



Vor den Australopithecinen

Klima und die Entstehung von Orrorin, Sahelanthropus und Ardipithecus

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Seminar: Paläoklima und Mensch
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PD Dr. Daniel Richter



Gliederung

- 1 Einführung
- 2 Sahelanthropus tchadensis
- 3 Orrorin tugenensis
- 4 Ardipithecus ramidus
- 5 Bäume und Verwandtschaften

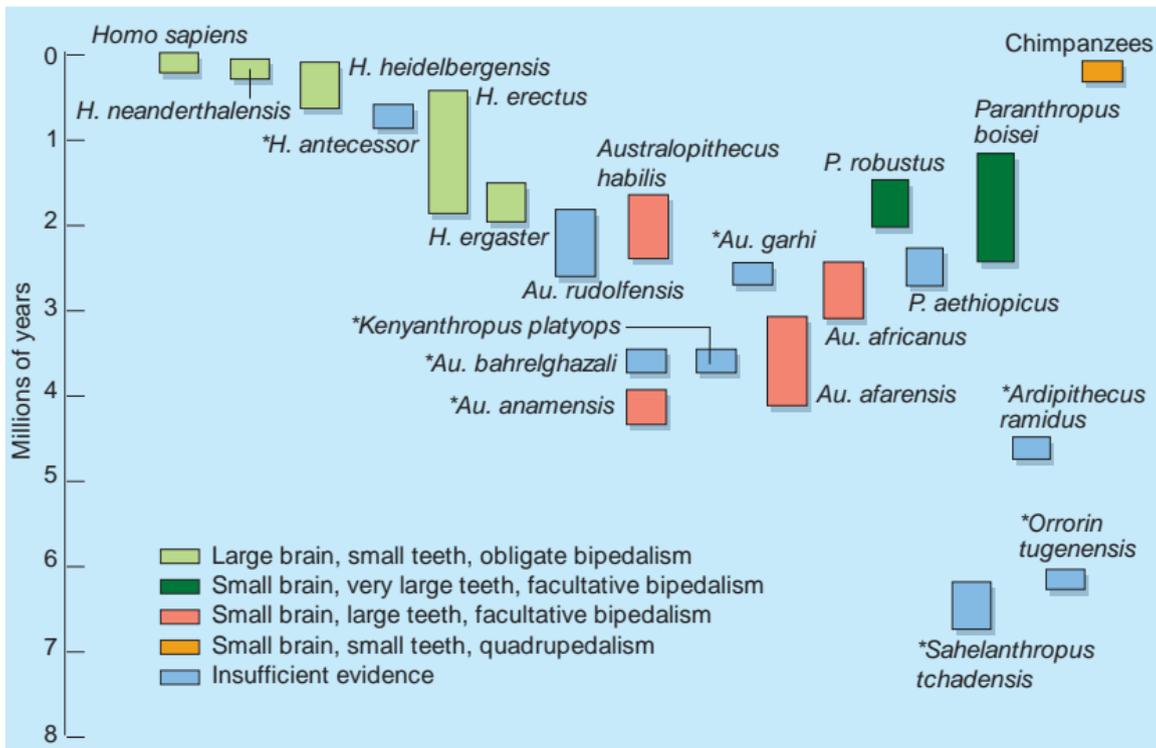


Einführung

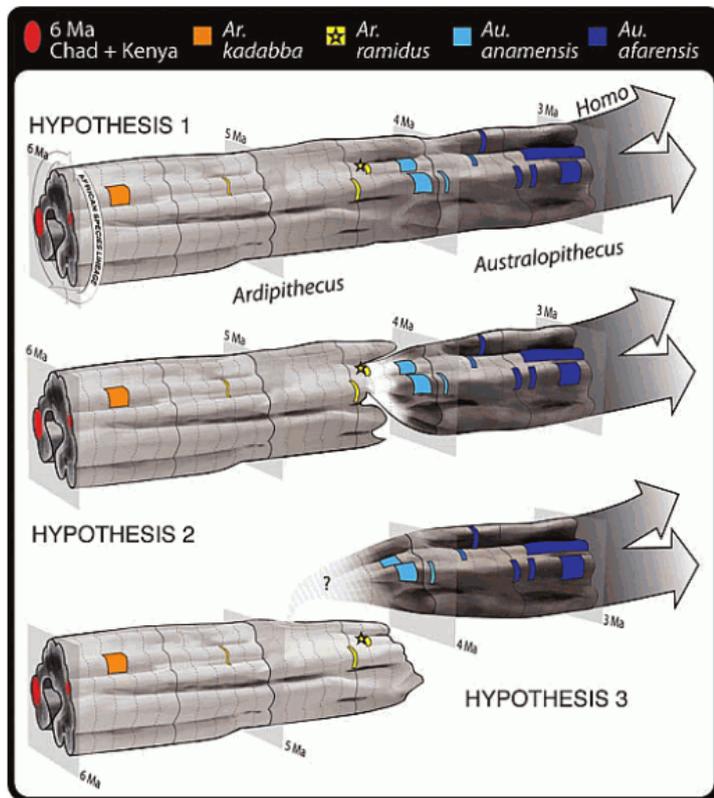
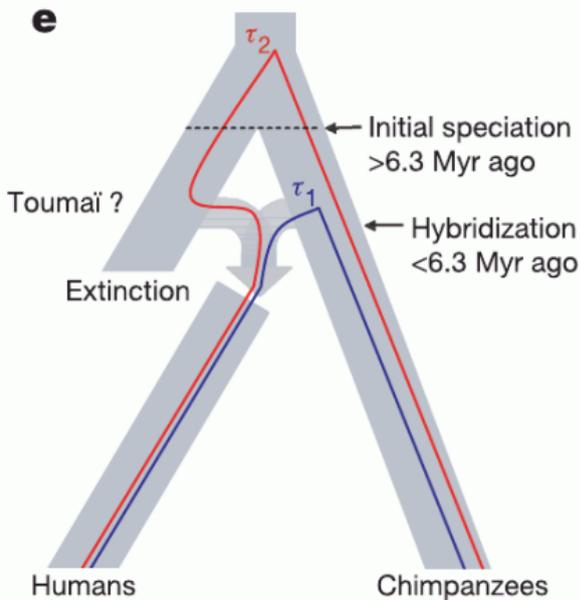
- 1 Einführung**
Vom Fossil zum Stammbaum
Fundstellen
- 2 Sahelanthropus tchadensis
- 3 Orrorin tugenensis
- 4 Ardipithecus ramidus
- 5 Bäume und Verwandtschaften



