



DNA Tribes® Digest January 1, 2012
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Introduction

Hello, and welcome to the January 2012 issue of DNA Tribes® Digest. This month’s article features an analysis of several mummies, including the famous King Tut and his relatives. These individuals lived in a unique time more than three thousand years ago: the “Amarna period,” which has left a vivid archaeological record of life in pharaonic Egypt.

Best regards and Happy New Year,
Lucas Martin
DNA Tribes

Last of the Amarna Pharaohs: King Tut and His Relatives

Historical Background

During the exploration of Egypt, a puzzle emerged along the Nile River: a singular ancient city that had been hastily abandoned to the desert. The site dated to the mid 1300's BCE (the height of New Kingdom Egypt) and became known as Amarna (named for the local Beni Amran tribe).

Unusual discoveries here included cuneiform tablets (the Amarna letters), written in a "peripheral Akkadian" vernacular spoken in the Levantine cities of the former Hyksos and their relatives to the north. Even more unusual was the "Amarna art" found in the city. Unlike the idealized royal icons customary in ancient Egypt, Amarna was decorated with naturalistic portraits emphasizing the individuality of the king's family and retinue.

Absent from Amarna were images of Egypt's ancient pantheon. Instead, this abandoned city had been dedicated to the more abstract "Aten," symbolized by the sun's orb extending its rays.¹

Examination of texts and monuments revealed this as the lost city of Akhetaten ("Horizon of the Aten"), freshly built for the "rebel pharaoh" Akhenaten and his wife Nefertiti. The iconoclastic Akhenaten had opposed the wealthy and influential priesthood of Egypt by closing temples, removing the names of the gods from monuments, and even forbidding use of the plural term "gods." Known in life as "Living in Ma'at" (Justice or Truth), he was later remembered only as the "Criminal of Akhetaten."

After Akhenaten's rule ended in unknown circumstances, his name was erased from all future king lists. Traditional polytheism was then re-established under Tutankhamun ("King Tut") and the former vizier Ay.² Despite helping the return to Egyptian customs, the names of Tut and Ay were also omitted from Egyptian records for their association with the "rebel pharaoh."

Shortly after it had been built, the city of Akhetaten was abandoned. Ironically, the ruins of the "City of the Horizon" became an archaeological time capsule. The Egyptian desert preserved the city's documents, naturalistic art, open air building designs, and urban layout as a testament to an innovative moment in ancient history.

The end of the Amarna period marked the conclusion of the Thutmosid 18th Dynasty of Egypt. King Tut and his relatives were to be the last descendants of one of the ancient pharaonic families, sometimes said to have ancestral links with the Land of Punt (near the Horn of Africa).³

Archaeologists have discovered several royal mummies linked to the Amarna period. These include not only the famous mummy of King Tut, but also his mother KV35YL and relatives Amenhotep III and Yuya. However, the association of the mummy KV55 with the iconoclast of Amarna remains uncertain. KV55 has been tentatively identified as Akhenaten; however, it is still debated whether this is the "rebel pharaoh" himself or instead the remains of another relative (such as Smenkhkare).

¹ During Akhenaten's reign, the "Aten" was represented as a phonetic name and inscribed in a cartouche, suggesting an abstract yet personal concept of deity sometimes compared to the Abrahamic traditions. For instance, some scholars have compared Psalm 104 with devotional poetry found in the ruins of Akhetaten.

² Ay was "Overseer of All the Horses of His Majesty" and possibly the father-in-law of Akhenaten and related to several studied Amarna mummies.

³ More recently, some archaeologists have compared the Predynastic Naqada culture of Egypt with the "A-Group" culture of Nubia (located south of Egypt along the Nile River).

Genetic Analysis of Amarna Mummies

Geographical analysis of the Amarna mummies was performed using their autosomal STR profiles based on 8 tested loci.⁴ Results are summarized in **Table 1** and illustrated in **Figure 1**. Maps for individual Amarna mummies are included in **Figures 2-8** in the Appendix.

Discussion: Average MLI scores in **Table 1** indicate the STR profiles of the Amarna mummies would be most frequent in present day populations of several African regions: including the Southern African (average MLI 326.94), African Great Lakes (average MLI 323.76), and Tropical West African (average MLI 83.74) regions.

