

North(west)ern Kalahari Basin fringe: Zambia/ northern Botswana

Sex biased contact between Bantu click speakers and ancestral Khoisan populations

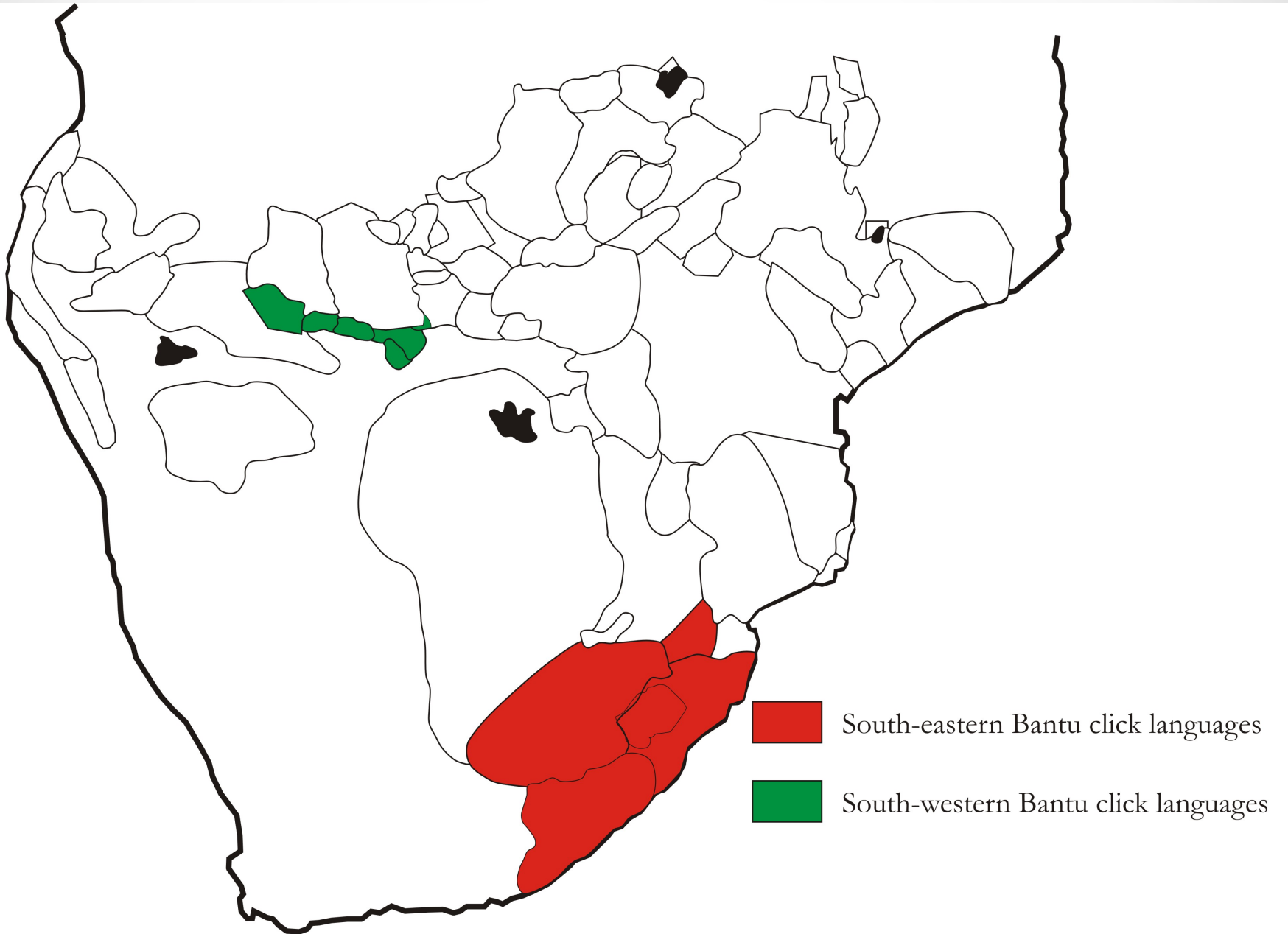
Khoisan as “non-Bantu” click languages

- Most important feature of ‘Khoisan’ languages: **click phonemes**
- clicks can be transferred via language contact
- **Most tangible evidence of Bantu and non-Bantu interference**