Übersicht der Homininenfossilien

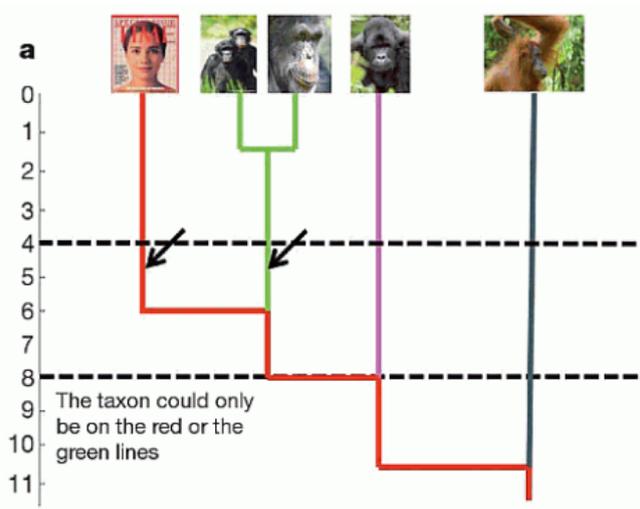


Entwicklungslinien



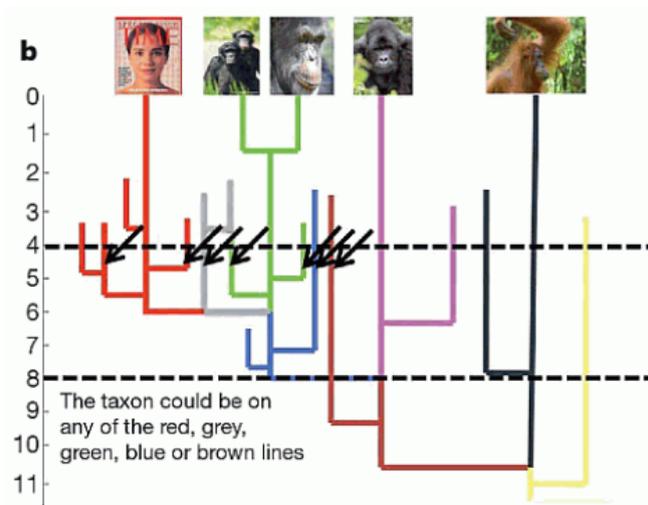
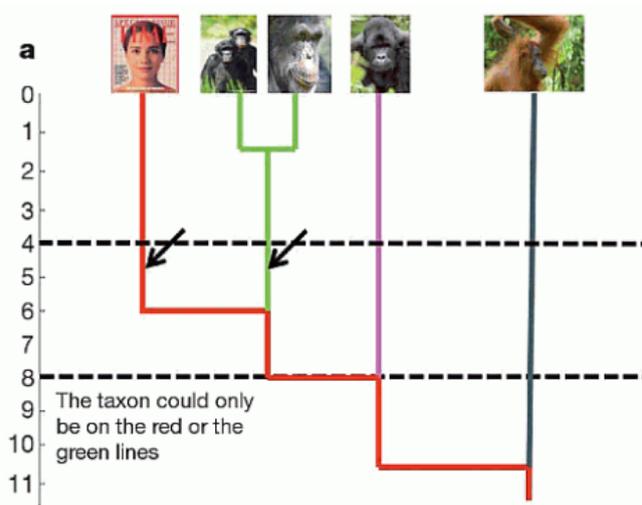


