

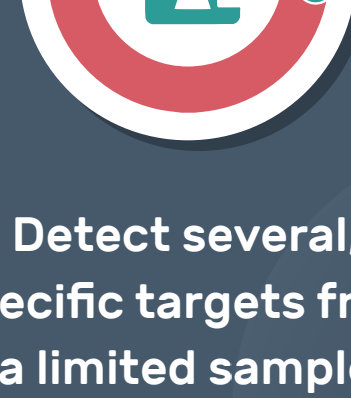
Multiplex PCR: the tools at your disposal

Multiplex PCR enables more sensitive detection of many targets from a small sample, saves money and increases sample throughput. This infographic discusses the pros & cons of different types of multiplex PCR technologies.

Why multiplex PCR?

Allows you to simultaneously detect multiple targets in a single sample.

Provides the opportunity to:



Detect several, specific targets from a limited sample



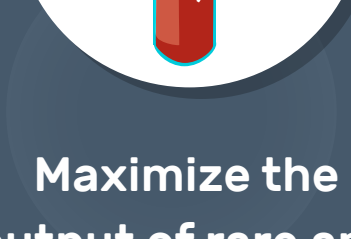
Increase the accuracy of identification



Precisely quantify several targets



Save money

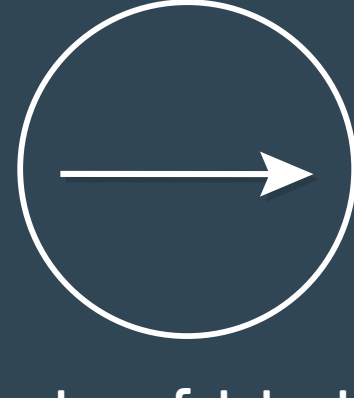


Maximize the output of rare and precious samples



Increase sample throughput, saving time

Five core principles to consider when selecting a multiplex PCR method:



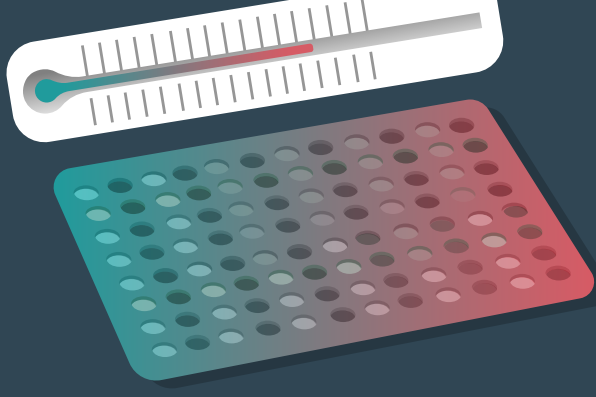
Number of detection channels available



Ability to provide unbiased quantification of different targets



How well established is the method in previous publications?



Ability to optimize annealing temperature



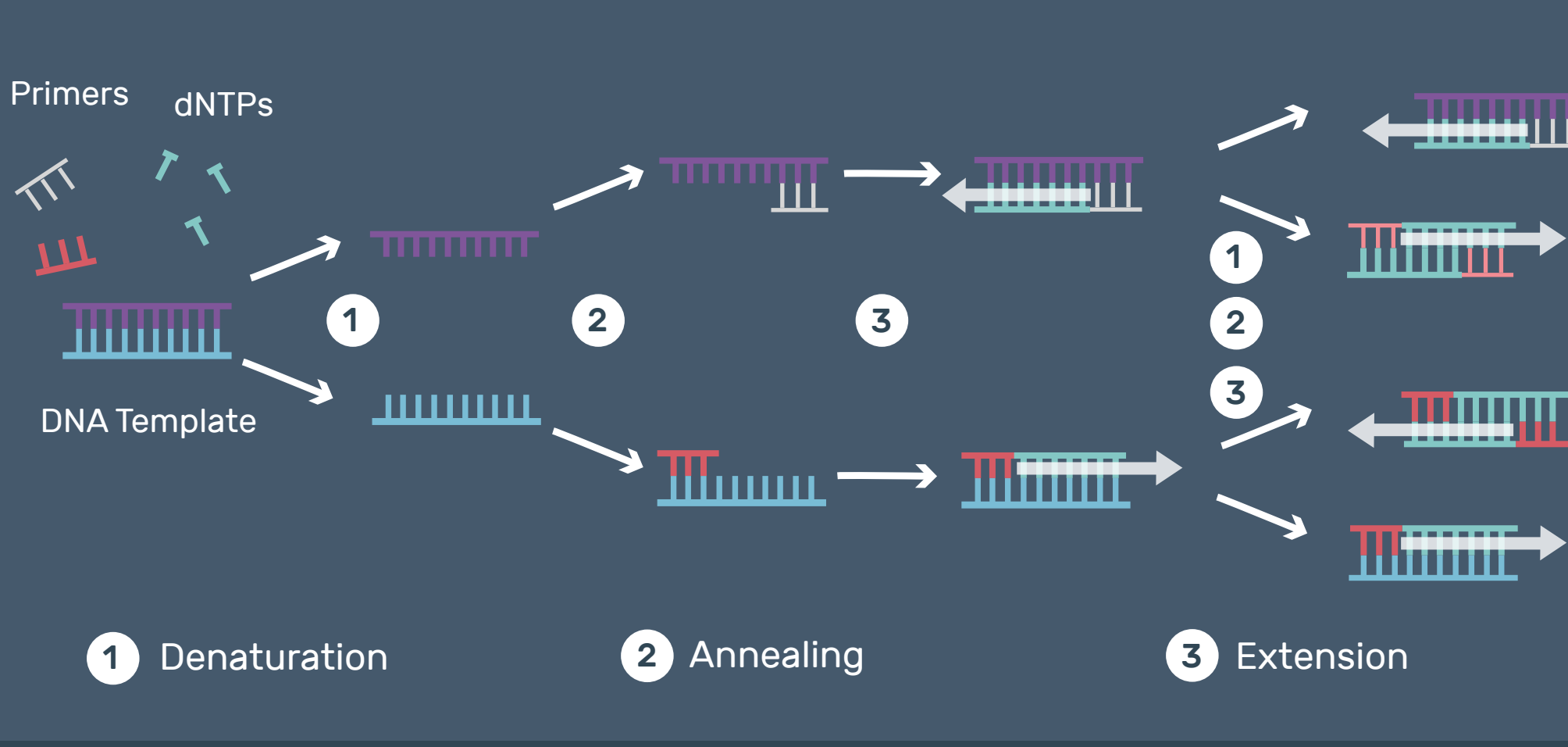
Total number of DNA/RNA targets identifiable in the same sample

