

## Autosomal STR Analysis of the Ancient Egyptian Amarna Royal Family, Pharaoh Ramesses III, and Unknown Man E (Prince Pentawere)

Mummy	Marker	Parent	Allele	Peak Frequency	Population	Affiliation
D13S317						
Thuya (KV46)		1st	9	46%	Wichi, Yuco	Native American
		2nd	12	49.70%	Ovambo	Sub-Saharan African
Yuya (KV46)		1st	11	50%	Croatian	European
		2nd	13	40%	Cayapa	Native American
Tiye (KV35EL)		1st	11	50%	Croatian	European
		2nd	12	49.70%	Ovambo	Sub-Saharan African
Amenhotep III (KV35)		1st	10	42.50%	Yupik	Northeast Asian
		2nd	16	1.80%	Akuthota	South Asian
Akhenaten (KV55)		1st	10	42.50%	Yupik	Northeast Asian
		2nd	12	49.70%	Ovambo	Sub-Saharan African
The Younger Lady (KV35YL)		1st	10	42.50%	Yupik	Northeast Asian
		2nd	12	49.70%	Ovambo	Sub-Saharan African
Tutankhamun (KV62)		1st	10	42.50%	Yupik	Northeast Asian
		2nd	12	49.70%	Ovambo	Sub-Saharan African
Ramesses III		1st	9	46%	Wichi, Yuco	Native American
		2nd	12	49.70%	Ovambo	Sub-Saharan African
Unknown Man E		1st	9	46%	Wichi, Yuco	Native American
		2nd	13	40%	Cayapa	Native American
D7S820						
Thuya (KV46)		1st	10	52.60%	Croatian	European
		2nd	13	14.70%	Balti	South Asian
Yuya (KV46)		1st	6	3.10%	Reddy (Vanne)	South Asian
		2nd	15	3.10%	Reddy (Vanne)	South Asian
Tiye (KV35EL)		1st	10	52.60%	Croatian	European
		2nd	15	3.10%	Reddy (Vanne)	South Asian
Amenhotep III (KV35)		1st	6	3.10%	Reddy (Vanne)	South Asian
		2nd	15	3.10%	Reddy (Vanne)	South Asian
Akhenaten (KV55)		1st	15	3.10%	Reddy (Vanne)	South Asian
		2nd	15	3.10%	Reddy (Vanne)	South Asian
The Younger Lady (KV35YL)		1st	6	3.10%	Reddy (Vanne)	South Asian
		2nd	10	52.60%	Croatian	European
Tutankhamun (KV62)		1st	10	52.60%	Croatian	European
		2nd	15	3.10%	Reddy (Vanne)	South Asian
Ramesses III		1st	6	3.10%	Reddy (Vanne)	South Asian
		2nd	15	3.10%	Reddy (Vanne)	South Asian
Unknown Man E		1st	6	3.10%	Reddy (Vanne)	South Asian
		2nd	13	14.70%	Balti	South Asian
D2S1338						
Thuya (KV46)		1st	19	29%	Otomi	Native American
		2nd	26	5.40%	Yerukula	South Asian
Yuya (KV46)		1st	22	19.40%	Mozambican	Sub-Saharan African
		2nd	27	1%	Italian	European
Tiye (KV35EL)		1st	22	19.40%	Mozambican	Sub-Saharan African
		2nd	26	5.40%	Yerukula	South Asian
Amenhotep III (KV35)		1st	16	8.90%	Italian, Ami	European, East Asian
		2nd	27	1%	Italian	European