Bantu click languages

Two distinct geographical clusters of Bantu click languages

- **South-East Bantu SEB** (South-Africa, Swaziland, Lesotho): so-called Nguni languages (Zulu, Xhosa, Swati, Ndebele) + Southern Sotho
- **South-West Bantu SWB** (north-western Botswana, north-eastern Namibia, south-western Zambia, and south-eastern Angola): Yeyi, Fwe, Mbukushu, Manyo and Kwangali



Click introduction through borrowing

- Acquisition of a click through borrowing from both Khoe-Kwadi and Kx'a languages
- Borrowed click words from semantic fields such as fauna, flora, hunting and fishing

Bantu-Khoisan contact situations

1. Culture contact

→ No genetic admixture

2. Language shift (entire Khoisan population started speaking Bantu)

→ Both Y-chromosomes and mtDNAs from Khoisan in Bantu groups with clicks

3. Intermarriage – most likely to have been sex-biased

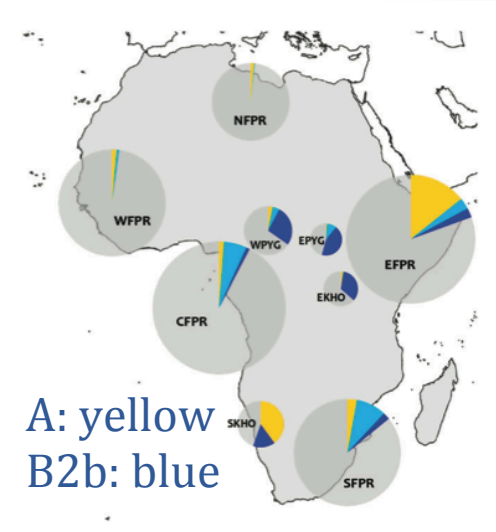
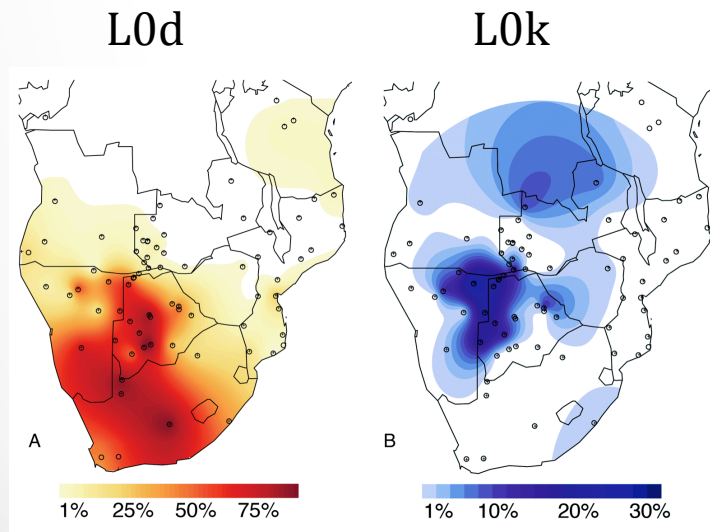
→ Khoisan mtDNA lineages in Bantu groups with clicks

(Linguistic data point towards 2 & 3)

Khoisan lineages: markers of contact

Characteristic Khoisan genetic markers:

- mtDNA haplogroups **L0d** and **L0k**
- Y-chromosomal haplogroups **A** and **B2b**



7 Bantu populations

- **WEST BANTU (Luyana)**
 - Kwamashi
 - **Mbukushu (have clicks)**
- **EAST BANTU (Botatwe)**
 - Shanjo
 - Tonga
 - Totela
 - Subiya
 - **Fwe (have clicks)**



Comparing mtDNA and Y chromosome data

Khoisan-characteristic haplogroups

Y chromosome

B2b*
(M112)

