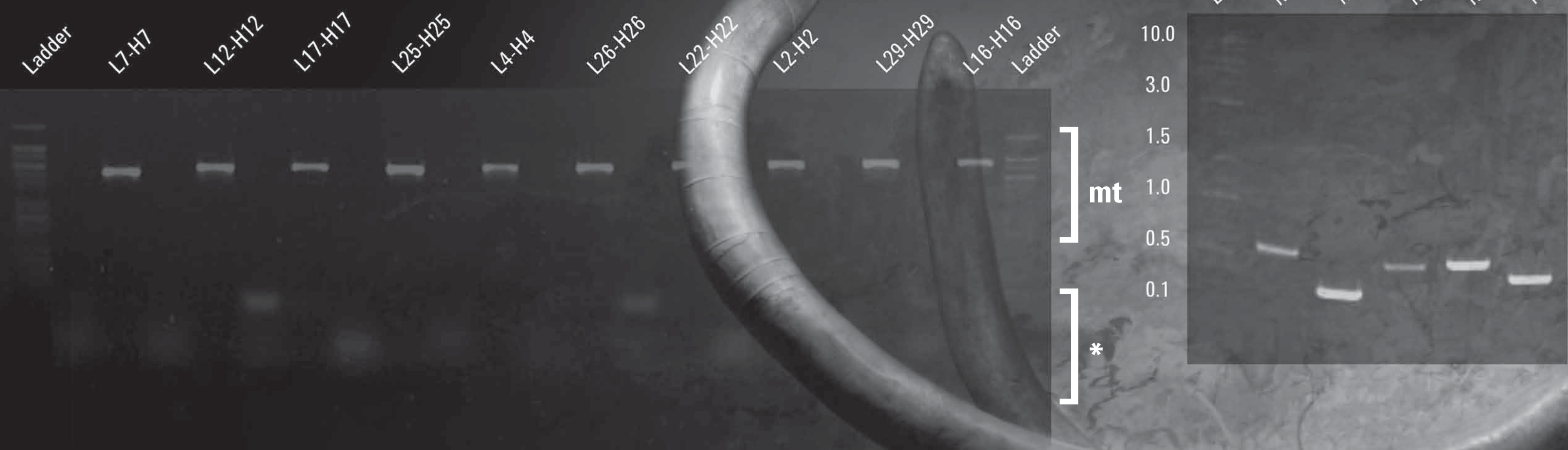


Ancient Subjects Do Not Require Ancient Research Technology

Examples of PCR Products for Mammoth Mitochondrial Genome Generated with Stratagene PicoMaxx High Fidelity PCR System¹.



(mt) designates UM Mammoth mtDNA
(*) negative controls.

^{1,2} Rogaev EI, Moliaka YK, Malyarchuk BA, Kondrashov FA, Derenko MV, Chumakov I, Grigorenko AP. Complete Mitochondrial Genome and Phylogeny of Pleistocene Mammoth *Mammuthus primigenius*. PLoS Biol. 2006 Mar;4(3):e73. Epub 2006 Feb 7.