Akhenaten (KV55)	1st	16	8.90%	Italian, Ami	European, East Asian
	2nd	26	5.40%	Yerukula	South Asian
The Younger Lady (KV35YL)	1st	16	8.90%	Italian, Ami	European, East Asian
	2nd	26	5.40%	Yerukula	South Asian
Tutankhamun (KV62)	1st	16	8.90%	Italian, Ami	European, East Asian
	2nd	26	5.40%	Yerukula	South Asian
Ramesses III	1st	15	6.40%	Han	East Asian
	2nd	28	0.90%	Namasudra	South Asian
Unknown Man E	1st	19	29%	Otomi	Native American
	2nd	28	0.90%	Namasudra	South Asian
D21S11					
Thuya (KV46)	1st	26	4.70%	Rajput	South Asian
	2nd	35	7.30%	Kshatriya	South Asian
Yuya (KV46)	1st	29	36.10%	Khandait	South Asian
	2nd	34	8.20%	Balinese	Southeast Asian
Tiye (KV35EL)	1st	26	4.70%	Rajput	South Asian
	2nd	29	36.10%	Khandait	South Asian
Amenhotep III (KV35)	1st	25	7%	Rajput	South Asian
	2nd	34	8.20%	Balinese	Southeast Asian
Akhenaten (KV55)	1st	29	36.10%	Khandait	South Asian
	2nd	34	8.20%	Balinese	Southeast Asian
The Younger Lady (KV35YL)	1st	25	7%	Rajput	South Asian
	2nd	29	36.10%	Khandait	South Asian
Tutankhamun (KV62)	1st	29	36.10%	Khandait	South Asian
	2nd	34	8.20%	Balinese	Southeast Asian
Ramesses III	1st	28	33.20%	Venda	Sub-Saharan African
	2nd	35	7.30%	Kshatriya	South Asian
Unknown Man E	1st	29.2	32.20%	Otomi	Native American
	2nd	35	7.30%	Kshatriya	South Asian
D16S539					
Thuya (KV46)	1st	11	61.50%	Inupiat	Northeast Asian
	2nd	13	24.40%	Bosniak	European
Yuya (KV46)	1st	6	1.70%	Tamil	South Asian
	2nd	10	29.80%	Otomi	Native American
Tiye (KV35EL)	1st	6	1.70%	Tamil	South Asian
	2nd	11	61.50%	Inupiat	Northeast Asian
Amenhotep III (KV35)	1st	8	15.20%	Gowda	South Asian
	2nd	13	24.40%	Bosniak	European
Akhenaten (KV55)	1st	11	61.50%	Inupiat	Northeast Asian
	2nd	13	24.40%	Bosniak	European
The Younger Lady (KV35YL)	1st	8	15.20%	Gowda	South Asian
	2nd	11	61.50%	Inupiat	Northeast Asian
Tutankhamun (KV62)	1st	8	15.20%	Gowda	South Asian
	2nd	13	24.40%	Bosniak	European
Ramesses III	1st	8	15.20%	Gowda	South Asian
	2nd	11	61.50%	Inupiat	Northeast Asian
Unknown Man E	1st	8	15.20%	Gowda	South Asian
	2nd	12	55%	Tehuelche	Native American
D18S51					
Thuya (KV46)	1st	8	2.90%	Reddy (Vanne)	South Asian
	2nd	19	16.70%	Mbenzele	Sub-Saharan African
Yuya (KV46)	1st	12	23.60%	Egyptians	North African
	2nd	22	5.90%	Gandla	South Asian

Tiye (KV35EL)	1st	19	16.70%	Mbenzele	Sub-Saharan African
	2nd	22	5.90%	Gandla	South Asian
Amenhotep III (KV35)	1st	16	36%	Drokpa	South Asian
	2nd	22	5.90%	Gandla	South Asian
Akhenaten (KV55)	1st	16	36%	Drokpa	South Asian
	2nd	19	16.70%	Mbenzele	Sub-Saharan African
The Younger Lady (KV35YL)	1st	16	36%	Drokpa	South Asian
	2nd	19	16.70%	Mbenzele	Sub-Saharan African
Tutankhamun (KV62)	1st	19	16.70%	Mbenzele	Sub-Saharan African
	2nd	19	16.70%	Mbenzele	Sub-Saharan African
Ramesses III	1st	8	2.90%	Reddy (Vanne)	South Asian
	2nd	12	23.60%	Egyptians	North African
Unknown Man E	1st	12	23.60%	Egyptians	North African
	2nd	26	6%	Rajput	South Asian

