Human Evolution, Pt. 6, 2025

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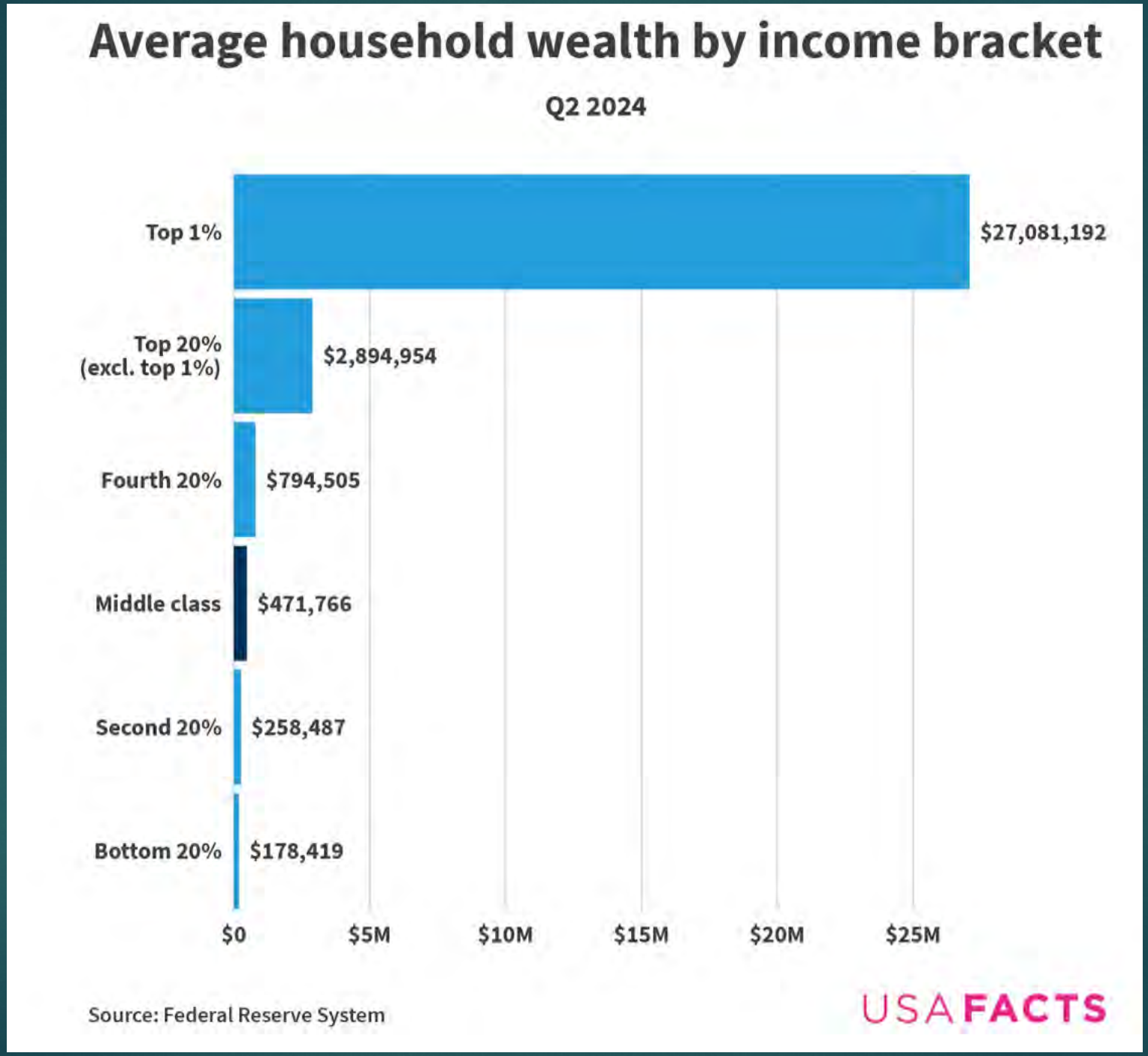
2025

Human Evolution Update January, 2025

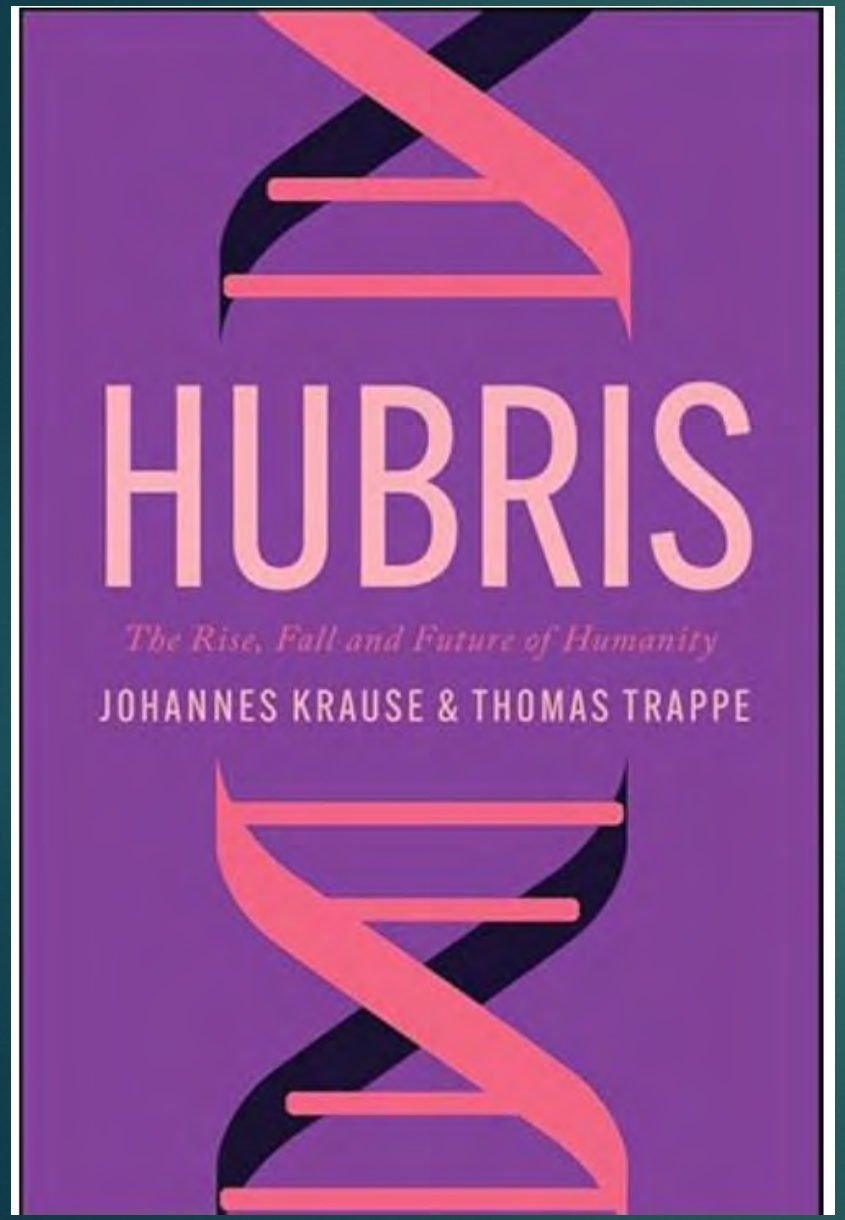
A new year

- I turned 80 in December. I am still in good health. But remember that extinction is the norm in evolution.
- If I kick off in the future, I want you all to know how much fun I have had with you all since 2019! You have kept my brain very active.
- I would like you all to send any suggestions for topics of interest in human evolution that you find interesting or want me to cover. Or any changes to how I do these lectures.
- Any feedback is always welcome.