Three key multiplex PCR technologies

1

Quantitative PCR (qPCR):
a traditional, real-time method for quantifying target DNA

Working principle



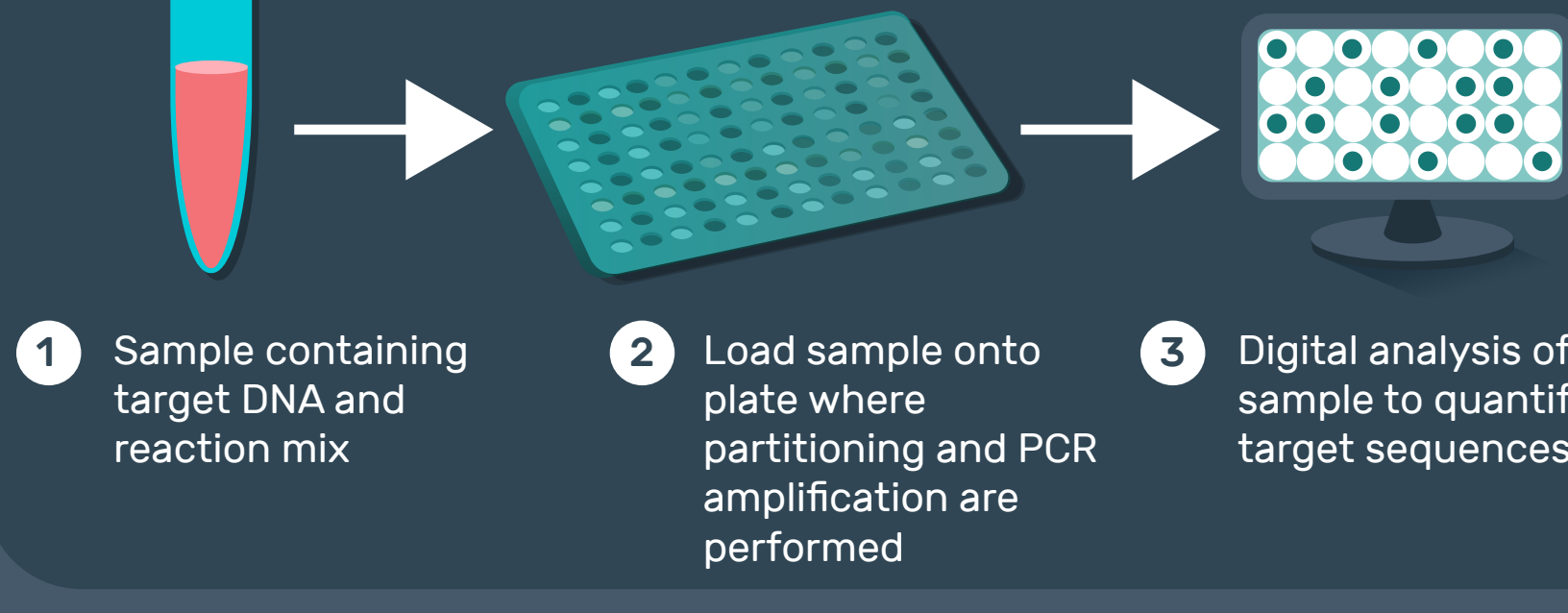
Pros & cons

- ✓ Multiple systems available varying from 2 to 6 channels
- ✗ Competition is high, especially when targets are differently abundant
- ✓ Well-established technique
- ✓ Annealing temperature gradient optimization capability enabled in some systems
- ✗ Limited accuracy when quantifying more than two DNA/RNA targets in the same well