Kwamashi

CLICK

Mbukushu

Tonga

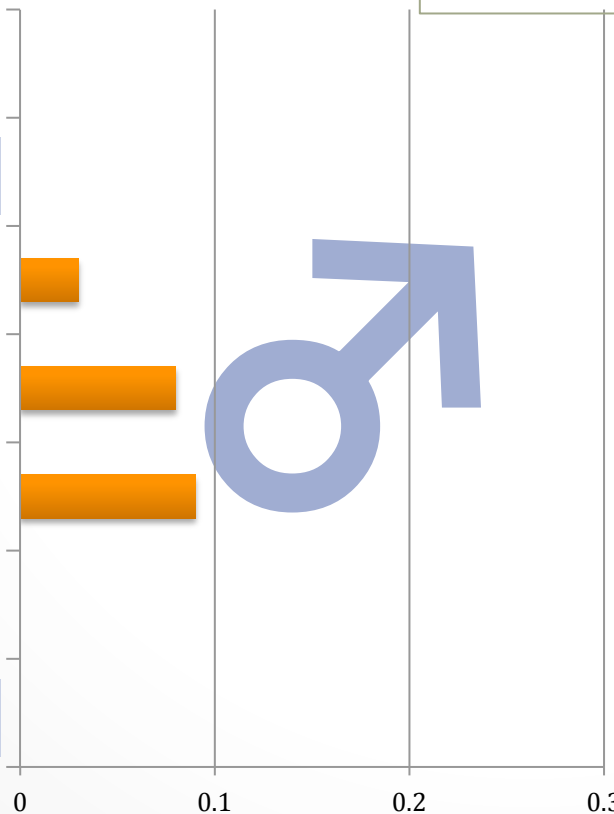
Totela

Subiya

Shanjo

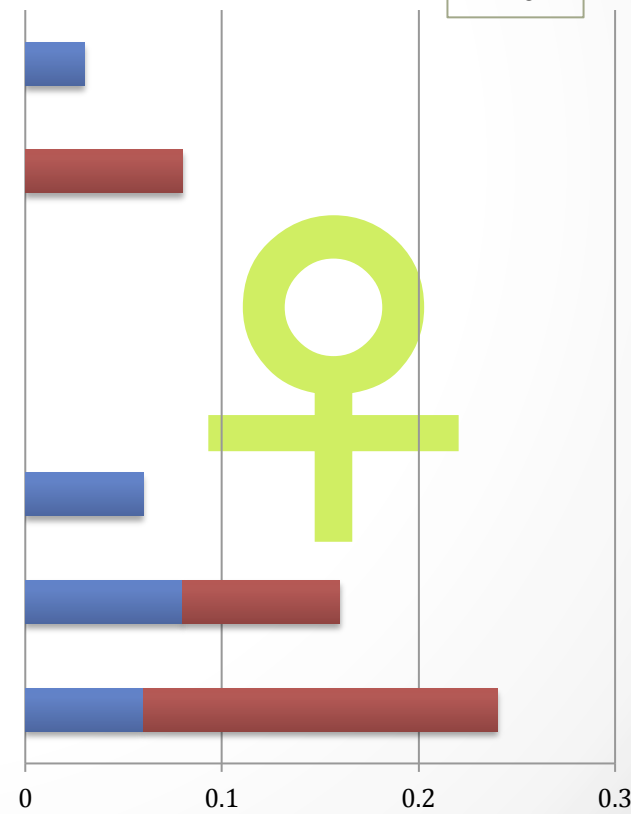
CLICK

Fwe

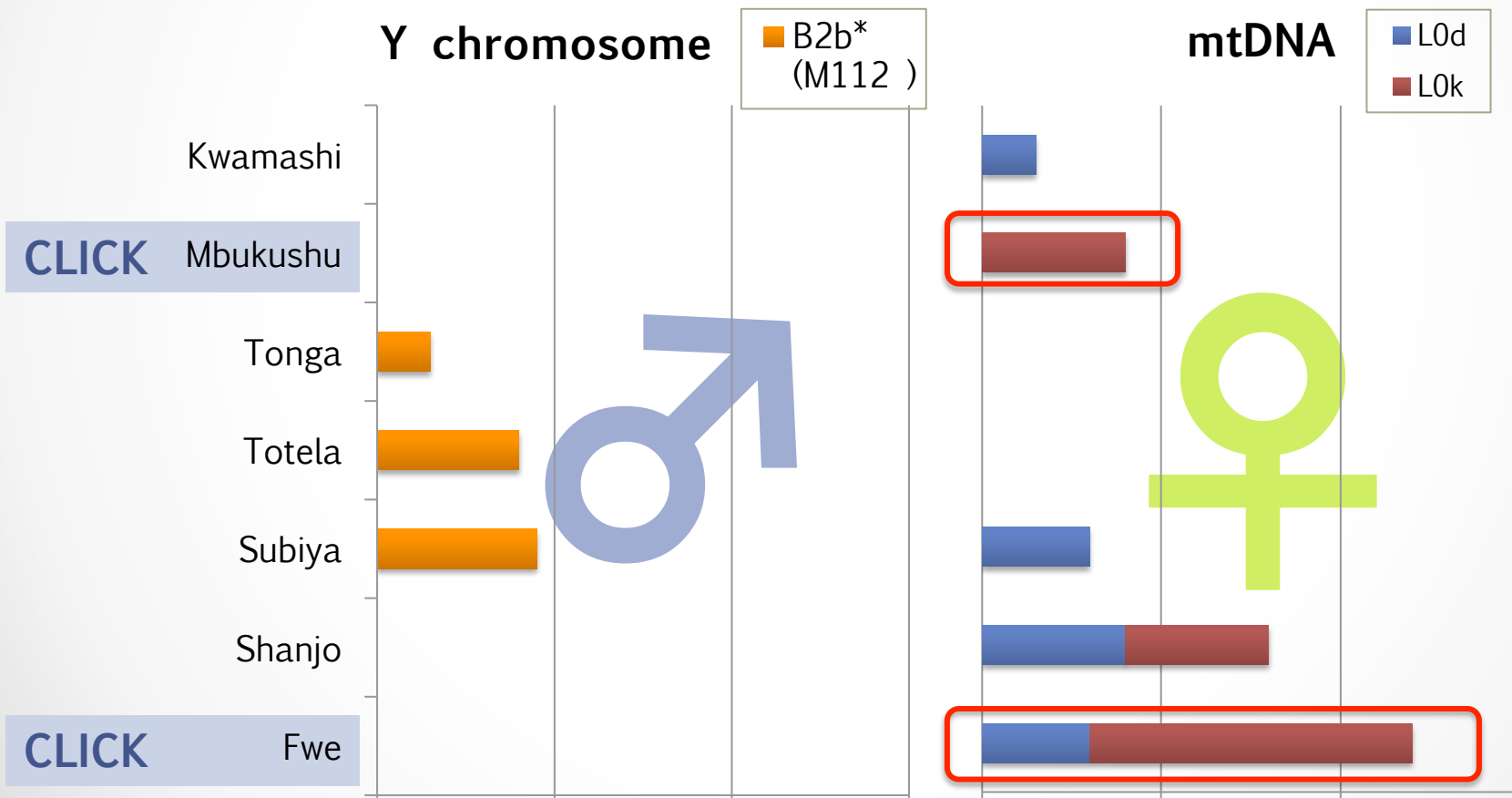


mtDNA

L0d
L0k



Khoisan-characteristic haplogroups

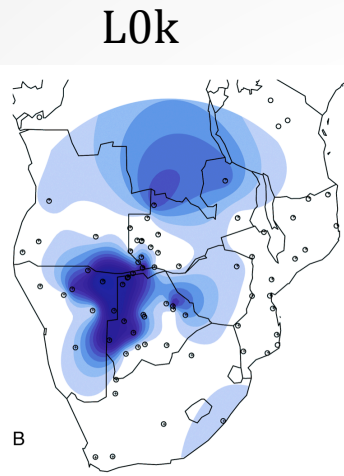