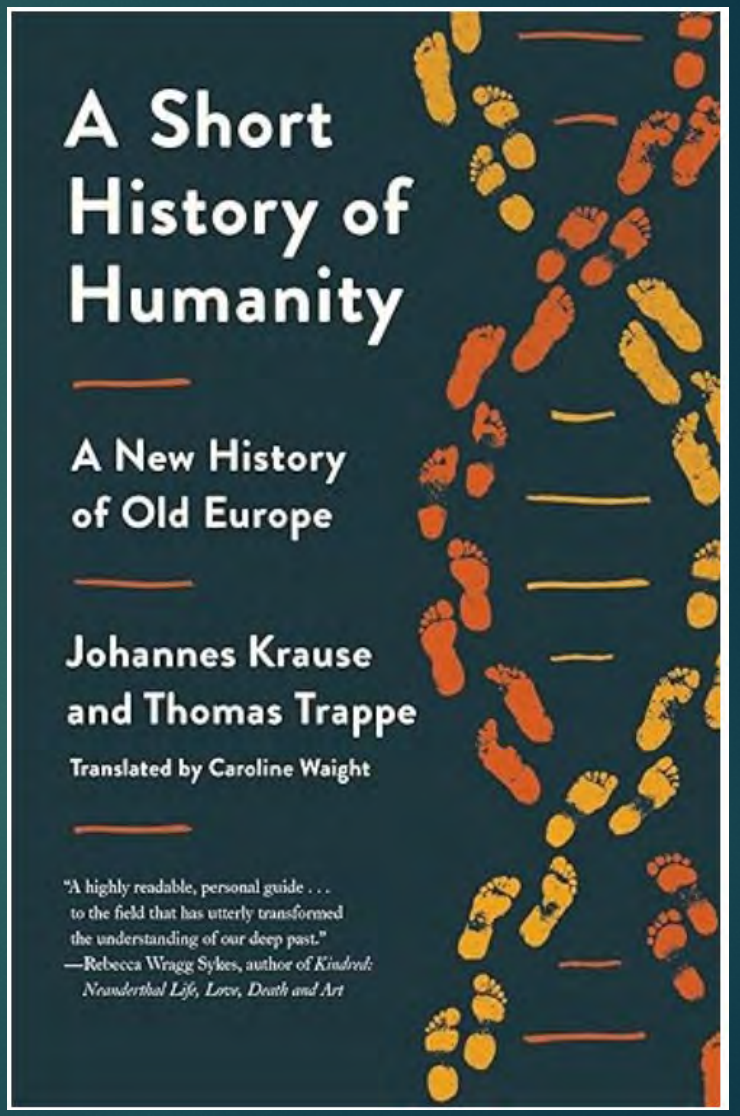


Guess to whom Trump is going to give his tax break?

New Book: Hubris- J. Krause & T. Trappe



Johannes Krause is the director of the Max Planck Institute for Evolutionary Anthropology and a brilliant pioneer in the field of archaeogenetics



A sad end for the Journal of Human Evolution

- A joint statement announces the resignation of the entire editorial board, while disclosing for the first time the use of AI in article production
- In their statement, the editors explained several conflicts with Elsevier that led them to their decision. An important issue seems to have been the level of compensation for the joint editors-in-chief. They also discuss Elsevier's persistent demands to reduce the number of associate editors, failure to give new editorial board members access to the system and the exclusionary cost of open access options for authors.
- The most explosive revelation is in a footnote to the announcement: Elsevier has been using AI tools in its production process that consistently introduce errors that require "extensive author and editor oversight" to correct.

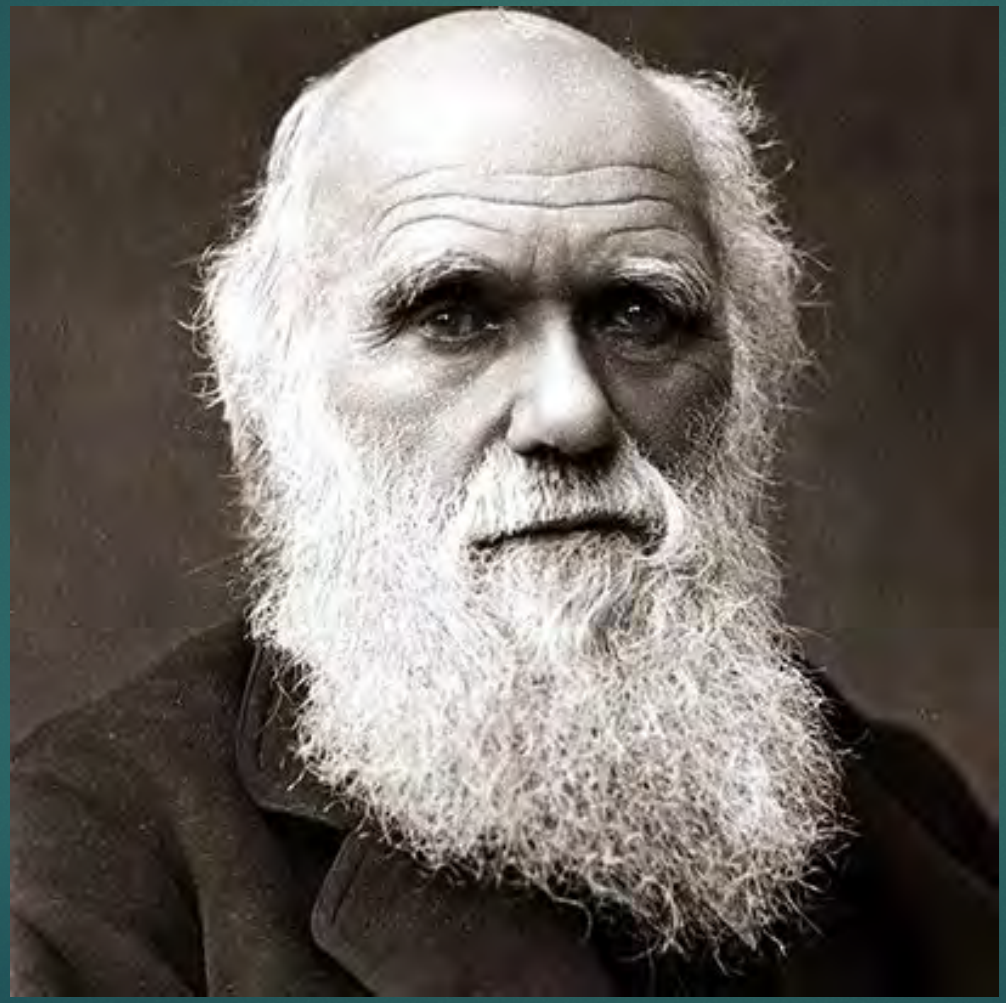
Sexually dimorphic dopaminergic circuits determine sex preference – A. Wei, et al., 2025

- Social interactions shape our everyday lives. Innate preference for social interaction with male or female conspecifics is a critical component in determining survival and reproduction success.
- Wei *et al*. studied same versus opposite sex social interaction in mice, showing that both male and female animals exhibit female social preference in normal conditions but switch to male preference when under survival threat.
- The switch is mediated by activation of specific populations of dopaminergic neurons in the ventral tegmental area (VTA) of the brain. The results identify sex-specific VTA-mediated neuronal circuits critical for determining sex preference.
- First physiological study to prove neural mechanism for socio/sexual preference.