#### CSF1PO

Thuya (KV46)	1st	7	17%	Afro-Venezuelan	Sub-Saharan African
	2nd	12	63.40%	Cayapa	Native American
Yuya (KV46)	1st	9	22.90%	Corsican	European
	2nd	12	63.40%	Cayapa	Native American
Tiye (KV35EL)	1st	9	22.90%	Corsican	European
	2nd	12	63.40%	Cayapa	Native American
Amenhotep III (KV35)	1st	6	1.90%	Javanese	Southeast Asian
	2nd	9	22.90%	Corsican	European
Akhenaten (KV55)	1st	9	22.90%	Corsican	European
	2nd	12	63.40%	Cayapa	Native American
The Younger Lady (KV35YL)	1st	6	1.90%	Javanese	Southeast Asian
	2nd	12	63.40%	Cayapa	Native American
Tutankhamun (KV62)	1st	6	1.90%	Javanese	Southeast Asian
	2nd	12	63.40%	Cayapa	Native American
Ramesses III	1st	7	17%	Afro-Venezuelan	Sub-Saharan African
	2nd	10	63.60%	Arab	Middle Eastern
Unknown Man E	1st	7	17%	Afro-Venezuelan	Sub-Saharan African
	2nd	10	63.60%	Arab	Middle Eastern

#### FGA

Thuya (KV46)	1st	24	34.40%	Wayuu	Native American
	2nd	26	14.80%	Quechua (Kichwa)	Native American
Yuya (KV46)	1st	20	25%	Croatian	European
	2nd	25	37.50%	Vysya	South Asian
Tiye (KV35EL)	1st	20	25%	Croatian	European
	2nd	26	14.80%	Quechua (Kichwa)	Native American
Amenhotep III (KV35)	1st	23	40%	Reddy (Vanne)	South Asian
	2nd	31	0.60%	Maratha	South Asian
Akhenaten (KV55)	1st	20	25%	Croatian	European
	2nd	23	40%	Reddy (Vanne)	South Asian
The Younger Lady (KV35YL)	1st	20	25%	Croatian	European
	2nd	23	40%	Reddy (Vanne)	South Asian
Tutankhamun (KV62)	1st	23	40%	Reddy (Vanne)	South Asian
	2nd	23	40%	Reddy (Vanne)	South Asian
Ramesses III	1st	24	34.40%	Wayuu	Native American
	2nd	34.2	0.10%	Colombian	Native American
Unknown Man E	1st	24	34.40%	Wayuu	Native American
	2nd	26	14.80%	Quechua (Kichwa)	Native American

Mummy	Alleles With Eurasian Affinity	Alleles With Sub-Saharan African Affinity	Estimated Total Eurasian Ancestry	Estimated Total Sub-Saharan African Ancestry
Thuya (KV46)	13/16	3/16	81.25%	18.75%
Yuya (KV46)	15/16	1/16	93.75%	6.25%
Tiye (KV35EL)	13/16	3/16	81.25%	18.75%
Amenhotep III (KV35)	16/16	0/16	100%	0%
Akhenaten (KV55)	14/16	2/16	87.50%	12.50%
The Younger Lady (KV35YL)	14/16	2/16	87.50%	12.50%
Tutankhamun (KV62)	13/16	3/16	81.25%	18.75%
Ramesses III	13/16	3/16	81.25%	18.75%
Unknown Man E	15/16	1/16	93.75%	6.25%
Average	126/144	18/144	87.50%	12.50%

Mummy	East Asian	European	Middle Eastern	Native American	North African	Northeast Asian	South Asian	Southeast Asian	Sub-Saharan African	All Components
Thuya (KV46)	0	2	0	4	0	1	4	0	3	
Yuya (KV46)	0	4	0	3	1	0	6	1	1	
Tiye (KV35EL)	0	4	0	2	0	1	6	0	3	
Amenhotep III (KV35)	1	4	0	0	0	1	9	2	0	
Akhenaten (KV55)	1	4	0	0	0	2	6	1	2	
The Younger Lady (KV35YL)	1	3	0	1	0	2	7	1	2	
Tutankhamun (KV62)	1	3	0	1	0	1	6	2	3	
Ramesses III	1	0	1	3	1	1	6	0	3	
Unknown Man E	0	0	1	7	1	0	6	0	1	
Totals	5	28	2	21	3	9	56	7	18	149
Affinity Index*	3.36	18.79	1.34	14.09	2.01	6.04	37.58	4.7	12.08	

\*Affinity Index calculated as follows: (Individual Component Total/All Components Total) x 100

## References

Amarna autosomal STR markers:

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Rameses III and Unknown Man E autosomal STR markers:

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Allele Frequency Database (ALFRED):

<https://alfred.med.yale.edu/>