

Principal Component Analysis & Mosquitos

Eve198

Week 8



Current Biology

Climate and Urbanization Drive Mosquito Preference for Humans

Highlights

- African populations of *Ae. aegypti* vary in preference for human versus animal odor

Authors

Noah H. Rose, Massamba Sylla, Athanase Badolo, ..., Bradley J. White, Jacob E. Crawford, Carolyn S. McBride



Collected mosquito eggs with ovitraps
 Hatched eggs in lab for human preference experiments

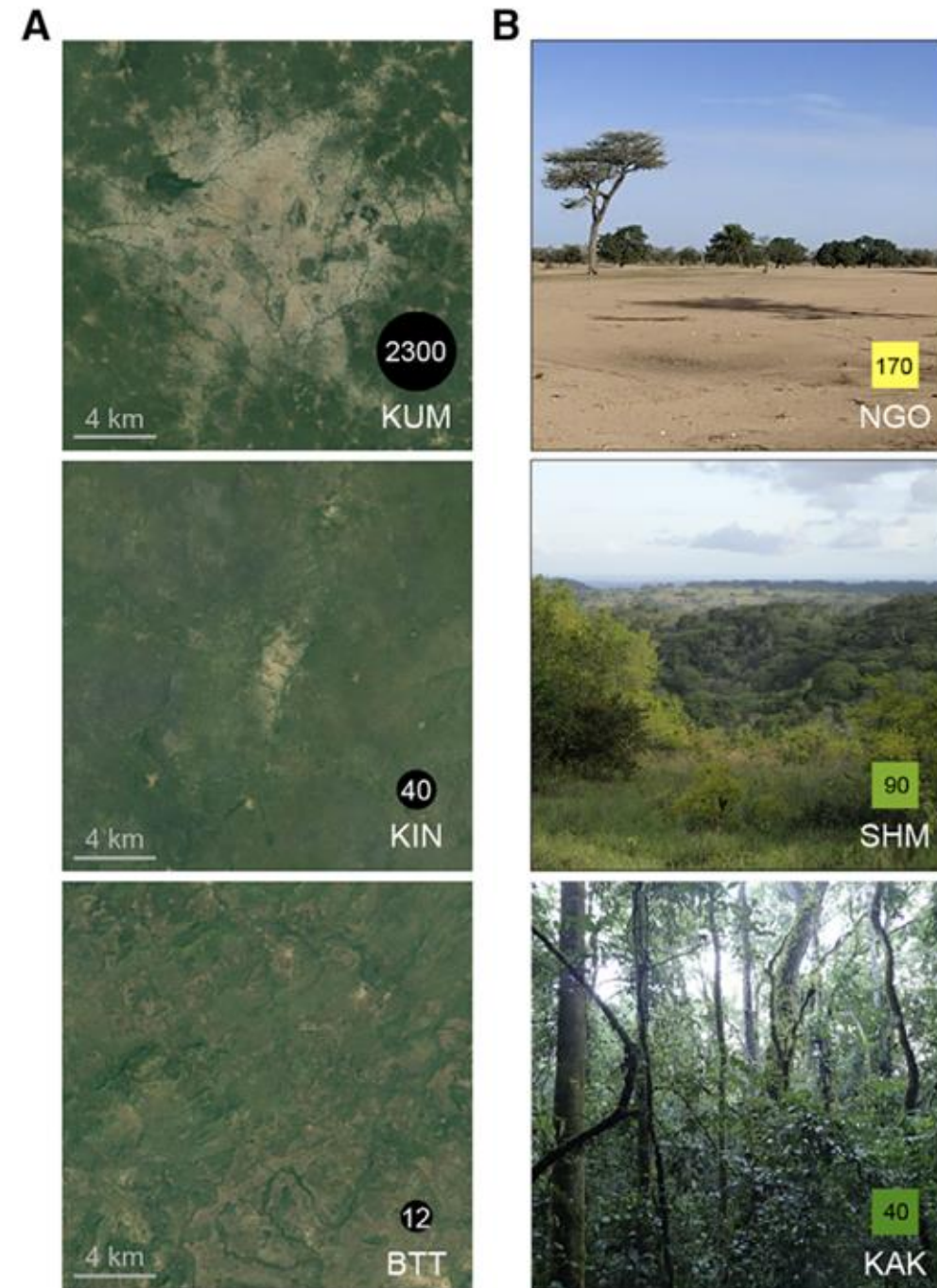
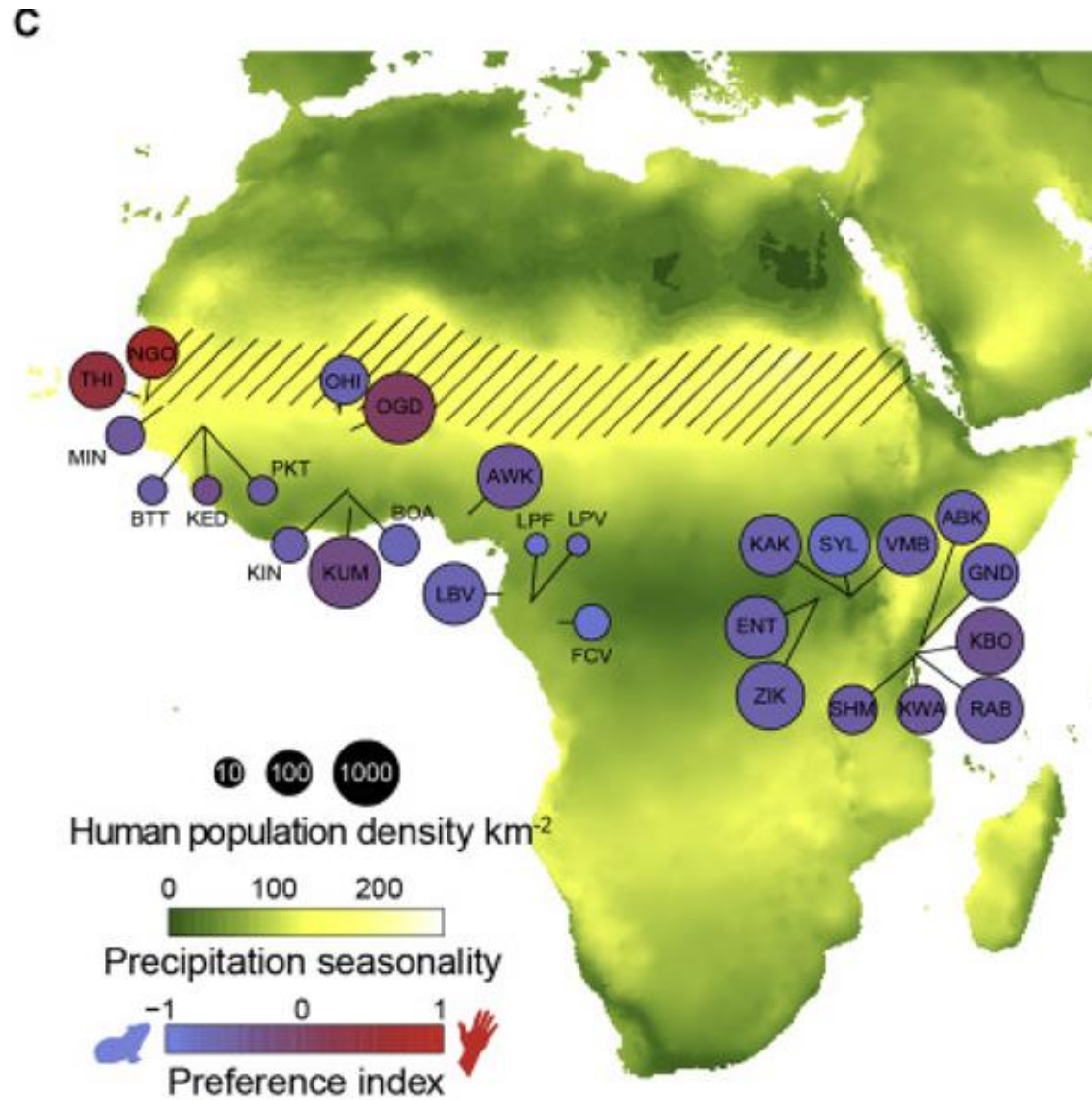
