

Table 1. DNA polymerases in *Saccharomyces cerevisiae*.

DNA polymerase	Molecular mass of subunit (kDa)	Gene	Essential?	Function	Homologue
α (I)	180	<i>POL1 (CDC17)</i>	Yes	Chromosomal DNA replication	DNA polymerase α
	86	<i>POL10</i>	Yes		
	58	<i>PR11</i>	Yes		
	48	<i>PR12</i>	Yes		
ϵ (II)	256	<i>POL2</i>	Yes	Chromosomal DNA replication and repair	DNA polymerase ϵ
	80	<i>DPB2</i>	Yes		
	34	<i>DPB3</i>	No		
	31	<i>DPB3</i>	No		
δ (III)	125	<i>POL3 (CDC2)</i>	Yes	Chromosomal DNA replication and repair	DNA polymerase δ
	48	<i>POL31 (HYS2)</i>	Yes		
	55	<i>POL32</i>	No		
β (IV)	68	<i>POL4</i>	No	Double-strand break repair (Base excision repair?)	DNA polymerase β
ϕ (V)	116	<i>POL5</i>	Yes	rRNA synthesis?	Pol5 in <i>S. pombe</i>
σ	66	<i>TRF4</i>	Yes*	Sister chromatid cohesion	Homologues in other eukaryotes
	72	<i>TRF5</i>			
γ	144	<i>MIP1</i>	No	Mitochondrial DNA replication	DNA polymerase γ
ζ	173	<i>REV3</i>	No	Error-prone translesion DNA synthesis	DNA polymerase ζ
		<i>REV7</i>	No		
η	71	<i>RAD30</i>	No	Error-free translesion DNA synthesis	DNA polymerase η , ι , κ
Rev1	112	<i>REV1</i>	No	Deoxycytidyl transferase Translesion DNA synthesis	UmuC, DinB in <i>E. coli</i> Rev1

* Both *TRF4* and *TRF5* encode DNA polymerase σ and deletion of both genes causes loss of viability (see text).