Let’s Play Fossil Skull Guess Who?

The ~50 Most Famous Hominin Skulls

Charles Darwin (1809-1882)

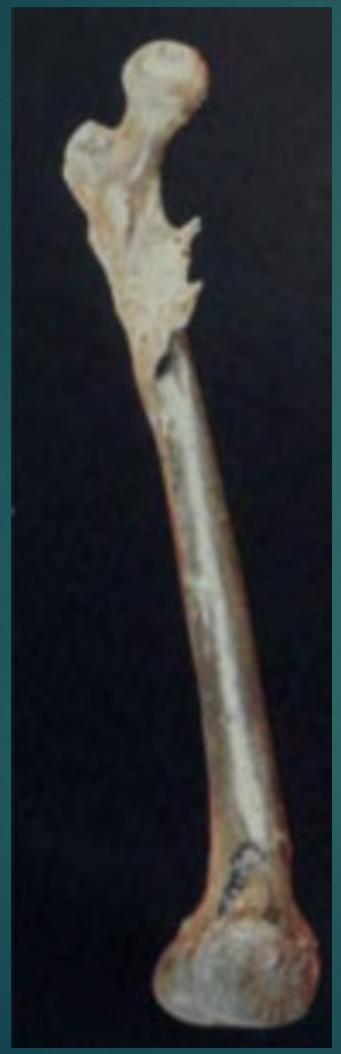


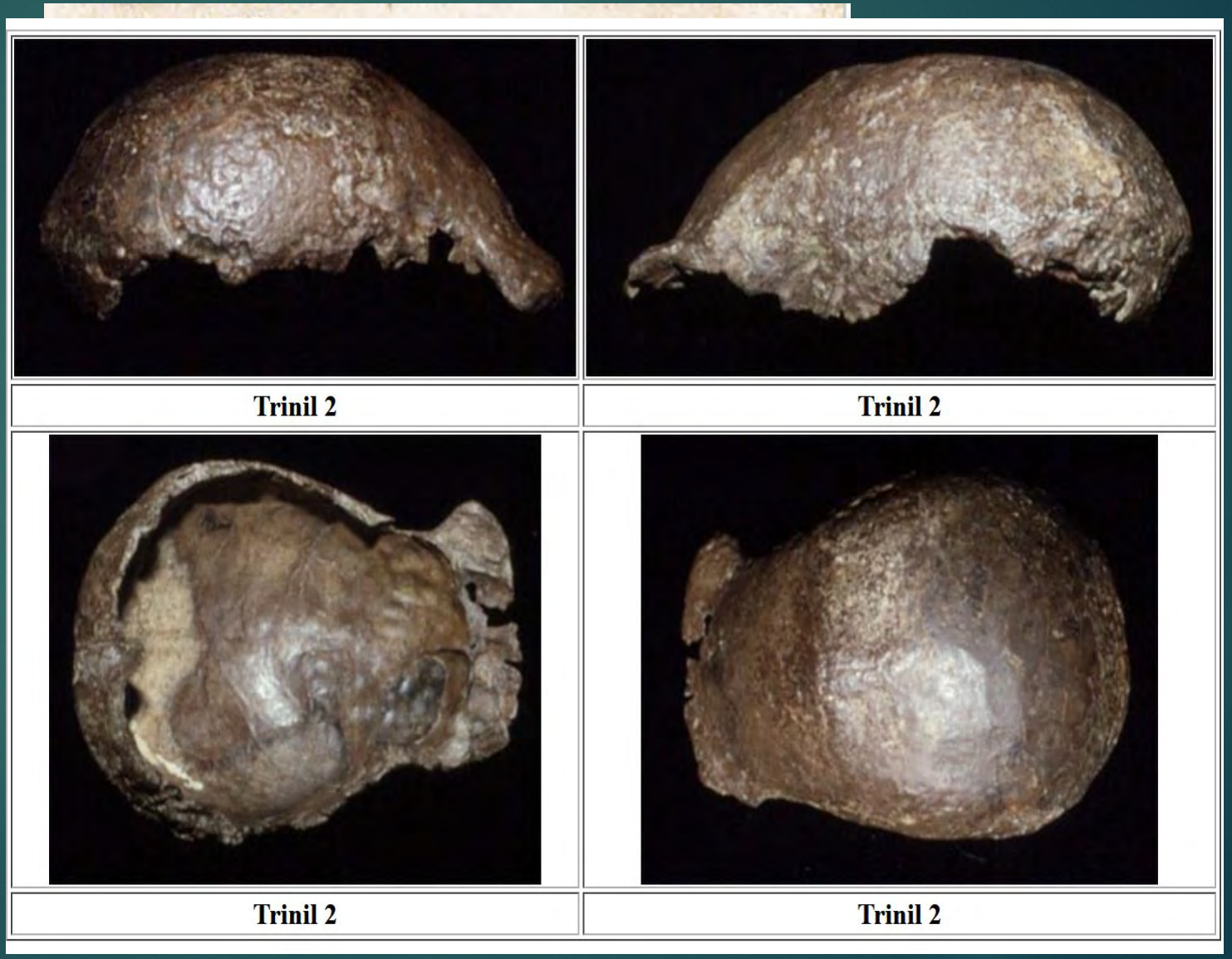
Homo neanderthalensis: Engis 2, Belgium, 1828, 31 Ka; 1st N found

Homo neanderthalensis: Feldhofer 1, 40 Ka, 1856, type specimen, 1st N mtDNA; -ensis = “from this place”

H. neanderthalensis: Gibraltar 1, Forbes Quarry, 40 Ka, 2nd discovered N skull in 1848 – genetically related to the new N Thorin in France; only N fossil Darwin ever touched

Pithecanthropus erectus (now *Homo erectus*): Trinil 2, 900 Ka, Java Man, 1891, E. Dubois





Sahelanthropus tchadensis: 7 Ma, Chad; hominin or hominid ?