These regional matches do not necessarily indicate an exclusively African ancestry for the Amarna pharaonic family. However, results indicate these ancient individuals inherited some alleles that today are more frequent in populations of Africa than in other parts of the world (such as D18S51=19 and D21S11=34).

MLI for World Region	Thuya	Yuya	KV35EL	Amen-hotep III	KV55	KV35YL	Tut	Average
Southern African	359.72	34.48	20.73	108.53	174.90	71.17	1,519.03	326.94
African Great Lakes	233.49	35.53	20.87	222.53	381.30	44.58	1,328.01	323.76
Tropical West African	142.84	8.91	6.93	37.43	53.03	22.99	314.00	83.74
Horn of Africa	14.65	0.79	5.17	12.03	4.54	22.00	44.35	14.79
Sahelian	39.14	0.74	5.76	2.97	4.40	16.85	30.41	14.33
Levantine	0.40	1.56	0.66	10.30	6.07	8.40	21.08	6.92
Aegean	0.12	0.35	0.87	9.06	7.05	20.16	9.85	6.78
Arabian	0.12	0.42	0.70	5.58	2.83	21.41	10.91	6.00
Northwest European	0.21	0.28	1.26	3.99	10.41	15.01	5.33	5.21
Mediterranean	0.08	0.23	0.74	4.54	5.81	16.80	6.04	4.89
North African	2.22	0.21	0.75	3.39	3.25	12.63	6.55	4.14
Mesopotamian	0.06	0.41	0.63	6.24	2.69	11.54	5.27	3.84

Table 1: Top MLI (Match Likelihood Index) scores for Amarna mummies based on the world regions identified by DNA Tribes® STR analysis. Each MLI score identifies the likelihood of occurrence of an STR profile in that region versus the likelihood of occurrence in the world as a whole.

⁴ For original data, see <http://jama.ama-assn.org/content/303/7/638.full>.

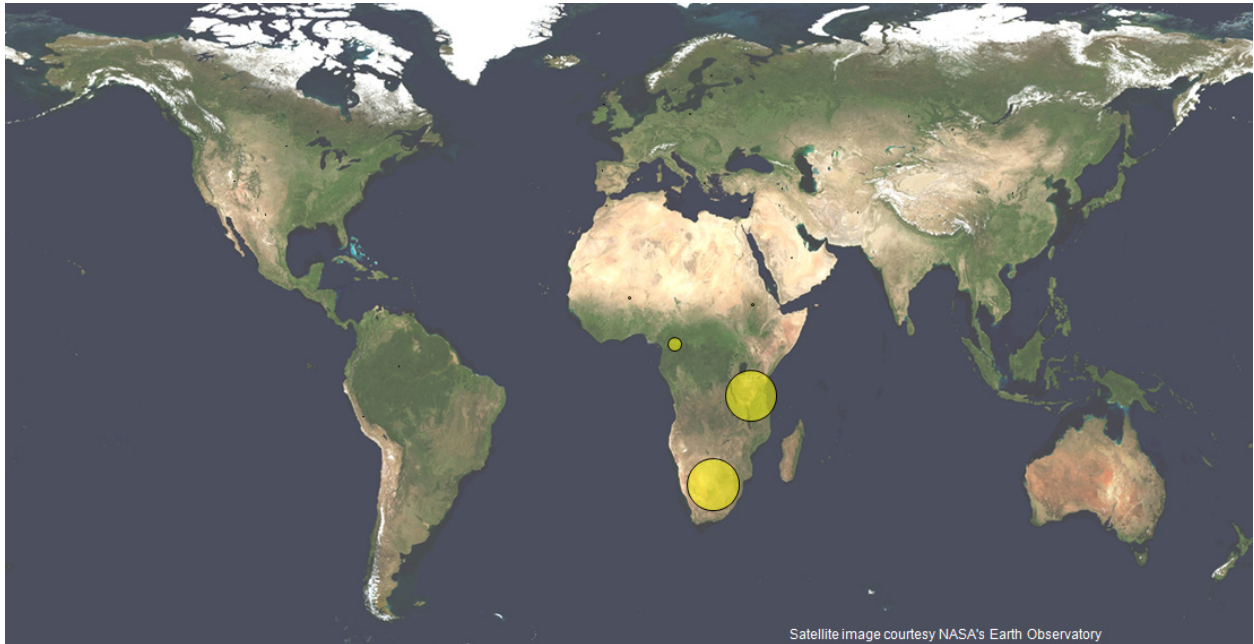


Figure 1: Map of average regional match likelihood (MLI) scores for the Amarna mummies. For more information about the world regions identified in DNA Tribes® STR based tests, see <http://dnatribes.com/populations.html>.

