

# Genetic Prehistory of Africa

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# Overview of African Prehistory

Modern humans evolve in Africa ~300 kya.

Herders with Middle-Eastern ancestry reach E Africa by 4 kya and S Africa by 2 kya.

Bantu-speaking farmers expand from W Africa into E and S Africa by ~2 kya.

Today, foragers, herders, and farmers coexist in these areas.

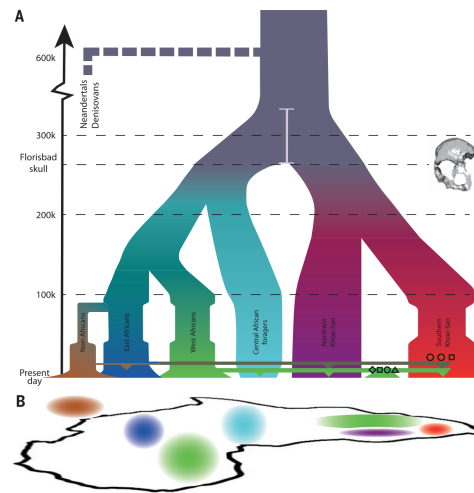
Genetic variation in modern Africa reflects these migrations. Ancient DNA and archaeology tell us what came before.

# Studies of ancient African genomes

Schlebusch et al 2017: 7 ancient Khoe-San genomes with dates 2000–300 BP.

Skoglund et al 2017: 15 ancient genomes with dates 2300–400 BP.

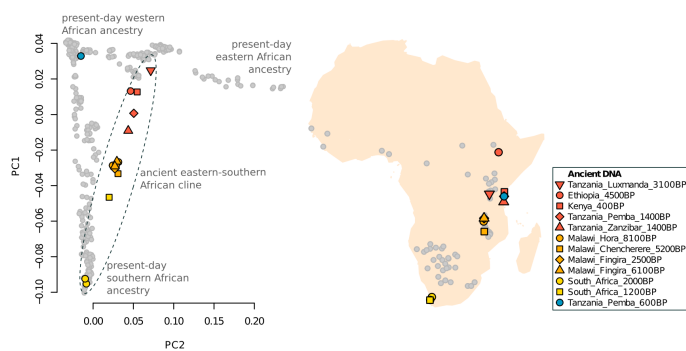
Wang et al 2020: 20 ancient genomes with dates 3900–300 BP.



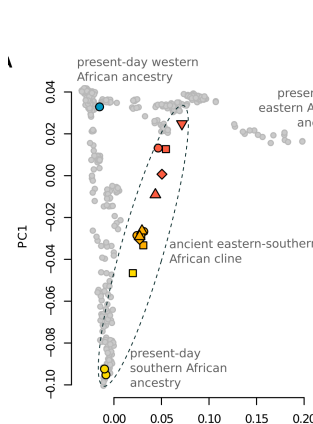
Very deep separation between S African foragers and all other humans, based on an ancient Khoe-San genome.

Schlebusch et al (2017)

# Principal components and geographic maps



Skoglund et al (2017)

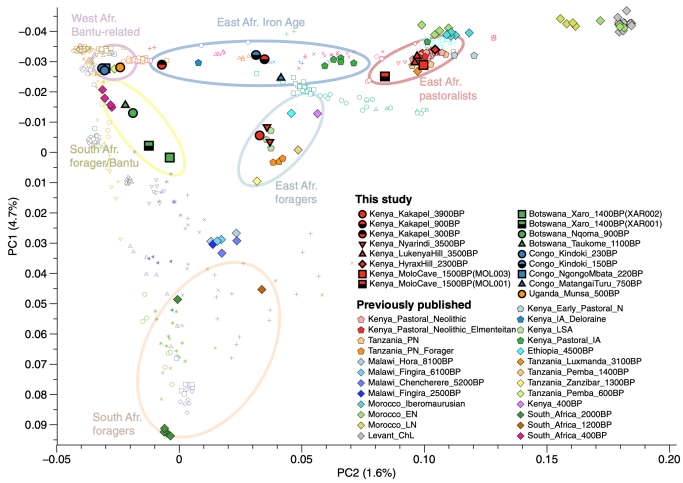


Downward-pointing orange triangle is from Tanzania, 3100 BP.

Yellow circles from southern tip of Africa, 2000 BP.

Other ancient samples are on a straight line connecting these two.

Suggests an ancient cline of admixture between 2 sources—one in NE Africa and one in S Africa.



Big differences btw ancient E African foragers and pastoralists (Wang et al, 2017).

## The Hadza of Tanzania

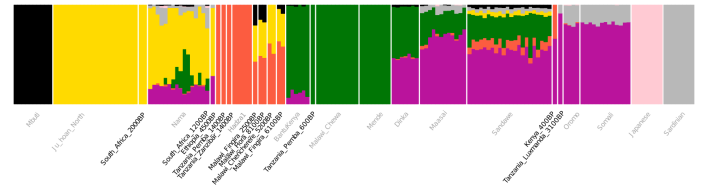


Hadza foragers of Tanzania descend from NE African foragers.