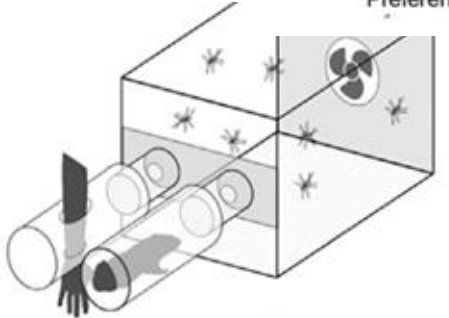
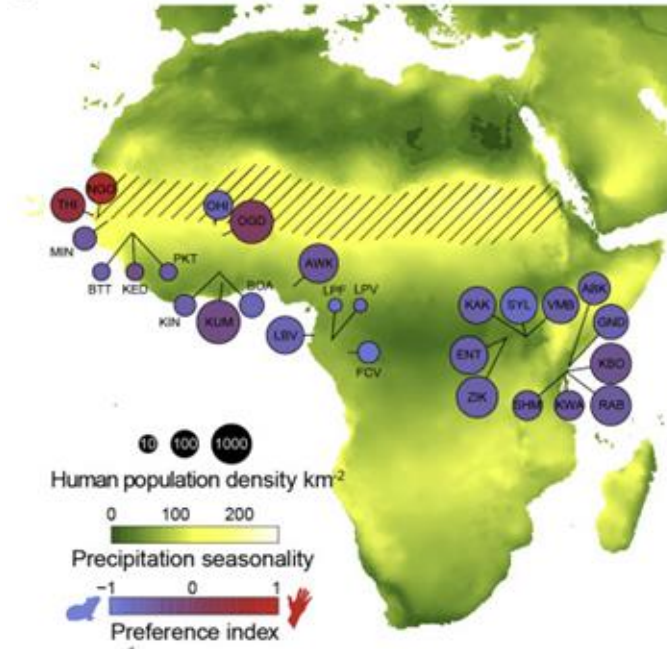
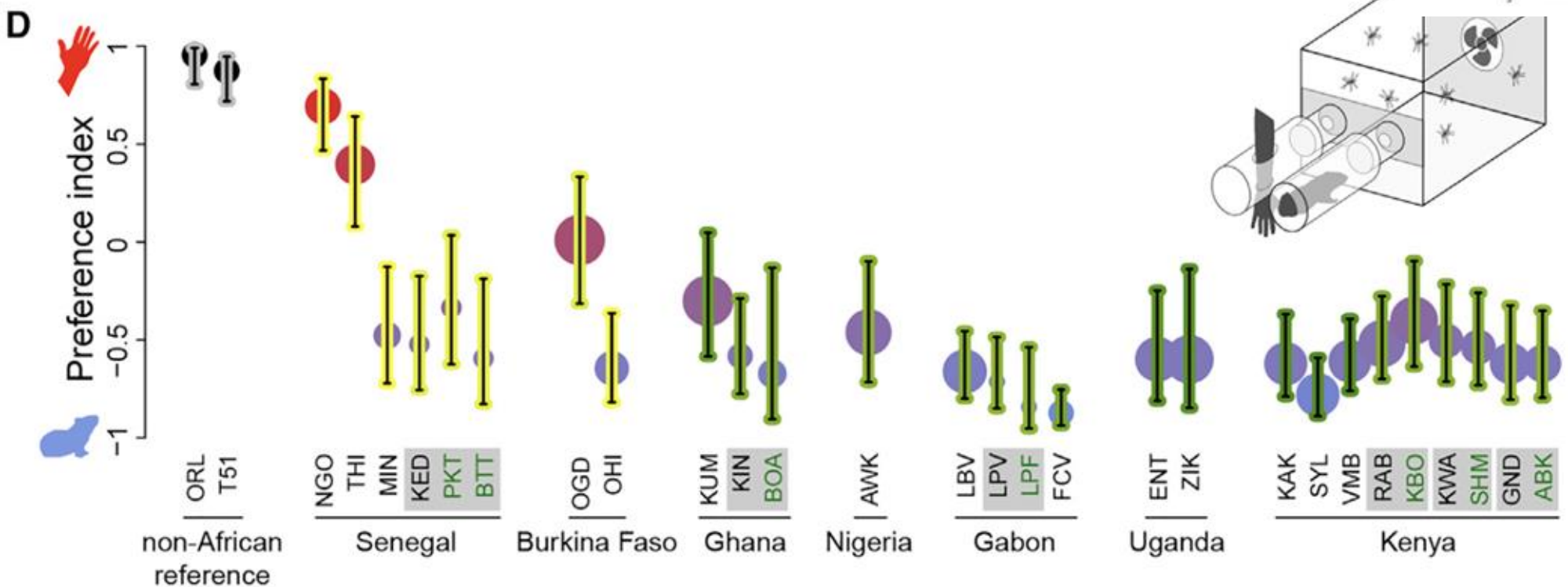
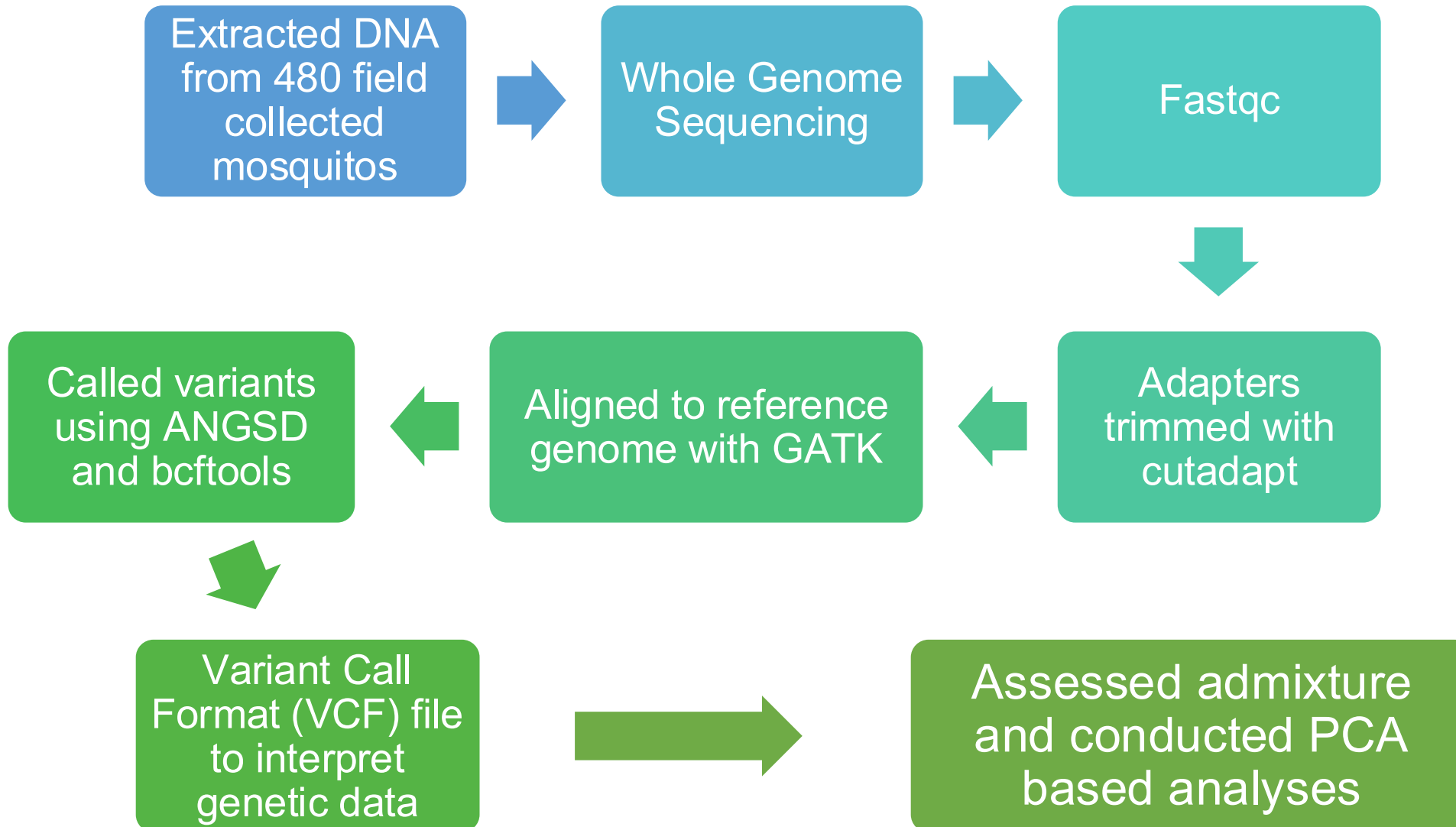