- The incorporation of lineages from Khoisan in Click Bantu is sex specific

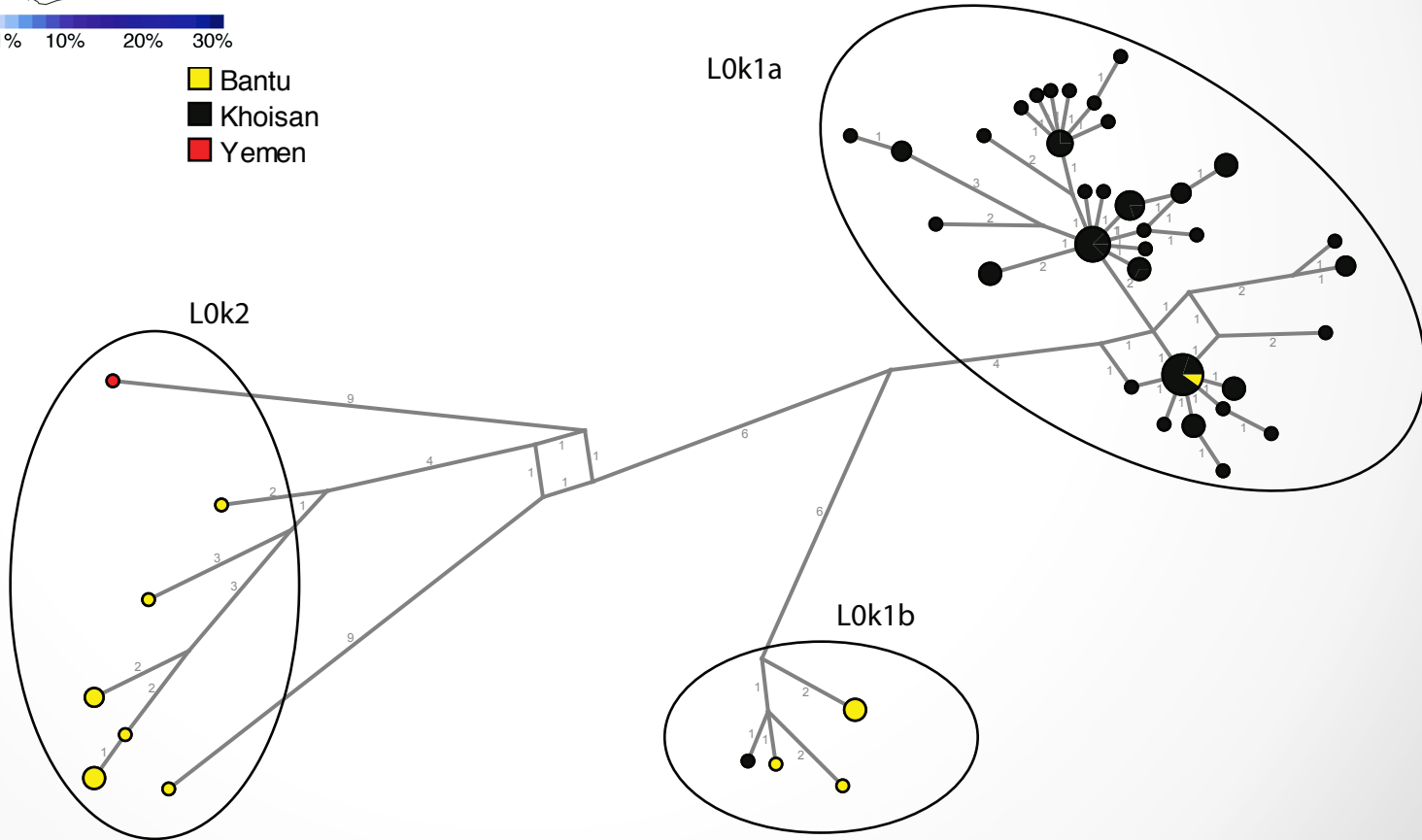
Conclusions

- Clicks probably transmitted by sex biased contact between Khoisan autochthonous women and Bantu immigrants
 - Exclude simple cultural contact
 - Exclude incorporation of entire Khoisan population (language shift)