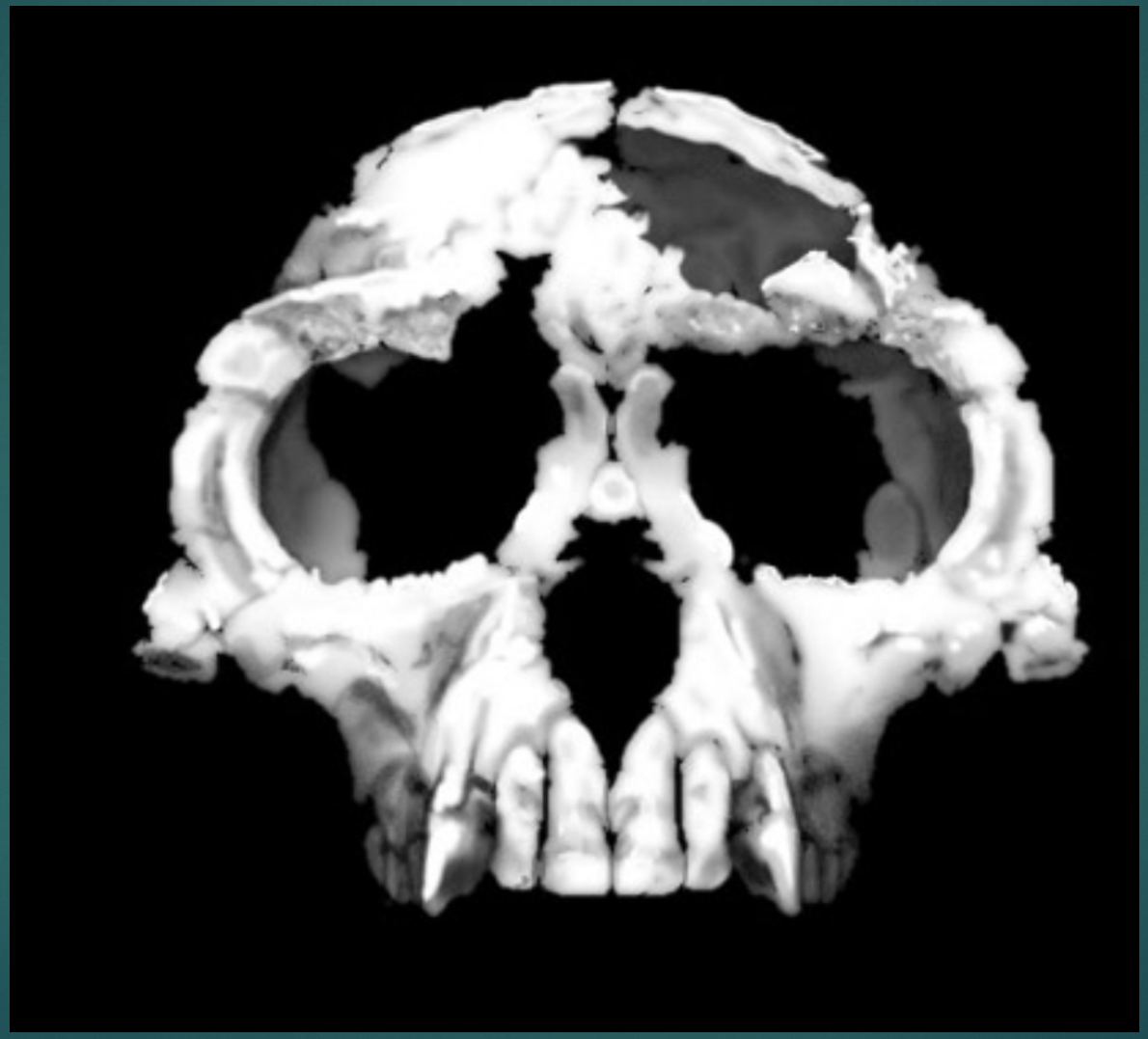
A. africanus: Taung child, 1924, 2.9 Ma, eagle victim

Dean Falk has called it "the most important anthropological fossil of the twentieth century.“

First evidence in favor of Charles Darwin's hypothesis that humanity's origin lay in Africa

Eoanthropus dawsoni: Piltdown Man, 1912 – 500 Ka?; finally in 1953, hoax (620 yo human skull; orangutan jaw, chimp tooth)

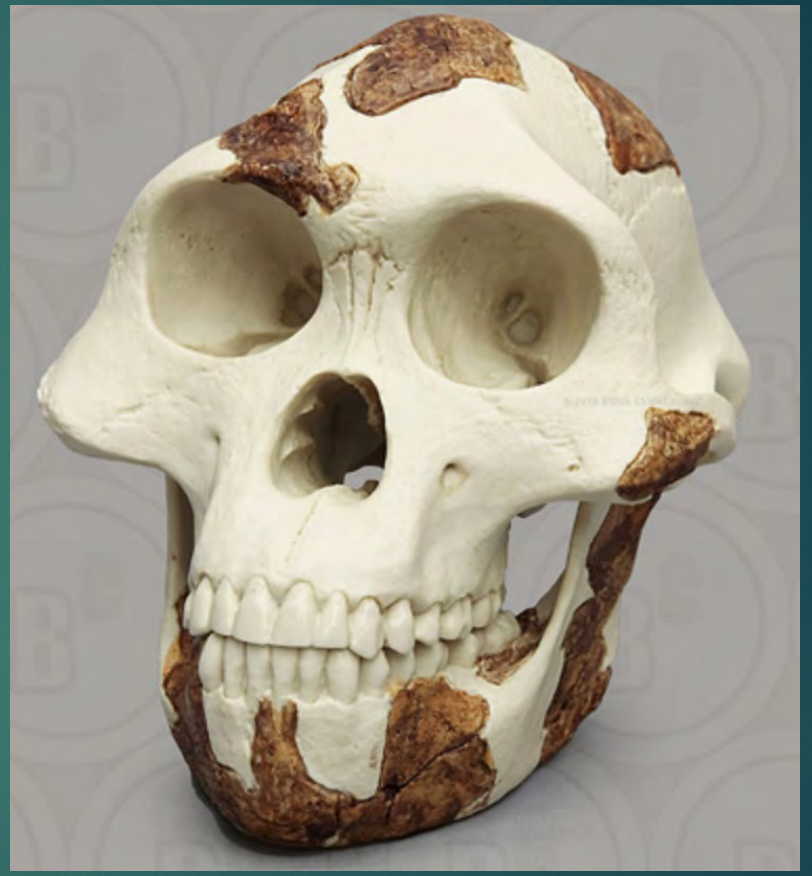
Ardipithecus ramidus: 4.4 Ma; from wooded environment – contradicts savannah hypothesis of bipedalism origin



A. africanus: ST5, Mrs. Ples, 3.7-3.4 Ma, an adolescent male

Kenyanthropus platyops, 3.4 Ma, Lomekwi site, Turkana, Kenya; oldest stone tools, 3.3 Ma

A. afarensis: A.L. 442-2, Hadar, 3 Ma, male & Lucy



A. afarensis: Selam, 3.3 Ma, Dikika, 3 yo

Australopithecus aethiopicus: 2.5 Ma, Black Skull; ancestor of P. boisei?