Fig 1: Preference for human odor varies widely in *Aedes aegypti* mosquitos across Africa

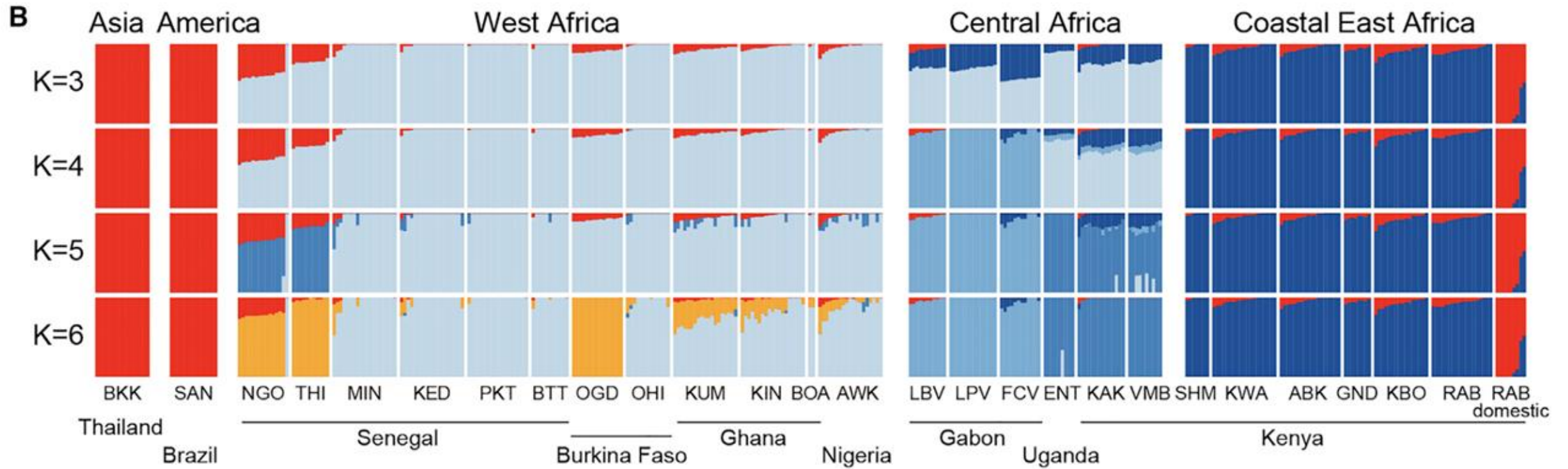


Bioinformatic Pipeline:



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Fig 3: Revisiting Population Structure:

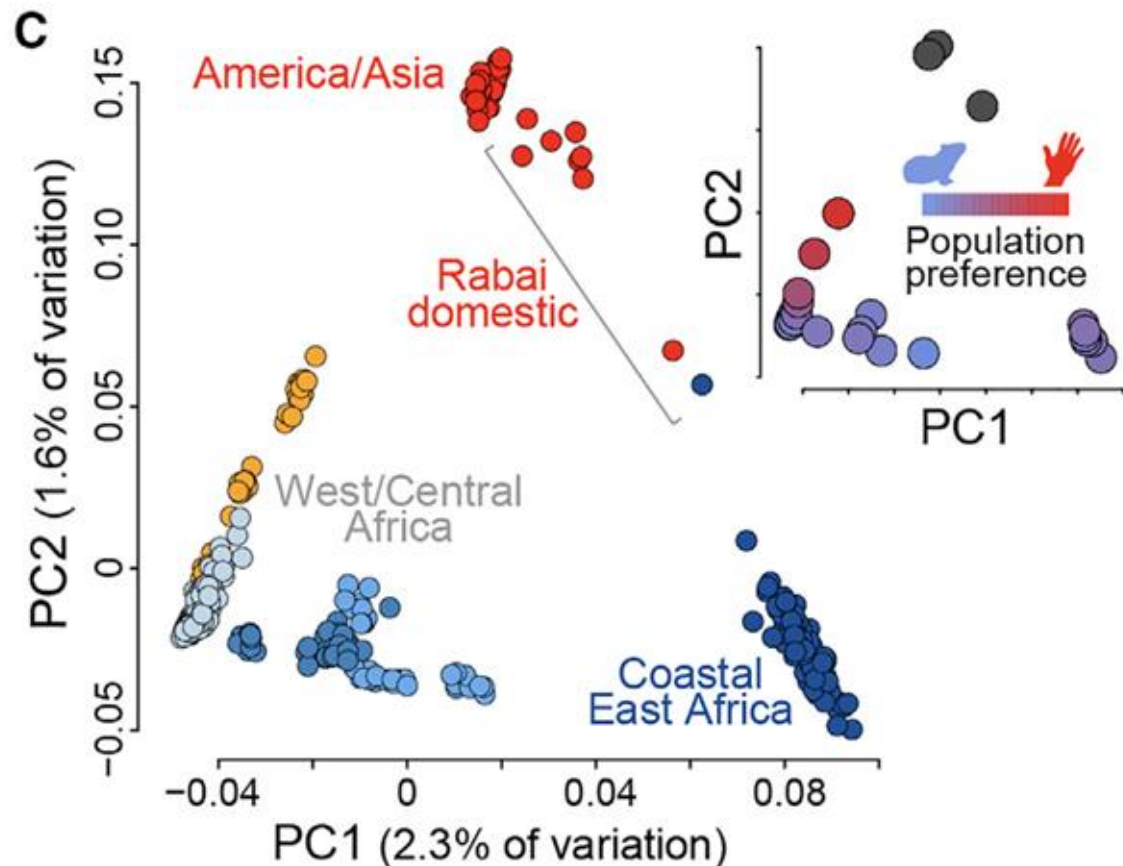


What is a Principle Component Analysis?