Conclusion

Results indicated the autosomal STR profiles of the Amarna period mummies were most frequent in modern populations in several parts of Africa. These results are based on the 8 STR markers for which these pharaonic mummies have been tested, which allow a preliminary geographical analysis for these individuals who lived in Egypt during the Amarna period of the 14th century BCE.

Although results do not necessarily suggest exclusively African ancestry, geographical analysis suggests ancestral links with neighboring populations in Africa for the studied pharaonic mummies. If new data become available in the future, it might become possible to further clarify results and shed new light on the relationships of ancient individuals to modern populations.

Appendix: Regional Analysis for Individual Amarna Mummies

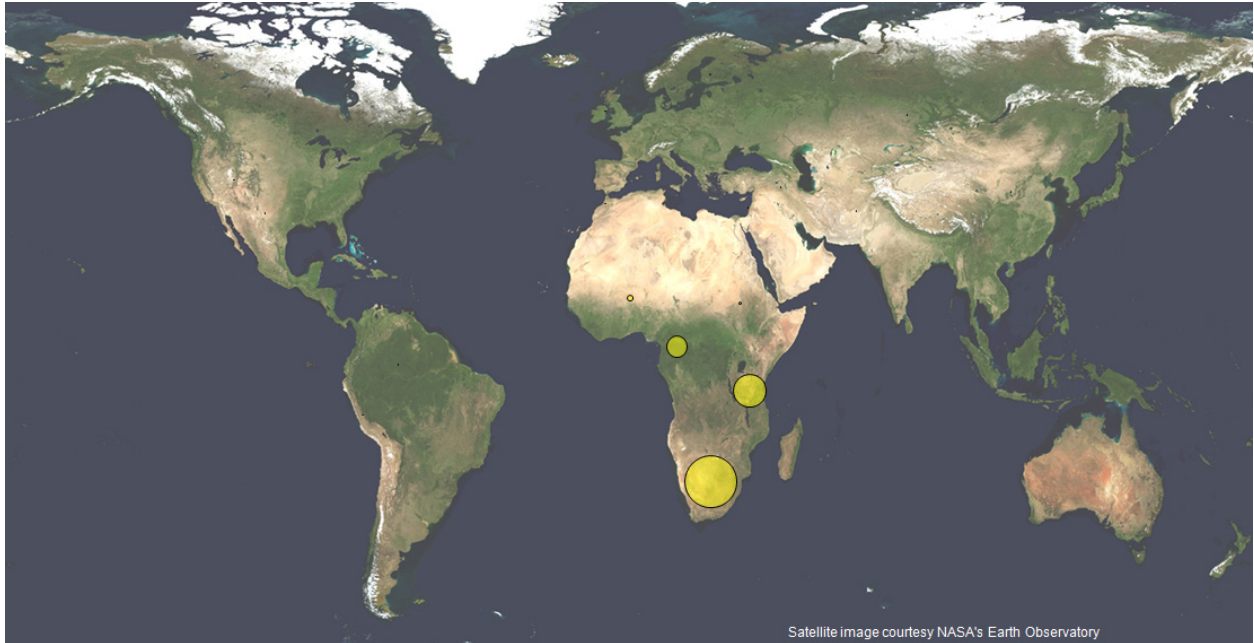


Figure 2: Thuya.

