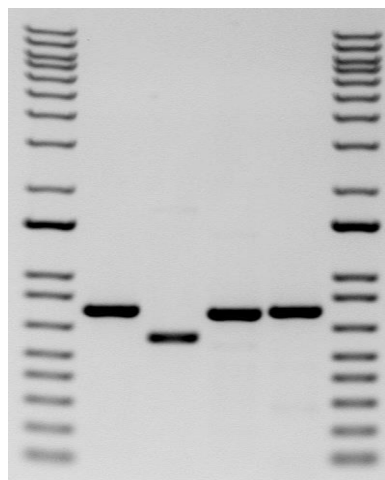
**Amplification of long DNA sequences is more achievable with Platinum SuperFi II DNA Polymerase.**

# Amplification of GC-Rich Targets

## Platinum SuperFi II DNA Polymerase

GC content (%)

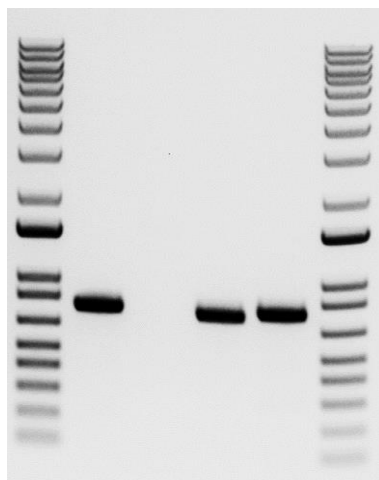
73 74 76 77



## Platinum SuperFi DNA Polymerase

GC content (%)

73 74 76 77



## Robust amplification of high-GC targets

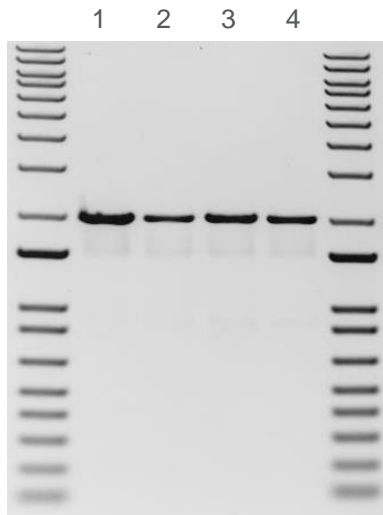
**Enhanced amplification of sequences with high GC content.**

Four targets of high GC content were amplified from 50 ng of human gDNA. No supplementary additive was required for Platinum SuperFi II DNA Polymerase, whereas Platinum GC Enhancer was used for Platinum SuperFi DNA Polymerase.

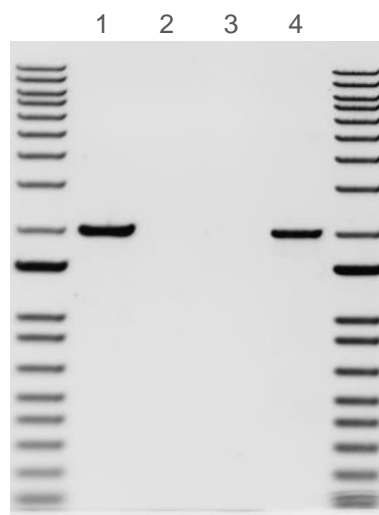
**Sequences with high GC content are amplified with high specificity and yield using Platinum SuperFi II DNA Polymerase without supplementary GC enhancers or additives.**

# Tolerance to Common PCR Inhibitors

Platinum SuperFi II  
DNA Polymerase



Platinum SuperFi  
DNA Polymerase



## Increased tolerance to inhibitors

### Higher tolerance to common PCR inhibitors.

A 2 kb fragment was amplified from 50 ng of human gDNA using Platinum SuperFi II and Platinum SuperFi DNA Polymerases.

#### Reaction mixtures contained:

- |                               |                         |
|-------------------------------|-------------------------|
| 1 – no inhibitor              | 3 – hemin (20 $\mu$ M)  |
| 2 – humic acid (4 $\mu$ g/mL) | 4 – bile salt (1 mg/mL) |

Increased tolerance to common PCR inhibitors is observed with Platinum SuperFi II DNA Polymerase.

# Summary Comparison of Platinum SuperFi and SuperFi II DNA Polymerases



	Platinum SuperFi II DNA Polymerase	Platinum SuperFi DNA Polymerase
Fidelity (vs. <i>Taq</i> DNA polymerase)	>300x	>300x
Hot-start modification (antibody-mediated)	Yes	Yes
Universal annealing protocol (no $T_m$ calculator needed)	Yes	No
Yield, specificity, sensitivity, and benchtop stability	+++	+++
Long-range amplification (up to 20 kb)	+++	++
GC-rich amplification <i>without enhancer</i>	Yes	No
Inhibitor tolerance	++++	+++
Stand-alone and master mix formats	Yes	Yes

Request a sample of Platinum SuperFi II DNA Polymerase at [thermofisher.com/platinumsuperfi-upgrade\\*](https://thermofisher.com/platinumsuperfi-upgrade)

\* Terms and conditions apply.



Thank you

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