- A method to reduce the dimensionality of large datasets

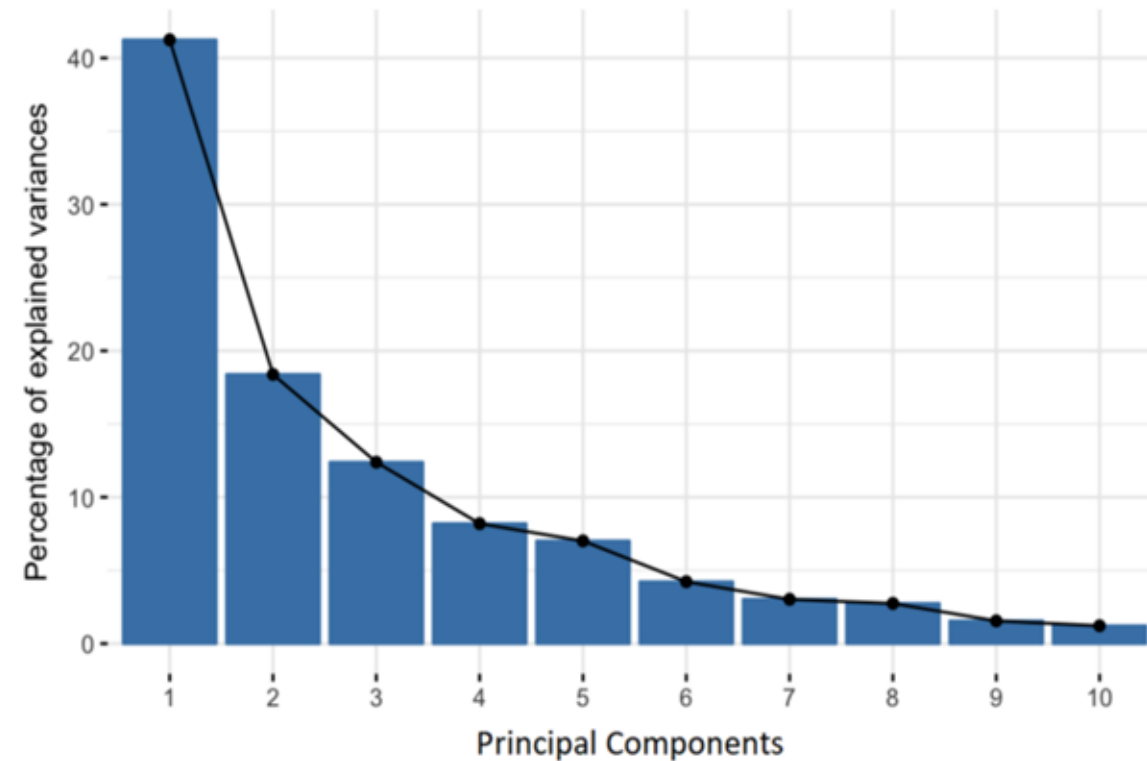
What is a Principle Component Analysis?

- A method to reduce the dimensionality of large datasets
 - Genomic Data= many SNPs for many individuals



What is a principal component?

- New variables constructed from a mixture of our initial variable.
- A PCA will return to you the same dimension of data you gave it.
 - But most of the information should be in the first few PCs
 - For 10 individuals genotyped at 100 loci you will get 10 principal components



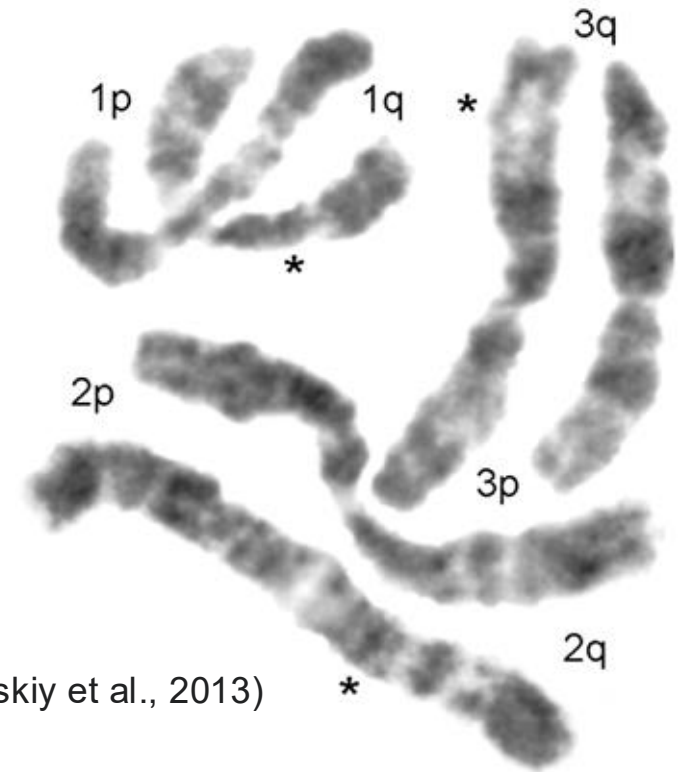
Working with a subset of data today:

Our methods differ from those used in this paper, primarily for convenience and time (ours).

- Just a section of chromosome 1



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(Timoshevskiy et al., 2013)

An Integrated Linkage, Chromosome, and Genome Map for the Yellow Fever Mosquito *Aedes aegypti*

Vladimir A. Timoshevskiy, David W. Severson, Becky S. deBruyn, William C. Black, Igor V. Sharakhov, Maria V. Sharakhova

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