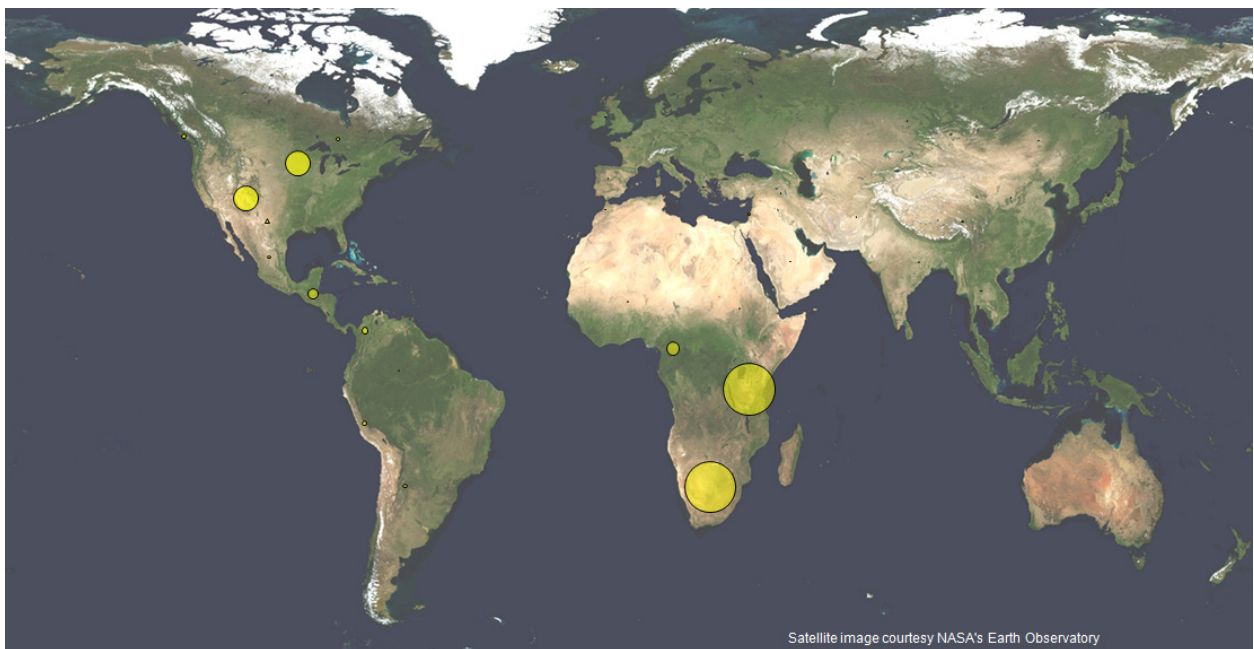


Figure 3: Yuya.