## The Ju/'hoansi of southern Africa



Ju/'hoansi foragers of southern Africa descend (mostly) from ancient southern African foragers.

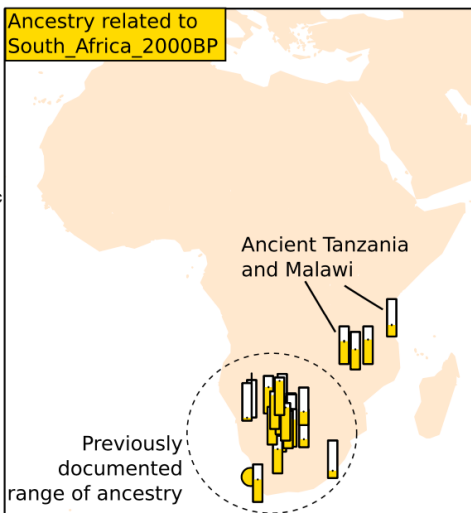


Yellow: Ju/'hoansi; Orange: Hadza; Black, pygmy.

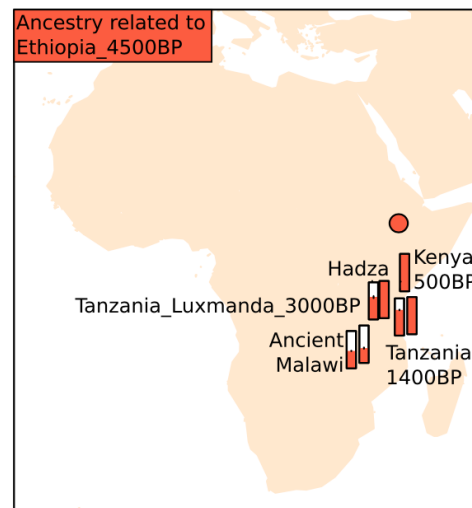
Other populations show varying levels of admixture with these.

These show no admixture. (Later studies modify this conclusion.)

One-way gene flow from foragers to pastoralists and agriculturalists.

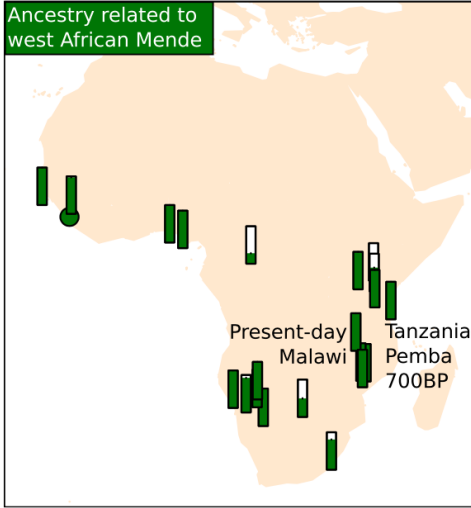


Southern forager ancestry used to extend into E Africa.



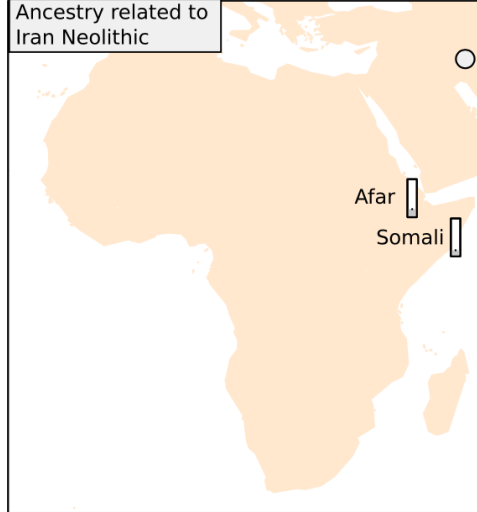
Ethiopian forager ancestry also extended into E Africa.

Ancestry related to west African Mende



W African forager ancestry was spread all over by the Bantu expansion.

Ancestry related to Iran Neolithic



Ancestry from the Iranian Neolithic extends into E Africa.

## Interbreeding between farmers and foragers

In some parts of Africa, farmers interbred with foragers.

In Malawi, the modern population contains no trace of the ancient foragers who lived there.

## Summary

- ▶ 300 kya separation between foragers of southern Africa and all other humans.
- ▶ Before agriculture and pastoralism, African foragers were genetically diverse. Populations that are now small and local were once widespread.
- ▶ There was an admixture cline between foragers of E Africa and S Africa.
- ▶ In Malawi, food producers replaced foragers completely.
- ▶ Elsewhere, foragers and food producers continue to co-exist.
- ▶ Gene flow is largely one-directional: forager → food producer.