H. habilis: KNM-ER 1813, 1.9 Ma

Homo rudolfensis (KNM-ER 1470 – 750 cc), 1.9 Ma & *Homo habilis* (KNM-ER 1813 – 510 cc), 1.9 Ma; separate species or sexual dimorphism

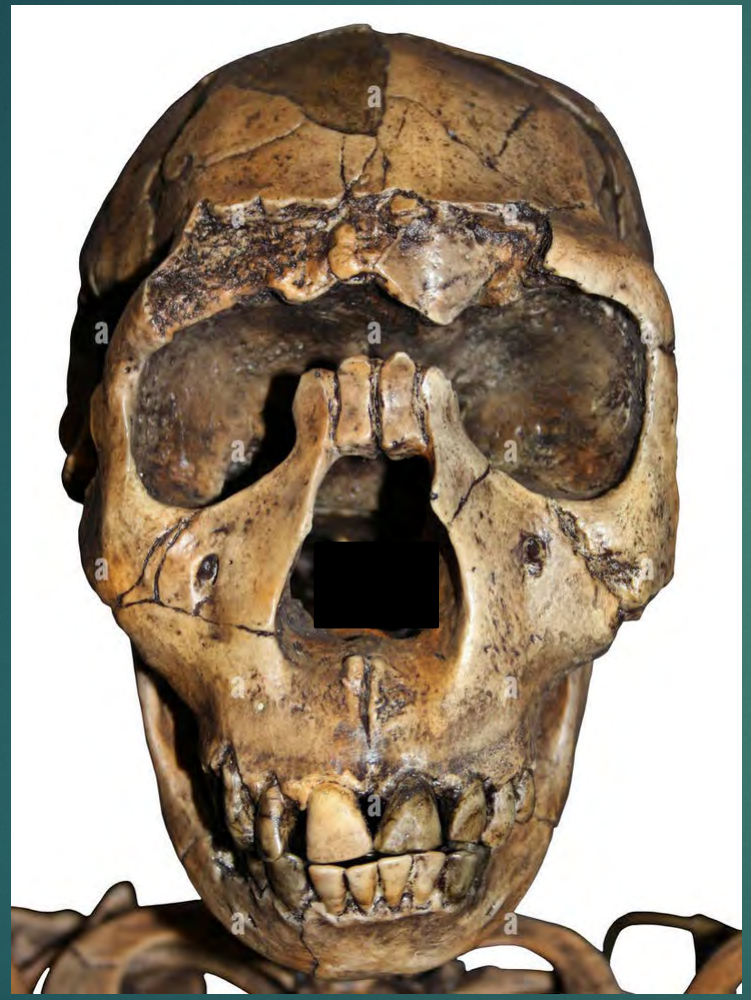
Paranthropus boisei: OH5, Zinj, 1.9 Ma, “toolmaker”?

H. erectus: Dmanisi, 1.9 Ma

A. sediba: Malapa, MH1, 1.9 Ma

Paranthropus robustus: SK48, 1.8 Ma

Homo ergaster: Turkana Boy, 1.6 Ma, 5’3”



H. erectus: Sangiran 17, Java, 1.2 Ma; 1125 cc

Homo antecessor: 1.2 Ma-780 Ka, Atapuerca; flat face – ancestral?; sister species to MH and Ns

H. erectus: Peking man, 770 Ka, Zhoukoudian, China

H. heidelbergensis: Mauer 1 mandible, 600 Ka, holotype

H. heidelbergensis (erectus tautavelensis): Arago, 600-350 Ka

Bodo, Ethiopia, 600 Ka: H. heidelbergensis or bodoensis?

H. erectus: Ceprano, Italy, 450 Ka

Homo neanderthalensis – Skull 5, Sima de los Huesos, 415 Ka, oldest DNA

H. heidelbergensis/neanderthalensis: Steinheim, 350 Ka

H. sapiens: Jebel Irhoud, 315 Ma

H. rhodesiensis: Kabwe/Broken Hill, 300 KA; redating from 600 Ka was significant – no longer H. heidelbergensis, not MH ancestor

Bodo 600 Ka Kabwe 300 Ka Herto 160 Ka

Homo naledi: 300 Ka

Dali, China, 260 Ka

H. neanderthalensis: Saccopastore, Italy, 250 Ka

Homo sapiens: Omo, Ethiopia, 233 Ka; “anatomically MH”

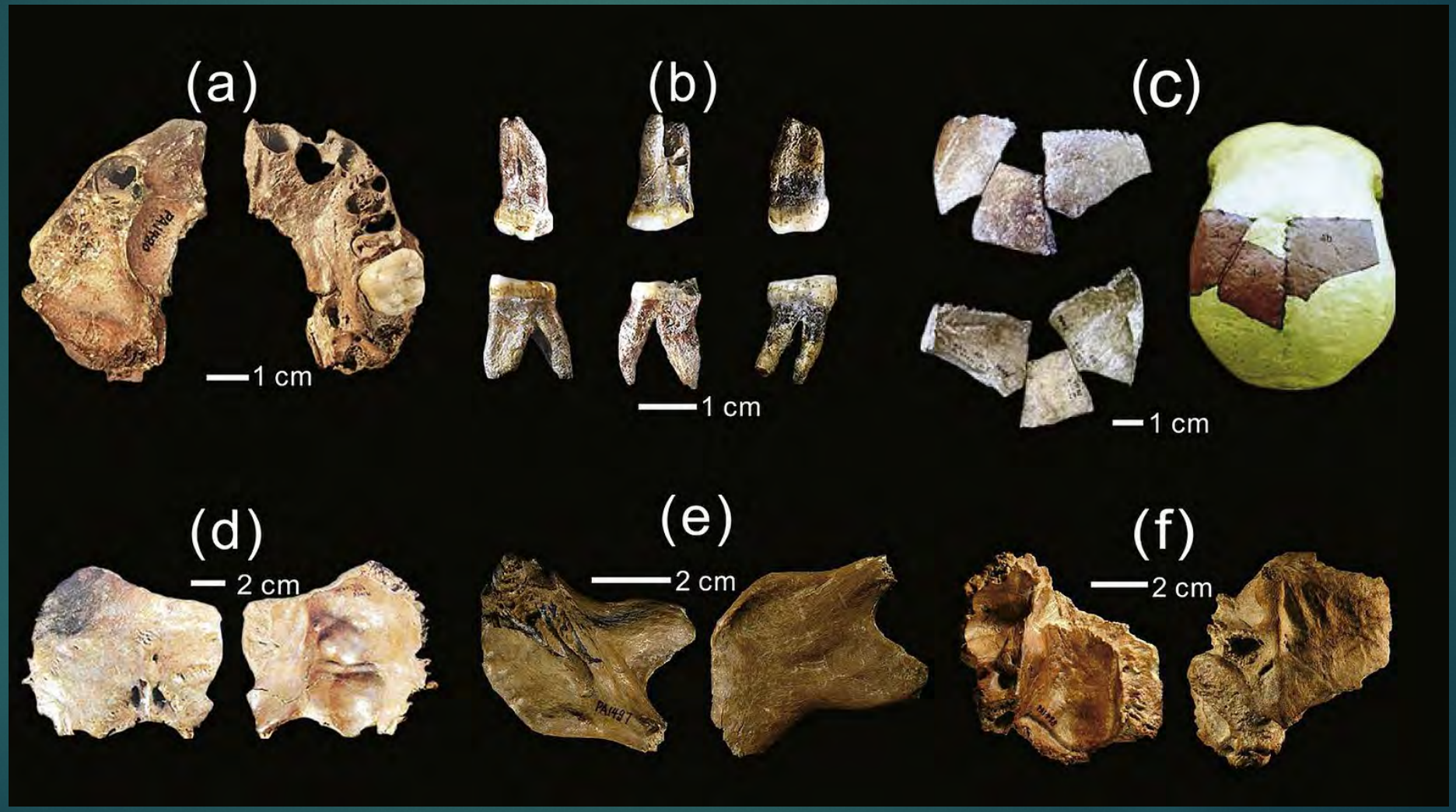
H. heidelbergensis: Petralona, Greece, 200 Ka (700 to 70 Ka)