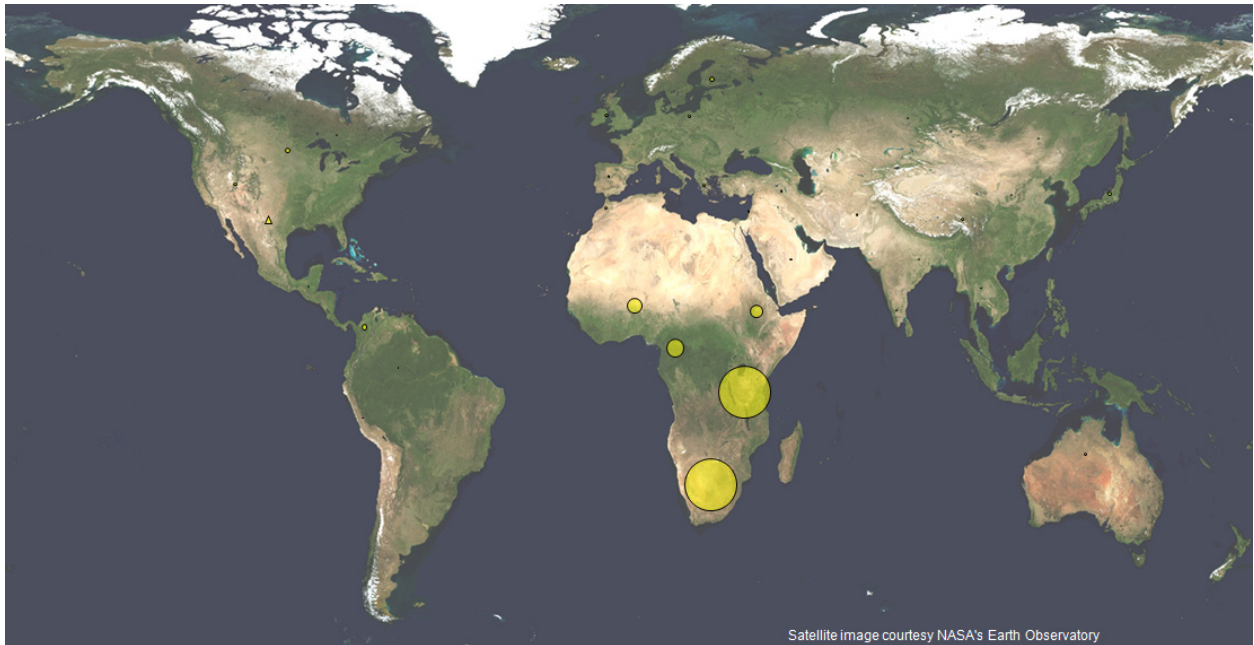


Figure 4: KV35EL (the “Elder Lady,” possibly Tiye).

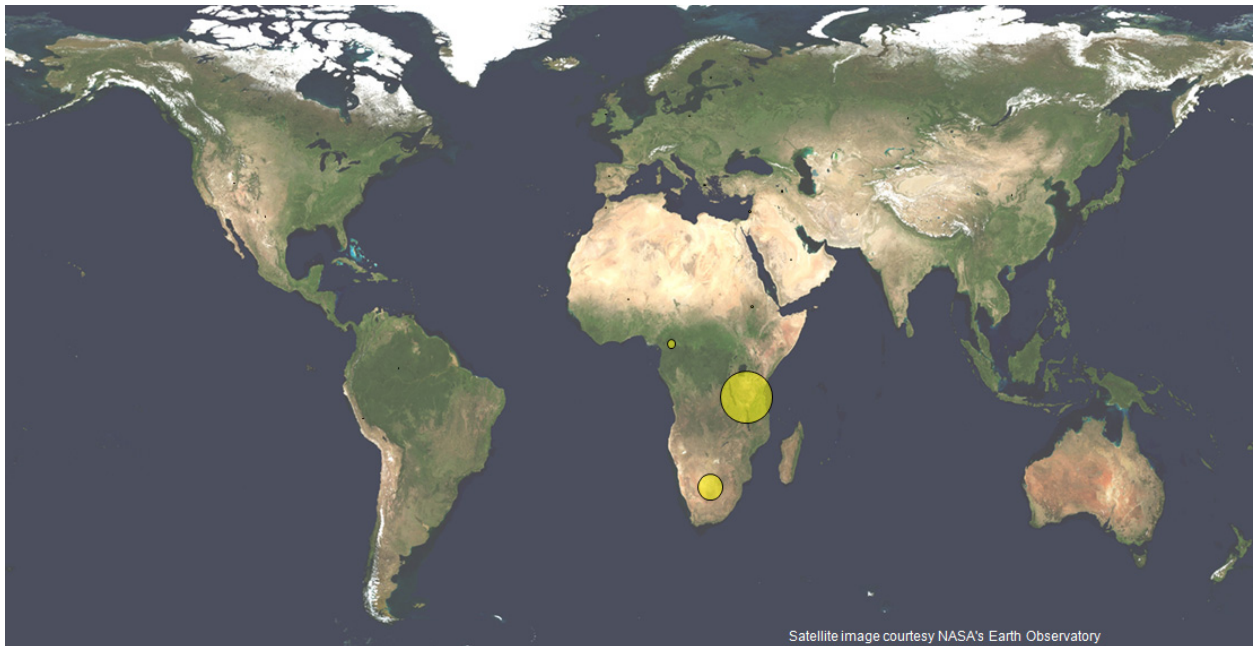


Figure 5: Amenhotep III.

