

NextGenPCR[®]

How does it work?



PCR in just two minutes!
High throughput!
Use any assay!

The NextGenPCR[®] machine is an end-point thermal cycler that uses innovative and patented heating technology to perform ultrafast amplification of nucleic acid sequences from biological materials.

With NextGenPCR[®] as the driver of genetic analyses in your laboratory you get:

- A reduction in turn around times from hours to minutes that boasts massively increased throughput using fast thermal cycling technology.
- A versatile thermal cycling instrument that can be used with any conventional PCR assay and is suitable for automated laboratory setups that make use of standardized SBS microplate formats.
- An energy efficient machine that saves $\geq 80\%$ power usage over competitor's solutions and is environmentally aware due to minimized use of plastics in its consumables.

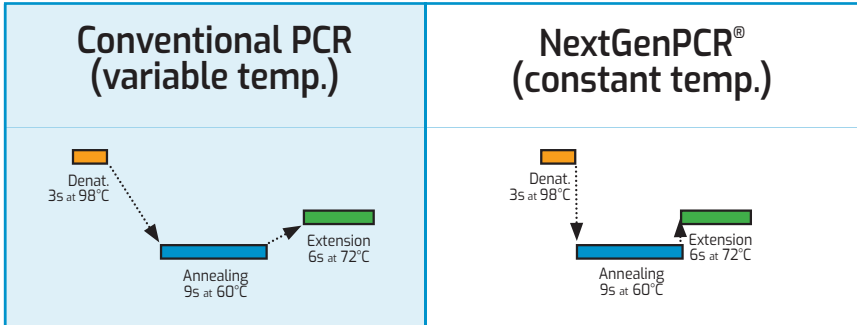
How does it work?

The NextGenPCR[®] innovation is based on **three core principles** that work in concert to greatly increase thermal cycling speeds during PCR.

- 1. NO RAMPING TIME**
- 2. ULTRA THIN POLYPROPYLENE**
- 3. ULTRA-FAST CHEMISTRIES**

1. NO RAMPING TIME

Elimination of temperature ramping times during PCR cycling



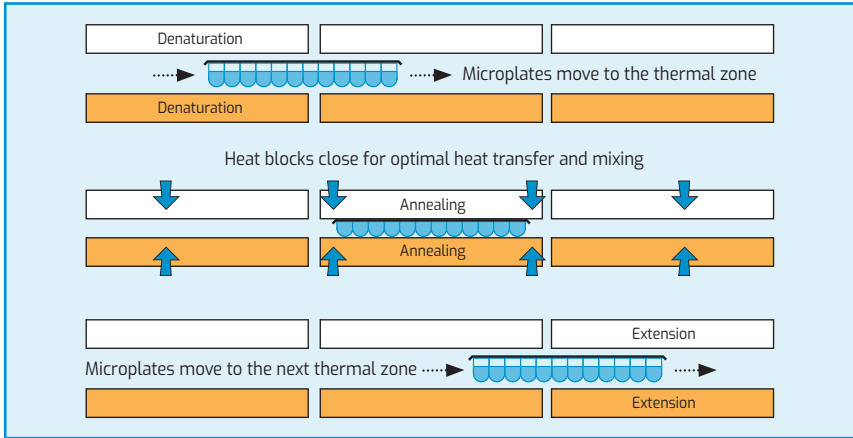
In conventional PCR, a microplate containing sample reaction mix volumes is placed in a machine that contains a Peltier heating element. This element is responsible for heating and cooling of a metal block, which in turn conveys heat to the microplate contents by direct surface-surface contact with the microplate plastic sample wells. Nearly all PCR thermal cyclers on the market utilize Peltier heating technology for heating and cooling.

NextGenPCR® revolutionizes the way in which heat is transferred to the reaction wells using three 'heating zones' with a constant temperature corresponding with the desired denaturation, annealing and extension temperatures.

This results in complete removal of the normally required temperature ramping time during which the Peltier element heats or cools the heating block, saving up to 70% of the time required to complete each cycle.

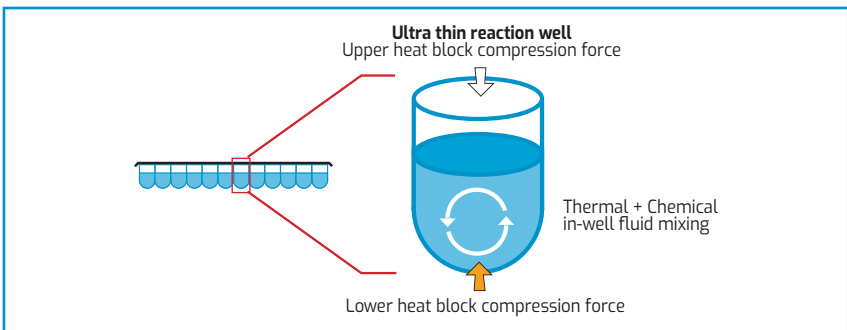
2. ULTRA THIN POLYPROPYLENE

Ultrathin polypropylene microplate format promotes per-cycle sample mixing



NextGenPCR[®] technology uses proprietary SBS-format microplates and heat seals that can be compressed by the closing of an upper and a lower heating block in each temperature heating zone. Compression has several beneficial effects to the speed with which the PCR cycle can be completed.

Deformation of the sample well causes microfluidic currents that improve heat transfer from the heating block into the reaction volume and leads to faster annealing of primer oligonucleotide sequences to the target genomic sequence.



3. ULTRA FAST CHEMISTRIES

Rapid proprietary DNA polymerase chemistry enhances nucleotide incorporation

Successful amplification of DNA or RNA sequences in PCR is in part dependent on the quality and speed of the DNA polymerase enzyme used.

Molecular Biology Systems provides several proprietary, ready-to-use PCR master mixes that can incorporate $\geq 10\text{kb}$ nucleotides per second with excellent accuracy. Using NextGenPCR[®] chemistry, virtually any PCR assay can be converted to work with the NextGenPCR[®] Machine, while allowing the required cycling times to be cut significantly.

Learn more about the NextGenPCR[®] product line and ultrafast PCR technology on our website: www.nextgenpcr.com



NextGenPCR[®] - Fastest PCR available

- NGS workflow acceleration
 - Variant identification
 - Prenatal testing
- Targeted exome sequencing

*“Tomorrow’s technology,
available today!”*



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