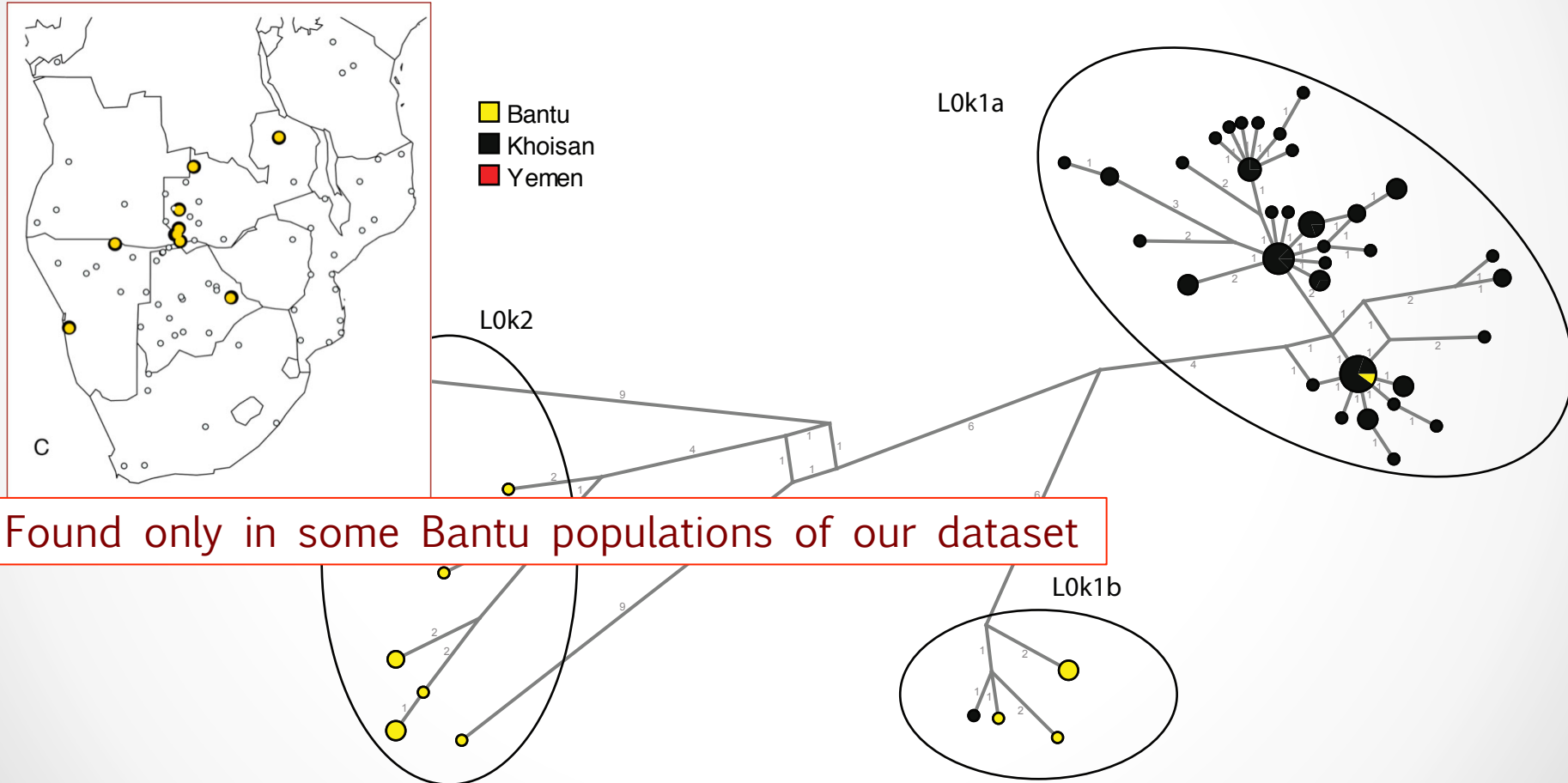
Variation in L0k haplogroup



- Bantu
- Khoisan
- Yemen



Variation in L0k haplogroup



Found only in some Bantu populations of our dataset

- Discovery of two divergent lineages in L0k

L0k2 specificity in southern Africa

- Present ONLY in Bantu from Zambia, Botswana and Namibia
- Absent from Khoisan
- Where does it come from?! Very divergent and sporadic