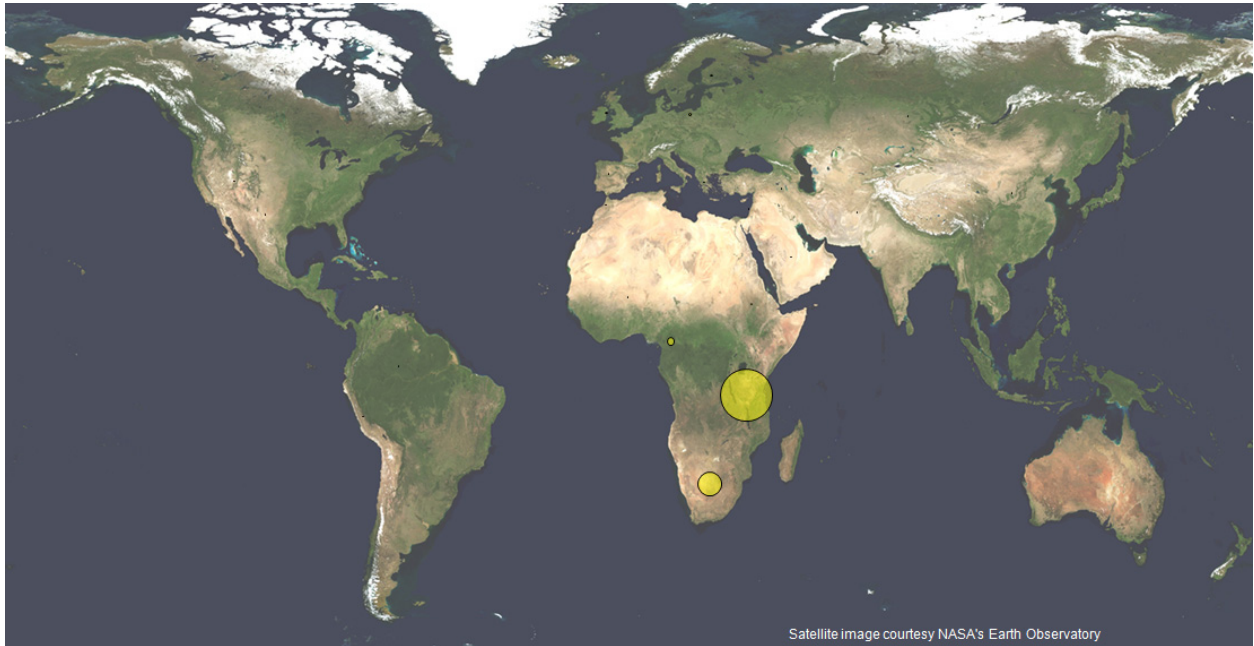


Figure 6: KV55 (possibly Akhenaten or Smenkhkare).

