Who am I? Where did I come from?

From Africa to Aotearoa – Our story

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Reconstructing Human Evolution

http://www.talkorigins.org/faqs/comdesc/images/hominids2_big.jpg
Allan Wilson (1934 - 1991)

- Born in Ngaruawahia
- BSc Otago
- PhD UC Berkeley
- The Wilson Lab
  - molecular evolution
  - molecular clock
  - mtDNA
  - ancient DNA
We don’t know if all of those fossils had descendants – but we do know that we all had ancestors....
Tracking human migrations through DNA
Mitochondrial “Eve”
based on Cann, Stoneking & Wilson 1987

An evolutionary tree from populations around the world based on mtDNA differences.

Traced all lineages to a single maternal line that existed in Africa over 150,000 years ago.
Haplogroups

mtDNA haplogroup distribution

http://www.mcdonald.cam.ac.uk/genetics/links.html
Human pathways. Reconstructed spread of modern humans during the late Pleistocene, and locations of some key early Upper Paleolithic archaeological sites. Grine et al., Olivieri et al., and Anikovich et al. provide new evidence confirming that early modern humans spread from southwestern Asia into northern Africa, Europe, and Russia about 45,000 to 40,000 years ago.

Early Archaeological sites in Sahul

Dated from 50,000 BP

Kosipe
Huon Peninsula
Lake Mungo
Near and Remote Oceania

Holocene sea level rise – 10,000 BP
Settlement of Remote Oceania

https://www.nlm.nih.gov/nativevoices/assets/exhibition/section/OB1674.jpeg
Winds - Sailing against the wind into Remote Oceania

- Safe sailing – return voyaging
- systematic and planned settlement
- no/little loss of life
- difference between exploration and settlement

http://www.jps.auckland.ac.nz/docs/Volume098/images/JPS_098_194_a.jpg
The Lapita Cultural Complex

Lapita sites first appear in the Bismarck Archipelago (New Guinea) about 3350 years ago. They reach Vanuatu by 3000 years ago - stamps above represent the site of Teouma.
Lapita pottery

Decorated pots, undecorated pots, ceramic “faces” “tattooing the pots”
Lapita Dispersal

Spans Near and Remote Oceania and Melanesia and Polynesia
Origins: Austronesian Languages

“Out of Taiwan” model for Lapita/Polynesian origins
“How shall we account for this Nation spreading itself so far over this vast ocean?”

Capt. James Cook, 1778
Transported Landscapes

Lapita peoples carried important plants and animals in their canoes and introduced these to the Pacific islands they settled.

http://archive.hokulea.com/images/ike/voyaging_food_animals.jpg
The commensal Model

Using animals as a proxy for tracing human migration pathways
The Kiore (rat) Story: According to mtDNA
Mitochondrial DNA (mtDNA)

Haplotypes belonging to P, Q, S and some M lineages (M27, M28, M29) represent these early migrations into Sahul and Near Oceania (50,000-30,000 BP)
Haplogroup B
Sub-lineages
Pacific haplogroups

B – 9 bp deletion
B4 – 16217C
B4a – 16261C, 5465C, 9123A
B4a1 – 10238C
B4a1a – 6719C, 12239T, 15746G
B4a1a1 – 14022G, 16247G
B4a1a1a – 6905G
B4a1a1c – 1185T, 4769A
B4a1a1m – 151T, 2416C
B4a1a1n – 8572A
B4a1a1a1 – 13479G
B4a1a1c – 1185T, 4769A
B4a1a1m1 – 1692G
B4a1a1n – 8572A
Wairau Bar

- One of the earliest archaeological sites in NZ
- Dates to about 750 years ago
- Occupation site with burials
- We have found many mitochondrial DNA lineages which suggests that there were many colonists
An inaccurate depiction of the colonization “event”

L J Steele & C F Goldie: The Arrival of the Maoris in New Zealand (1898)
Auckland Art Gallery Toi o Tāmaki, gift of the late George and Helen Boyd, 1899
European Arrival in the Pacific

- 1700s
- Spanish, Dutch, French, English, German, American
- Explorers, sealers, whalers, missionaries
- Followed by miners, traders, gum diggers
- 1960s Pacific Island migrations

Capt. James Cook
THE LONGEST JOURNEY:

Africa to Aotearoa

(A Genetic Ancestry Study of New Zealand)
The Right Honourable Sir Jerry Mateparae
Maternal Haplogroup B4a1a1
# MtDNA Haplogroups in British Isles

| Region/Haplogroup | L | HV | H | H1+H3 | H5 | HV0+V | J | T1 | T2 | U2 | U3 | U4 | U5 | U | K | I | W | X | Other | Size |
|-------------------|---|----|---|-------|----|-------|---|----|----|----|----|----|----|---|---|---|---|------|------|
| England           | 0.2| 0  | 44.7| (20)  | (4.1)| 3.2   | 11.5| 1.6 | 6.2 | 1.5 | 0.6 | 2.2 | 9.1 | 2.7 | 7.8| 4  | 1.2 | 1.6 | 1.9  | 2333 |
| Ireland           | 0  | 1.3| 44.1| (22.5)| (1.3)| 5.7   | 10.7| 1.3 | 5.4 | 1.3 | 1   | 1.3 | 8.4 | 0.3 | 12 | 3  | 2.3 | 0.7 | 1.2  | 299  |
| Scotland          | 0  | 0.2| 44.1| (25)  | (3.1)| 3     | 12.7| 2.2 | 5.9 | 1.2 | 1.1 | 2.8 | 8.1 | 2.4 | 6.9 | 4.1| 0.6 | 2.5 | 2.4  | 1853 |
| Wales             | 0  | 0  | 59.8| (8.7) | 4.3 | 15.3  | 2.2 | 1.1 | 0  | 0  | 0   | 4.4 | 0   | 7.6 | 3.3 | 0  | 1.1 | 0.9  | 92   |

- 44-59% Haplogroup H
- 10-15% Haplogroup J
- 7-12% Haplogroup K
- 5-9% Haplogroup U5, 2-3% other U
- 1-5% Haplogroup T2
- 3-4% Haplogroup I
New Zealanders: Many people, many journeys!

Our analyses have identified almost all major mtDNA lineages (red branches are all present in NZ)