 - Gene flow from Khoisan?
 - time of contact Bantu-Khoisan=**1200 years ago**

**1200 years ago:
Bantu arrive**

Bantu population:
migrating towards south.
mixed haplogroups, less
ancestral

substructure with
various "khoisan"
populations

??

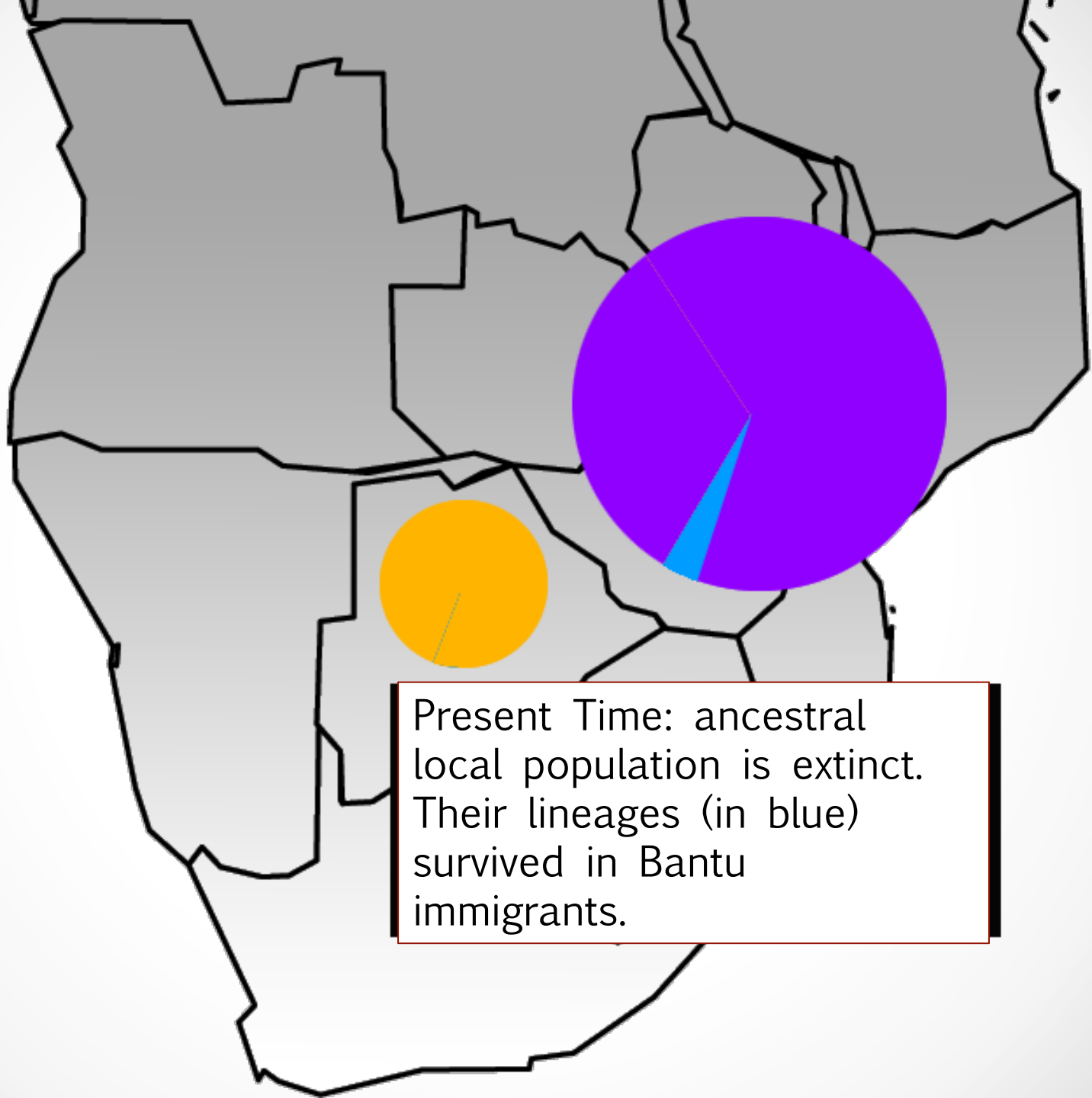
*Sex biased gene flow
from a population with
high proportion L0k2*