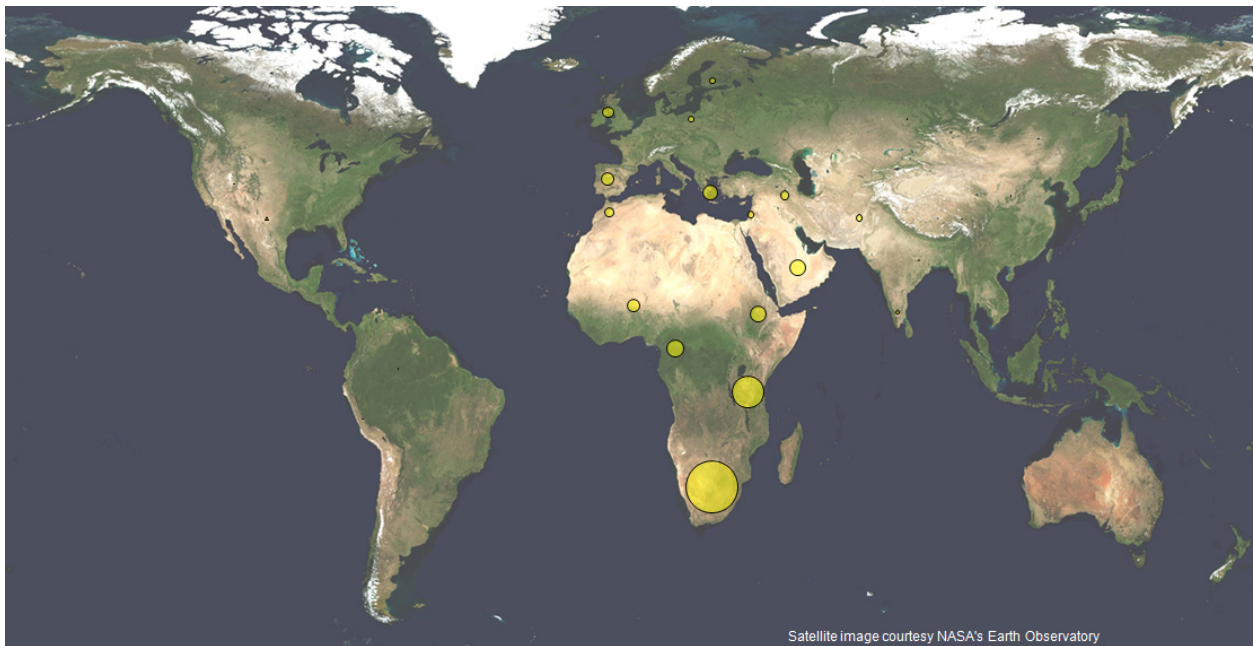


Figure 7: KV35YL (the “Younger Lady”).

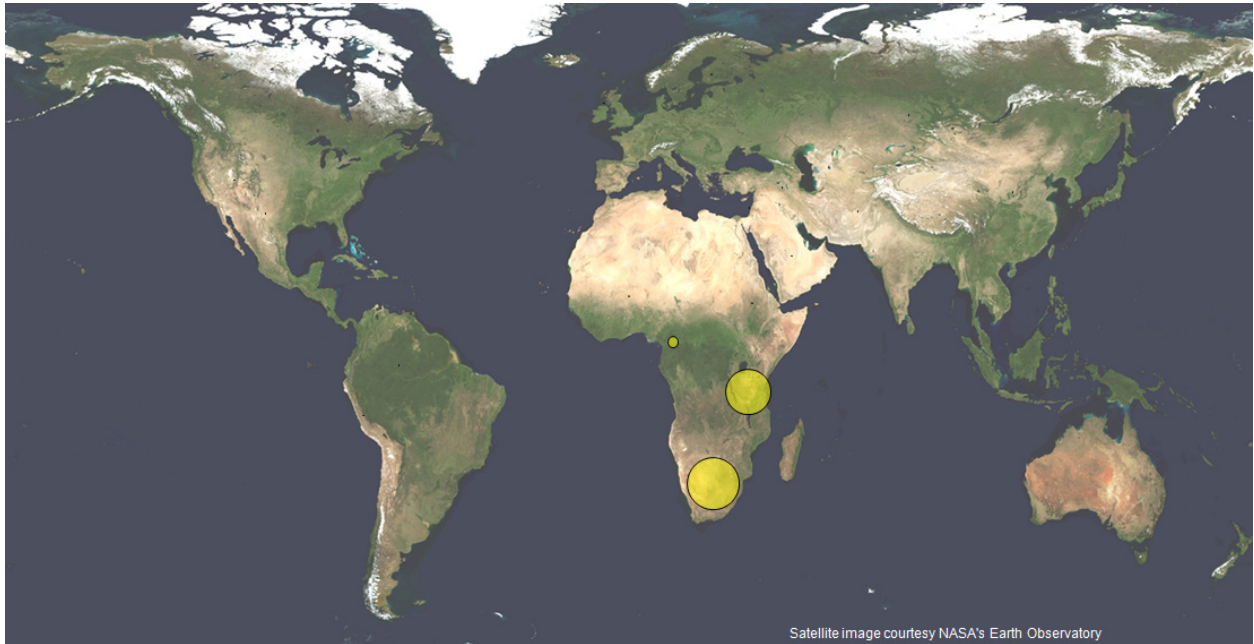


Figure 8: Tutankhamun.



Getting the Most from Your STR Testing

Once your 15, 21 or 27 Marker Kit STR testing is complete, we offer several options to keep your report current and customize your genetic analysis for the information you want. (*Prices are listed as of January 1, 2012 and are subject to change.*)

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Middle Eastern Panel: A listing of your DNA match scores for Middle Eastern populations in our database, including all individual Arab, Berber, Caucasus, Jewish, Persian, and Turkish populations.

Native American Panel: A listing of your DNA match scores for all individual Native American populations in our database.

South Asian Panel: A listing of your DNA match scores for South Asian populations in our database, including all individual populations of Bangladesh, India, Nepal, Pakistan, and Sri Lanka.

Extended Match Results: A comprehensive listing of your DNA match scores for all individual populations in our database.

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