

# Exploring PCR

Explore PCR Applications

- Mutagenesis
- Cloning
- Sequencing
- Genotyping
- Gene Expression
- Pathogen Detection
- Multiplexing

**10<sup>9</sup>** copies of **DNA** are made after **30 cycles** of **PCR** in **1** reaction.

Don't forget to add!

## Explore different types of PCR

### 1 Quantitative PCR

- **84%** of researchers doing qPCR use a Hot-Start DNA Polymerase.
- **79.1%** analyze qPCR data by the Standard Curve Method.
- **41.2%** use pre-developed assays.

Probe-Based Chemistries



VS



SYBR™ Technology-Based Chemistries

### 2 Fast PCR

Thermo Scientific™ Phire™ Polymerase can amplify a 1.5 Kb DNA fragment in **30 minutes**.



### 3 Reverse Transcription PCR

- Reverse Transcriptases are the replicating enzymes of retroviruses.
- **RT-PCR** can happen in a **1-step assay** or a **2-step assay**.

RNA Template

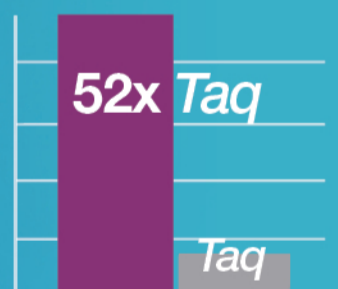
cDNA

PCR

### 4 High-Fidelity PCR

Thermo Scientific™ Phusion™ High Fidelity Polymerase is **52x more** accurate than *Taq* Polymerase.

$$\frac{1}{\text{polymerase error rate}} = \text{Fidelity}$$



### 5 Direct PCR

**No DNA** purification necessary! Tissue sample goes straight into **PCR** tube.



**1985** **PCR** published in the Journal of Science.

**1989** **TAQ** Polymerase is named "Molecule of the Year" by the Journal of Science.