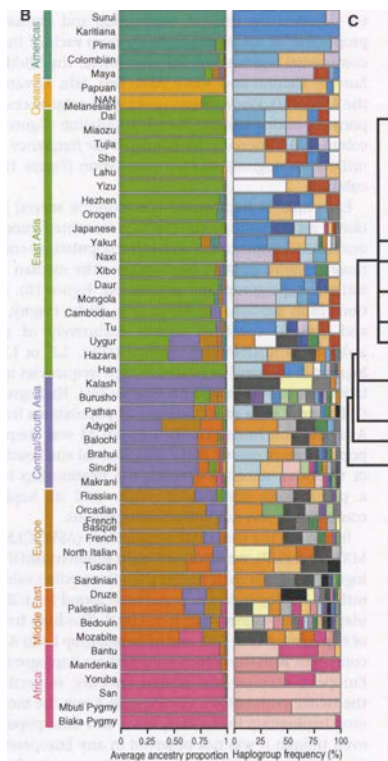


mtDNA

2016, 4'H x 24" W x 20'L

Rough milled and hand crafted cedar screen, black paint,
100% silk from Uzbekistan and China, natural dyes,

The Installation, *mtDNA*, is based on a graph representing the 1000 Genomes Project tracing Mitochondrial DNA worldwide.ⁱ The research, which is ongoing, shows how varied and diverse the matrilineal DNA is for each person in each haplogroup (genetic population group) within each country. As indicated in the chart, individual ancestry proportions varied substantially in all but a few of the major mtDNA haplogroups. The research is significant because it is providing an overview of all human genetic variation, not only what is already known to be biomedically relevant; the consortium will generate a valuable tool for all fields of biological science, especially in the disciplines of genetics, medicine, pharmacology, biochemistry, and bioinformatics.ⁱⁱ



The research group of Emery, Magnaye, Bigham, Akey, and Bamshad obtained DNA for 965 from the "Human Genome Diversity Cell Line Panel" mtDNA-haplogroup typing. Using a total of 28 diagnostic SNPs, they classified samples into the 23 mtDNA haplogroups. The illustration shows the Geographic Location, mtDNA-Haplogroup Frequencies, and Average Ancestry Proportions in the HGDP Populations.ⁱⁱⁱ

Left column: barplots of continental-ancestry proportions averaged within each HGDP population. Barplots are colored by continental region (labeled by colored bars on the left) and sorted by continental ancestry.

Right column: barplots of haplogroup frequencies within each population. Barplots are colored by mtDNA haplogroup.

mtDNA informs viewers on multi-racial groups as well as inhabiting a physical space, allowing viewers to see through the semi-translucent silk to others in the space. The screen structure is based on a mashrabiya, an element in traditional Arabic and North African architecture which is a carved wood latticework located on the second story of a building. The mashrabiya is a cool shaded space primarily used by women as a place to see out but not be seen. It is both protective and a space of observation. Significantly, in tracing mtDNA globally,

we find that the human origins of the mtDNA or our “EVE”^{iv} were from Africa.

This work is made with Pacific Northwest Cedar. I used rough-cut cedar planks and milled and hand cut the pieces for the screen. As in a traditional screen, each piece is handcrafted showing the imperfections of hand tools. The silk and dyes represent the globe; the silk is from Uzbekistan, India and China. The dyes are from Brazilwood sawdust, from violin bow manufacturing, from Brazil (red to dark blue); Indian Lac, from the cochineal bug, from India (deep shades of red); Longwood, from Mexico (shades of purple, black, and green); Fusticwood, from the Caribbean Islands (yellow, gold, and orange). The Indigo blue used was commercially produced, but is originally from Asia and was re-cultivated in the American South by slaves.

Each line in the graph represents a Haplogroup, a group of people in a geographic region. The blue tones are Asia, reds and pinks are Africa, orange the Middle East, purple SE Asia through Persia, gold/yellow Russia and Europe.^v

My interest in interpreting the current research on the genetic spectrum is to make a piece that honors on our mothers.

ⁱ 1000 Genomes, <http://www.1000genomes.org>

ⁱⁱ The original image was published in the article: “Estimates of Continental Ancestry Vary Widely among Individuals with the Same mtDNA Haplogroup ” in The American Journal of Human Genetics 96, 183–193, February 5, 2015 by, Leslie S. Emery, Kevin M. Magnaye, Abigail W. Bigham, Joshua M. Akey, and Michael J. Bamshad

ⁱⁱⁱ “Estimates of Continental Ancestry Vary Widely among Individuals with the Same mtDNA Haplogroup ” in The American Journal of Human Genetics 96, 183–193, February 5, 2015 by, Leslie S. Emery, Kevin M. Magnaye, Abigail W. Bigham, Joshua M. Akey, and Michael J. Bamshad (Figure S1), Figure 1-B , Geographic Location, mtDNA-Haplogroup Frequencies, and Average Ancestry Proportions in the HGDP Populations, the Left column: barplots of continental-ancestry proportions averaged within each HGDP population. Barplots are colored by continental region (labeled by colored bars on the left) and sorted by continental ancestry. Right column: barplots of haplogroup frequencies within each population. Barplots are colored by mtDNA haplogroup (labeled by the haplogroup tree in C).

^{iv} “Genetic Adam and Eve did not live too far apart in time, Studies re-date ‘Y-chromosome Adam’ and ‘mitochondrial Eve’ ”August 6, 2013. Nature, the International Journal of Science Ewen Callaway