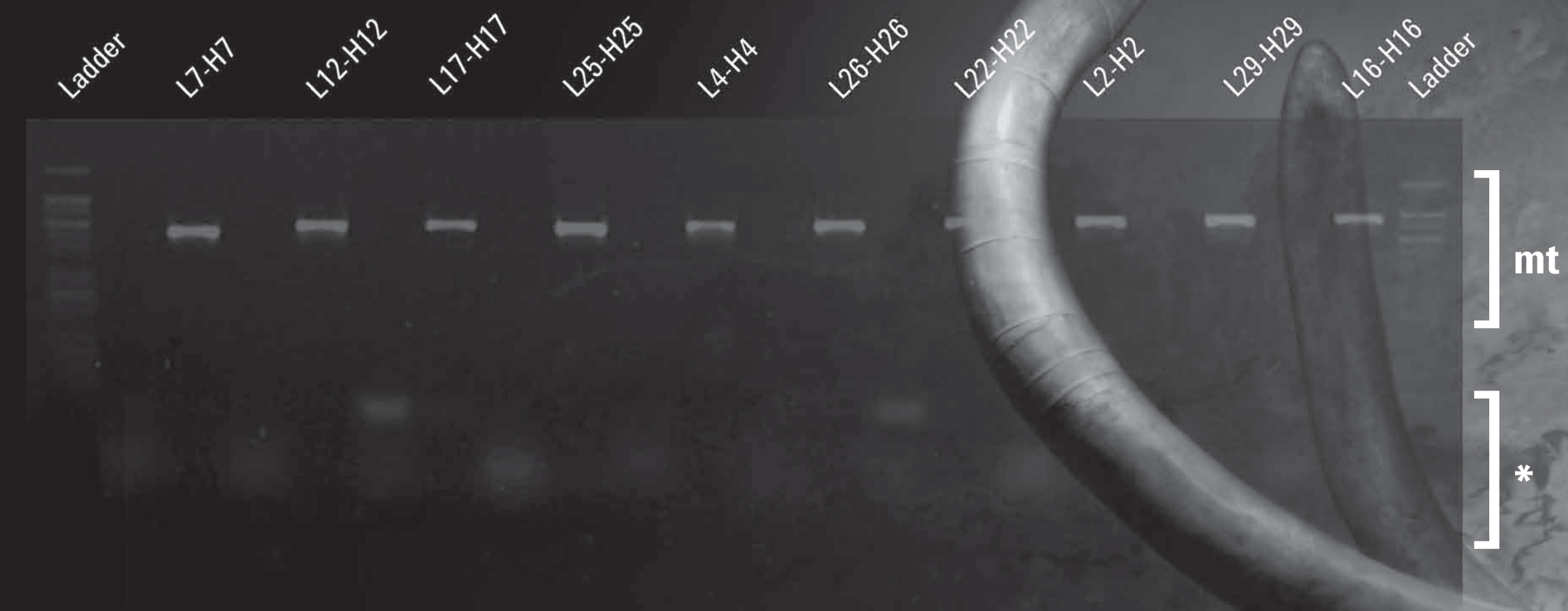
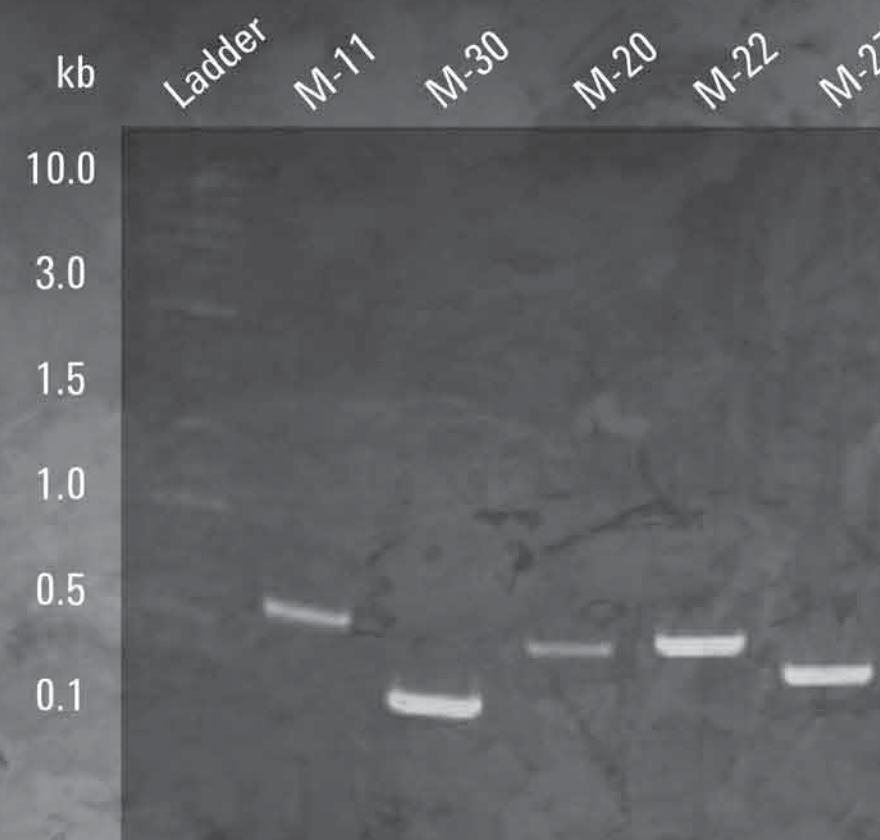


# Ancient Subjects Do Not Require Ancient Research Technology

Examples of PCR Products for Mammoth Mitochondrial Genome Generated with Stratagene PicoMaxx High Fidelity PCR System<sup>1</sup>.



Examples of PCR products (~300–600 bp) for mammoth mitochondrial genome<sup>2</sup>.



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

<sup>1,2</sup> 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 II Fusion HS DNA Polymerase</i> (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)
	<i>Herculase II Fusion DNA Polymerase</i> (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	<i>Paq5000 DNA Polymerase</i> (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 DNA Polymerase AD*</i> (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	<i>Herculase Enhanced DNA Polymerase</i> (Cat Nos. 600260, 600262, 600264, 600266, 600310, 600312, 600314)	Designed for GC rich targets (Better options now available with <i>Herculase II Fusion DNA Polymerase</i> )	★ (3x <i>Taq</i> )	★	★	★ 1 min/kb	★ 0-23 kb (with significant optimization)	Yes	Yes (Cat Nos. 600310, 600312, 600314)	No
1998	<i>PfuTurbo DNA Polymerase AD*</i> (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 DNA Polymerase</i> (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
	<i>Easy-A High-Fidelity PCR Cloning Enzyme</i> (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)
	<i>PicoMaxx High-Fidelity PCR System</i> (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 Cx Hotstart DNA Polymerase</i> (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.