H. sapiens idaltu (“elder”): Herto, 160 Ka; oldest “globular” MH

H. neanderthalensis: Altamura man, 150 Ka, most complete, oldest N DNA

Dragon Man, Harbin skull, China, 146 Ka

Homo juluensis: “big headed”, Denisovan?



Maba skull: 130 Ka, China: H. heidelbergensis or Denisovan

Homo neanderthalensis: Krapina E, 130 Ka

H. sapiens: Qafzeh, 100 Ka. Levant

H. sapiens: Skhul 5, 100 Ka, Levant

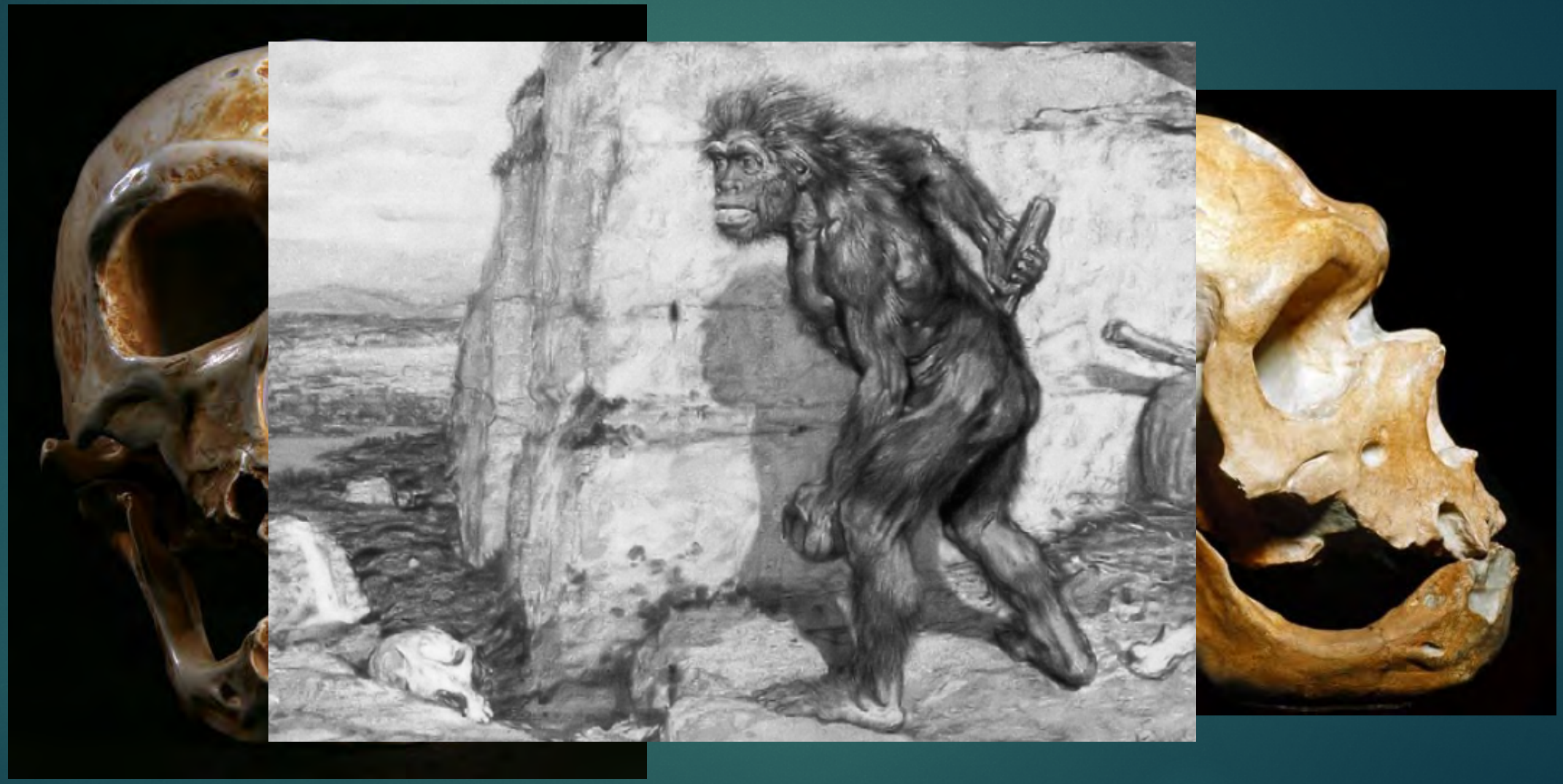
Denny: Denisova 11, 90 Ka, hybrid (N mother; D father)

Shanidar Z: Iraqi, 75 Ka

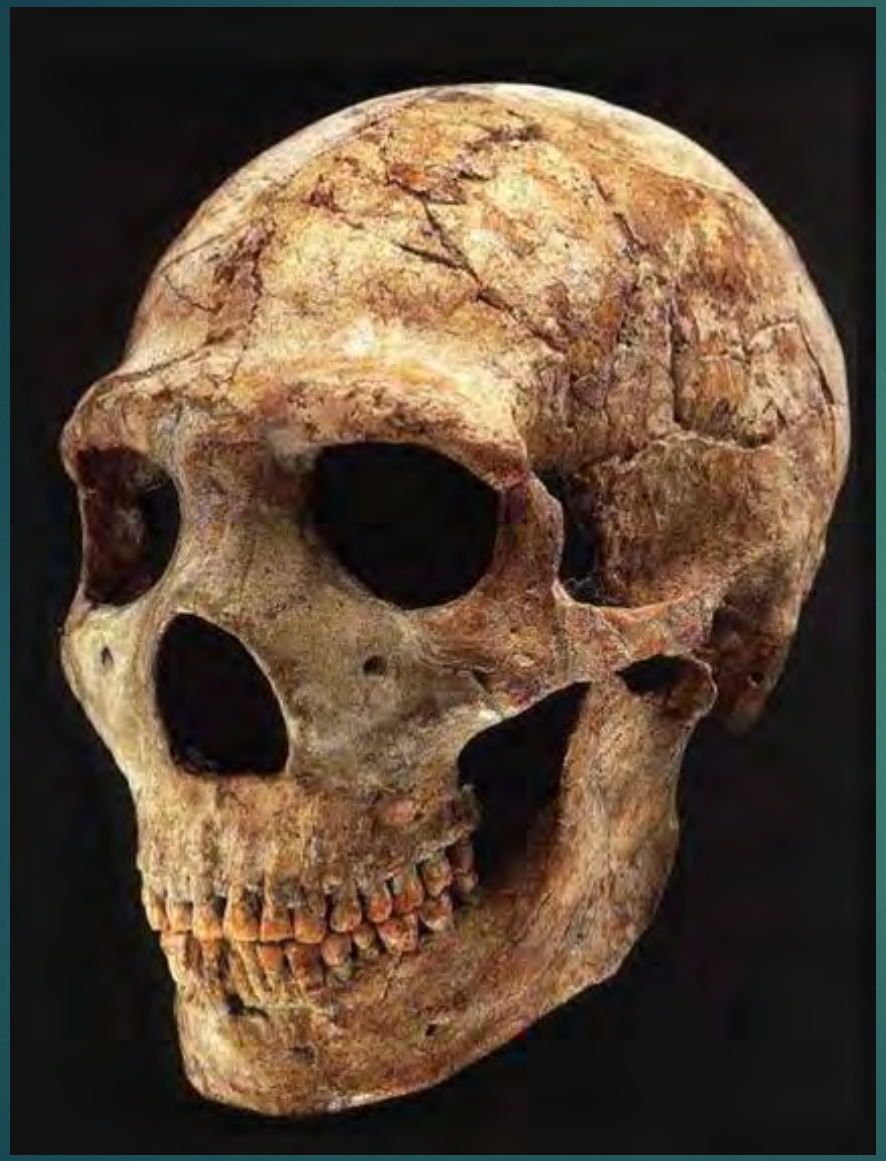
H. neanderthalensis: Shanidar 1, Iraqi, 70 Ka