Stratagene Polymerase Selection Guide and Timeline

★ ★ Best Choice ★ Will Work Well ★ Not Optimal ★ Not Recommended

Time Line	PCR Enzymes	Description	Fidelity	Yield	Sensitivity	Speed	Target Length (genomic)	ArchaeMaxx (Overcomes dUTP poisoning)	HotStart Available	Master Mix Available
Future	<i>PfuUltra</i> II Fusion HS DNA Polymerase (Cat Nos. 600670, 600672, 600674)	Engineered to be the highest fidelity and fastest polymerase combined into one!	★ ★ 1 error per 2.5 million bp (20x <i>Taq</i>)	★	★	★ ★ 15 sec/kb	★ ★ 0-19 kb (little-to-no optimization)	Yes	Yes (Cat Nos. 600670, 600672, 600674)	Yes (Cat Nos. 600850, 600852)
	Herculase II Fusion DNA Polymerase (Cat Nos. 600675, 600677, 600679)	First routine, high-fidelity polymerase for difficult targets including high GC content or samples with inhibitors present. Provides superior yields across a broad range of targets and is economical enough for routine use.	★ 1 error per 770,000 bp (6x <i>Taq</i>)	★ ★	★	★ ★ 15 sec/kb	★ ★ 0-12 kb (little-to-no optimization) 12-23 kb (with optimization)	Yes	No	No
2006	Paq5000 DNA Polymerase (Cat Nos. 600680, 600682, 600684)	Fast and economical alternative to <i>Taq</i>	★ (Fidelity equivalent to <i>Taq</i>)	★	★	★ ★ 30 sec/kb	★ 0-6 kb Amplifies longer targets than <i>Taq</i>	Yes	Yes (Cat Nos. 600860, 600862, 600864)	Yes (Cat Nos. 600870, 600872)
2002	<i>PfuUltra</i> DNA Polymerase AD* (Cat Nos. 600385, 600387, 600389)	Engineered as the highest fidelity polymerase in the world	★ ★ 1 error per 2.5 million bp (20x <i>Taq</i>)	★	★	★ 1 min/kb	★ 0-19 kb (optimization required)	Yes	Yes (Cat Nos. 600390, 600392, 600394, 600396*)	Yes (Cat Nos. 600630, 600632)
2000	Herculase Enhanced DNA Polymerase (Cat Nos. 600260, 600262, 600264, 600266, 600310, 600312, 600314)	Designed for GC rich targets (Better options now available with Herculase II Fusion DNA Polymerase)	★ (3x <i>Taq</i>)	★	★	★ 1 min/kb	★ 0-23 kb (with significant optimization)	Yes	Yes (Cat Nos. 600310, 600312, 600314)	No
1998	<i>PfuTurbo</i> DNA Polymerase AD* (Cat Nos. 600255, 600257, 600259)	First high fidelity polymerase which overcame dUTP poisoning (ArchaeMaxx) allowing for higher yields and length than were previously achieved	★ 1 error per 770,000 bp (6x <i>Taq</i>)	★	★	★ 1 min/kb	★ 0-19 kb (optimization required)	Yes	Yes (Cat Nos. 600320, 600322, 600324)	Yes (Cat Nos. 600600, 600602)
1993	Cloned <i>Pfu</i> DNA Polymerase AD* (Cat Nos. 600353, 600355, 600357)	Cloned to ensure commercial supply of <i>Pfu</i>	★ (6x <i>Taq</i>)	★	★	★ 2 min/kb	★ (up to 1 kb no optimization) (up to 5kb with optimization)	No	No	No
1991	Native <i>Pfu</i> (Cat Nos. 600135, 600136, 600140)	Stratagene introduced the first thermophilic proofreading polymerase (High-Fidelity)	★ (6x <i>Taq</i>)	★	★	★ 2 min/kb	★ (up to 1 kb)	No	No	No
	<i>Taq2000</i> DNA Polymerase (Cat Nos. 600195, 600196, 600197, 600198)	Ultrapure cloned <i>Taq</i> minimizes smearing and virtually eliminates unwanted background artifacts. Consistent performance for your <i>Taq</i> experiments.	★	★	★	★ 1 min/kb	★ (up to 1kb no optimization) (up to 4kb with optimization)	No	Yes (Cat Nos. 600280, 600282, 600284)	No
1987	<i>Taq</i> DNA Polymerase	First thermophilic PCR enzyme. No longer available from Agilent.	★	★	★	★ 1 min/kb	★ (up to 1kb no optimization) (up to 4kb with optimization)	N/A	N/A	N/A
Specialty	PCR Enzymes	Description	Fidelity	Yield	Sensitivity	Speed	Target Length (genomic)	ArchaeMaxx (Overcomes dUTP poisoning)	HotStart Available	Master Mix Available
	Easy-A High-Fidelity PCR Cloning Enzyme (Cat Nos. 600400, 600402, 600404)	Proofreading DNA polymerase which adds 3' -A overhangs to PCR amplicons. Combines accuracy of <i>Pfu</i> with TA/UA cloning efficiency of <i>Taq</i> .	★ (6x <i>Taq</i>)	★	★	★ 1 min/kb	★ 0-6 kb	Yes	No	Yes (Cat Nos. 600640, 600642)
	PicoMaxx High-Fidelity PCR System (Cat Nos. 600420, 600422, 600424)	Most sensitive polymerase offered. Great in applications with precious starting material and high fidelity requirements.	★ (2X <i>Taq</i>)	★ ★	★ ★	★ 1 min/kb	★ 0-10 kb (little to no optimization)	Yes	Yes (Cat Nos. 600420, 600422, 600424)	Yes (Cat No. 600650)
	<i>PfuTurbo</i> Cx Hotstart DNA Polymerase (Cat Nos. 600410, 600412, 600414)	The only high-fidelity polymerase in the world which will incorporate dUTP. Especially useful with UNG (uracil N-glycosylase) decontamination protocols or bisulphite sequencing.	★ (6x <i>Taq</i>)	★	★	★ 1 min/kb	★ 10 kb	No	Yes (Cat Nos. 600410, 600412, 600414)	No

Note: All polymerases are 50 µl reactions.
*AD versions offer greater economy with equal performance by featuring a reformulated buffer system that allows us to control our costs and pass on the savings.