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Present Time: ancestral local population is extinct. Their lineages (in blue) survived in Bantu immigrants.

Conclusions

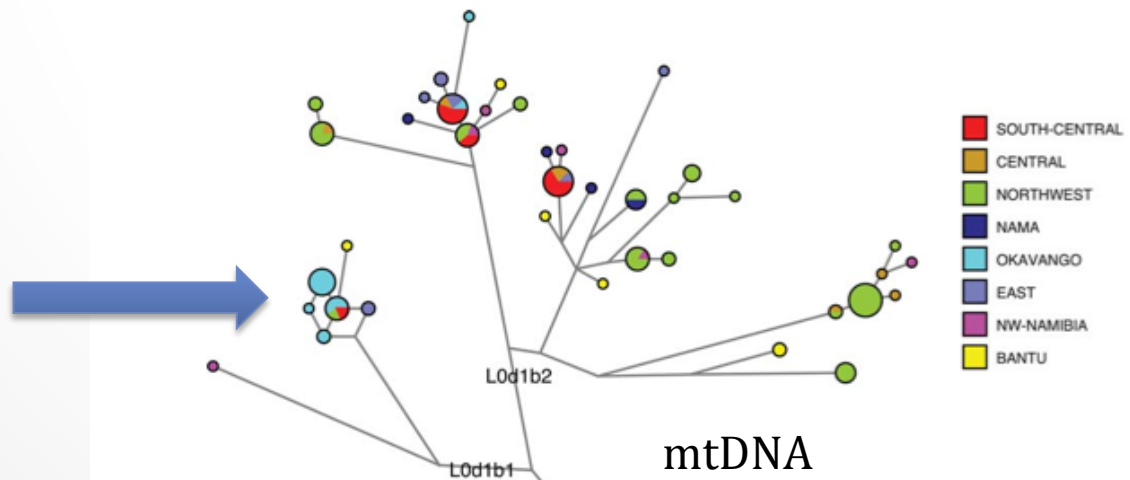
- Ancient sublineages of L0k in Bantu
→ Incorporated through contact with locals that were genetically diverse from extant Khoisan