Homo neanderthalensis: Kebara 2 skeleton, 60 Ka, Israel

H. neanderthalensis: La Chapelle Aux Saints, 60 Ka, subject of 1st incorrect N monograph by Marcellin Boule



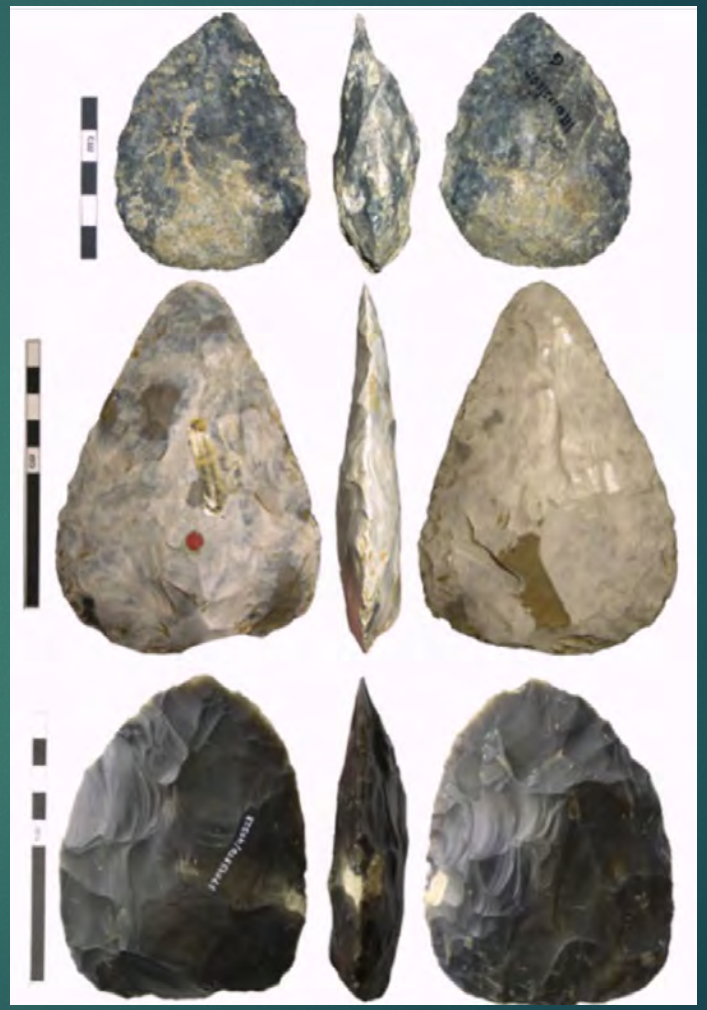
H. neanderthalensis: Amud 1, Israel, 60 Ka, 1736 cc, largest N brain



Homo neanderthalensis: La Ferrassie, France, 54 Ka

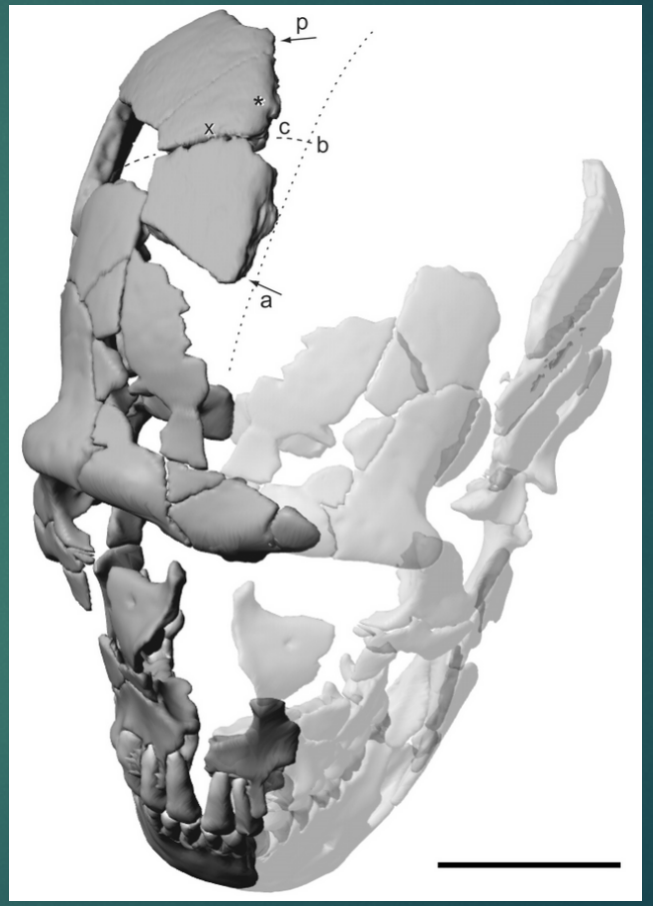
Homo floresiensis – Flo, 50 Ka, the Hobbit, 3’ tall