2

Plate-based digital PCR (dPCR):
a sensitive, digital PCR method for measuring target DNA/RNA

Working principle



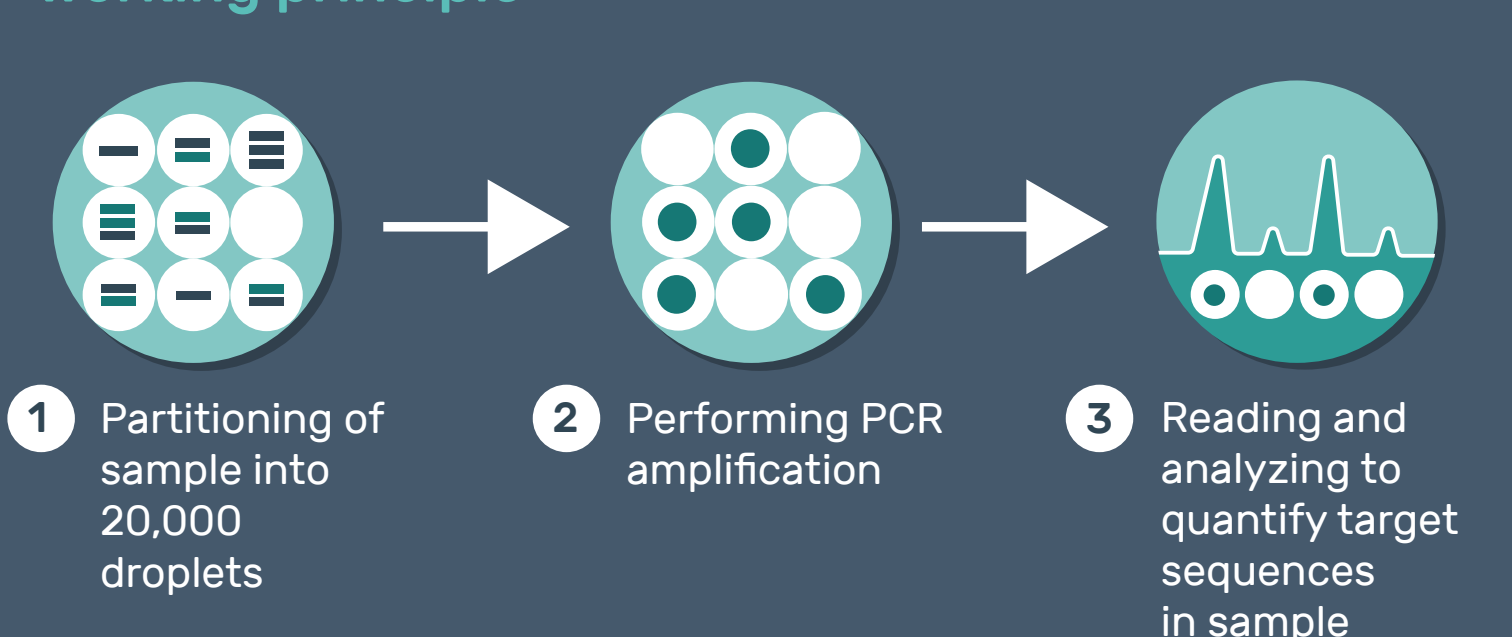
Pros & cons

- ✓ 2, 4 or 5 channels
- ✗ Limited number of published data
- ✗ No temperature gradient for assay optimization
- ✓ Accurate multiplexing ability limited to the number of available channels

3

Droplet Digital™ PCR (ddPCR™)
a highly sensitive method based on water-oil emulsion droplet technology for target DNA/RNA quantification

Working principle



Pros & cons

- ✓ 2, 4 or 6 channels
- ✓ Used in 6,300+ publications
- ✓ Temperature gradient enabled for assay optimization
- ✓ Multiplexing capability up to 12 targets per droplet
- ✓ Partitioning to avoid competition

Summary

	qPCR	dPCR	ddPCR
Multichannel	✓	✓	✓
Partitioning capability	✗	✓	✓
Well-established method	✓	✗	✓
Gradient capability	✓	✗	✓
High-order multiplexing	✗	✗	✓

This infographic has been made as part of a BioTechniques feature. To learn more about multiplex PCR technologies, visit www.Bio-Rad.com.