Deep genetic substructure in southern Africa prior to the Bantu expansion

Khoisan in the Okavango region: the Khwe

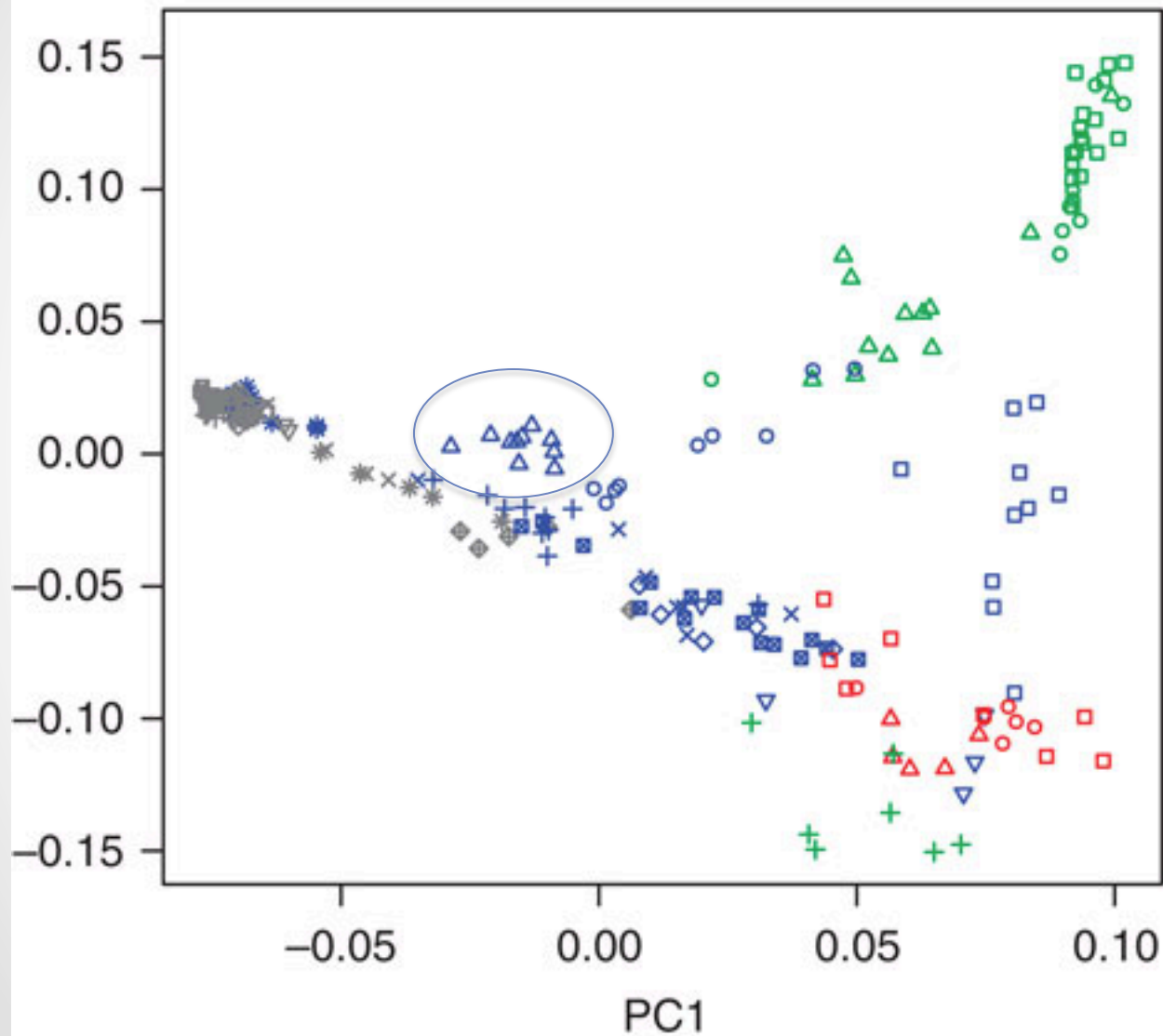
Buga, ||Ani, ||Xo

- Genetically homogeneous
 - Buga and ||Ani, in particular, cannot be distinguished
- Characteristic mtDNA and Y chromosome lineages
 - Moderate effect of isolation
- More Bantu admixture in ||Xo



Autosomal DNA - PCA

PCA (Jul'hoan ascertainment)



Khoe-Kwadi

- Naro
- Haillom
- △ Khwe
- + Shua
- × Tshwa
- ◇ Gllana
- ▽ Glui
- Nama
- * Damara

Kx'a

- Jul'hoan_North
- Jul'hoan_South
- △ !Xuun
- + #Hoan

Tuu

- Taa_West
- Taa_North
- △ Taa_East

Final remarks - North(west)ern Kalahari fringe

- Contact and sex biased admixture between Bantu and local click speakers
 - Borrowing of clicks, incorporation of early divergent mtDNA lineages
- Characteristic presence of rare mtDNA divergent lineages in Bantu suggests ancient structure and admixture with a population related to extant Khoisan, but extinct nowadays.