H. neanderthalensis: La Moustier, 45 Ka, “Mousterian” technology



H. sapiens: Oase 2 – MH-N hybrid, 42 Ka, N = 4-6 generations back

H. neanderthalensis: Saint-Césaire, 41 Ka; Chatelperronian debate



Homo neanderthalensis: Devil’s Tower, Gibraltar 2, 42 Ka, 5 yo male

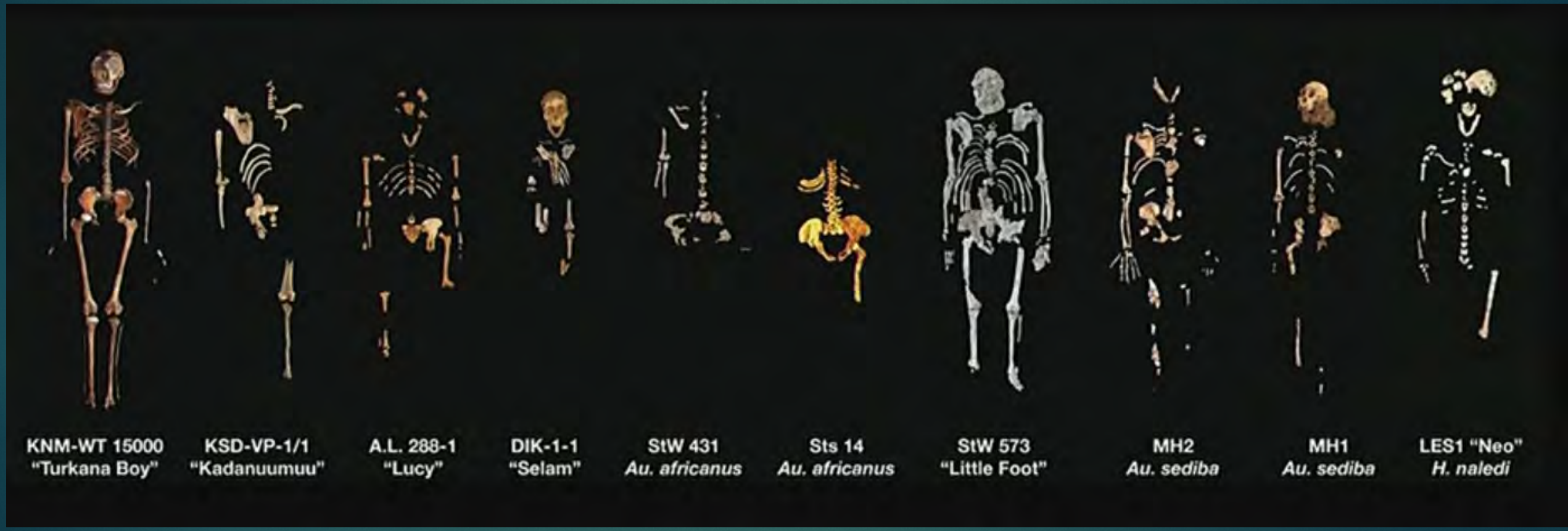
Teshik-Tash N 9 yo child, Uzbekistan, undated

Most famous pinkie in paleontology: Homo sp. Altai: Denisovan hominin (X woman), 40 Ka; 1st species discovery by DNA

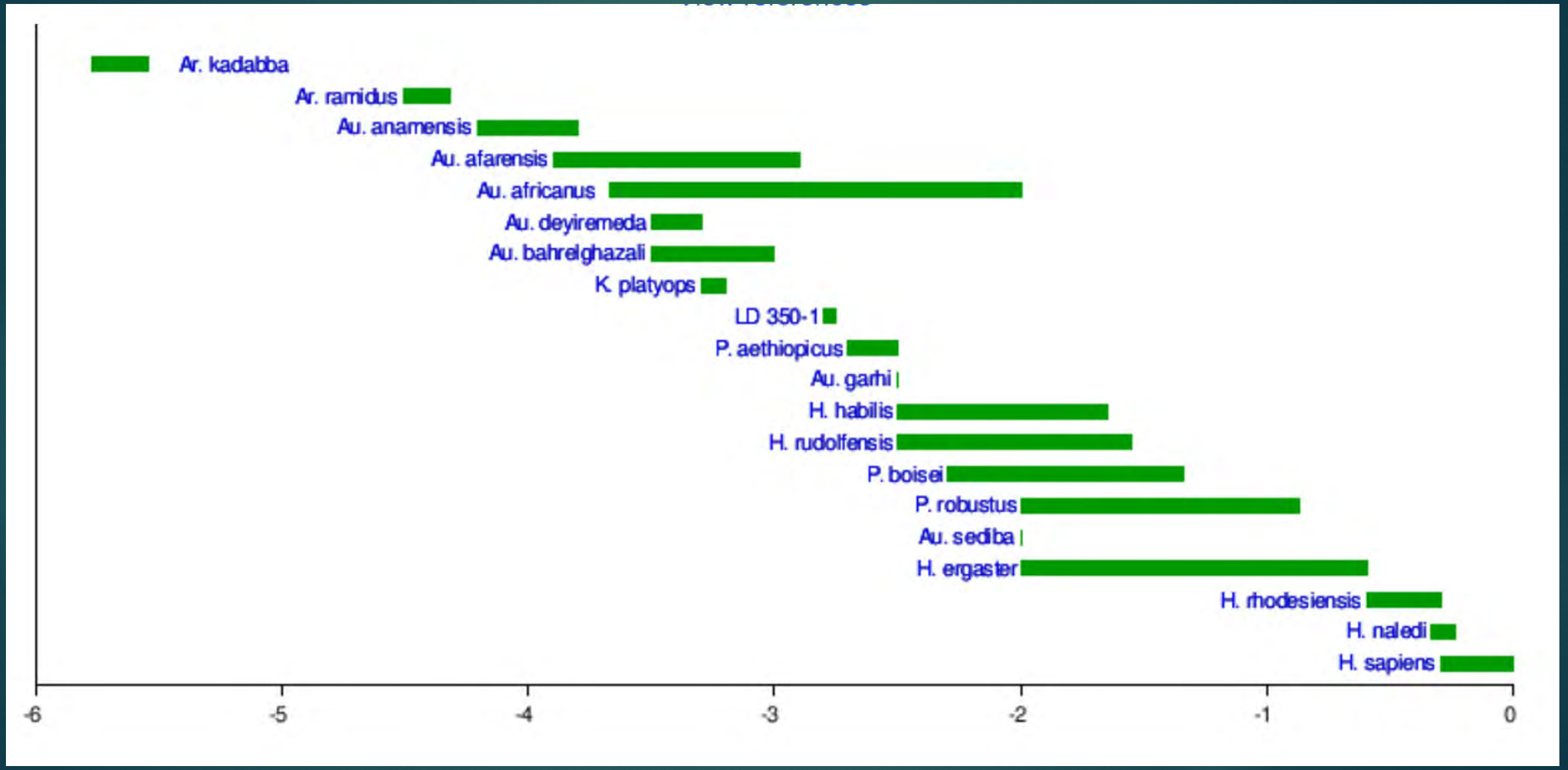
Homo sapiens: Cro-Magnon 1, France, 33 Ka

Skull variation in H. sapiens

All of the complete skeletons of early hominins



Origins


Ar. kadabba
Ar. ramidus
Au. anamensis
Au. afarensis
Au. africanus
Au. deyiremeda
Au. bahrelghazali
K. platyops
LD 350-1
P. aethiopicus
Au. garhi
H. habilis
H. rudolfensis
P. boisei
P. robustus
Au. sediba
H. ergaster
H. rhodesiensis
H. naledi
H. sapiens
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-4
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