Wohin gehört das Fossil

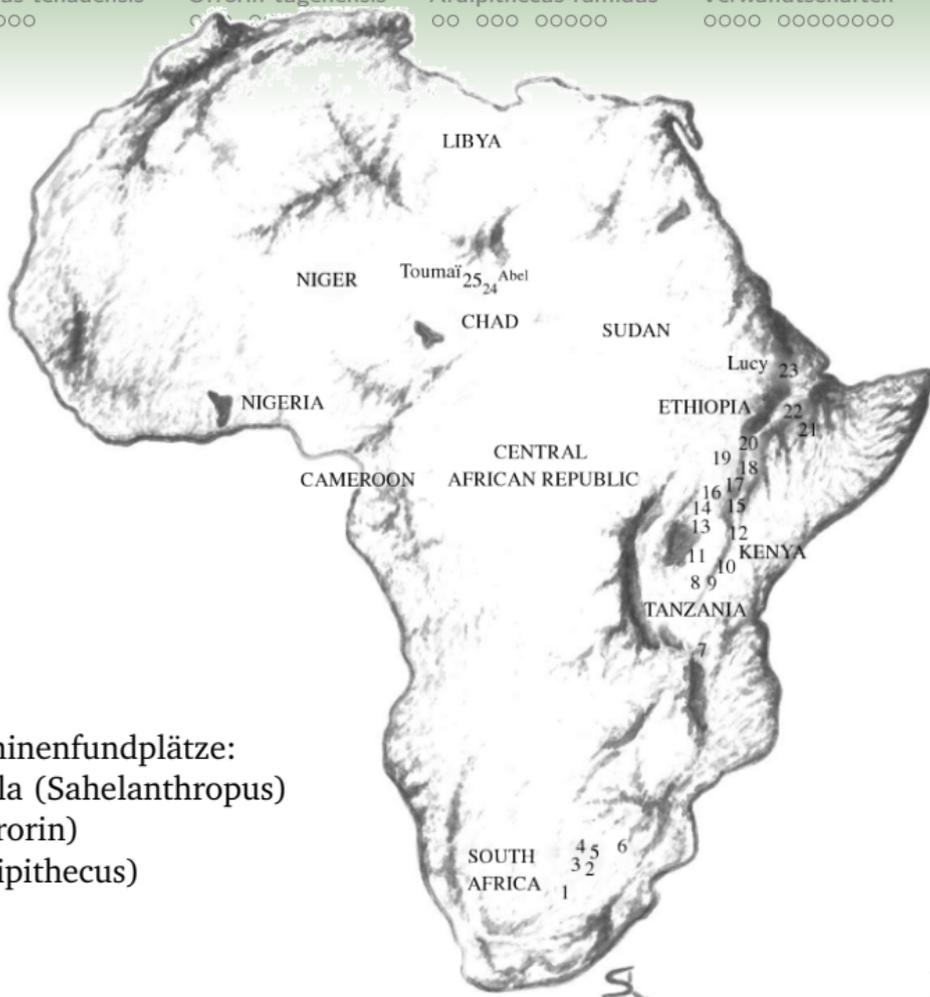




Wohin gehört das Fossil



Fundstellen



Wichtige Homininenfundplätze:
 25 Toros-Menella (Sahelanthropus)
 11 Lukeino (Orrorin)
 22 Aramis (Ardipithecus)
 Br10.



Sahelanthropus tchadensis

① Einführung

② Sahelanthropus tchadensis

Fundsituation

Datierung, Habitat und Umwelt

Rekonstruktion und Deutung

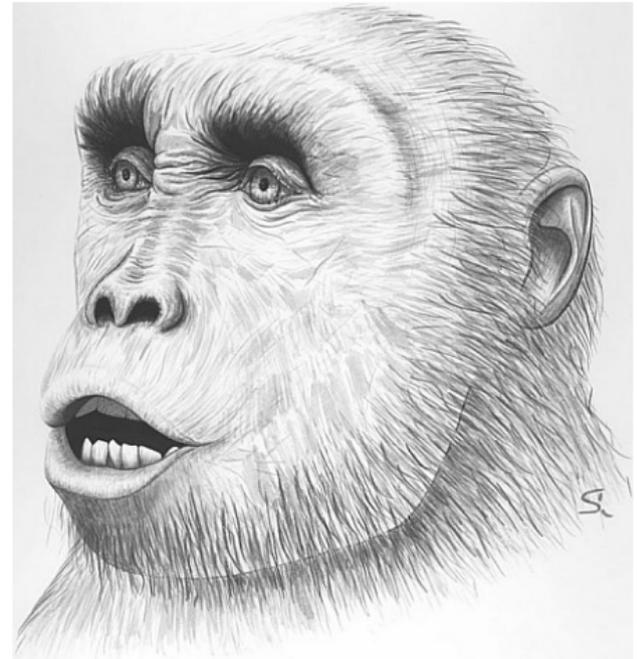
③ Orrorin tugenensis

④ Ardipithecus ramidus

⑤ Bäume und Verwandtschaften



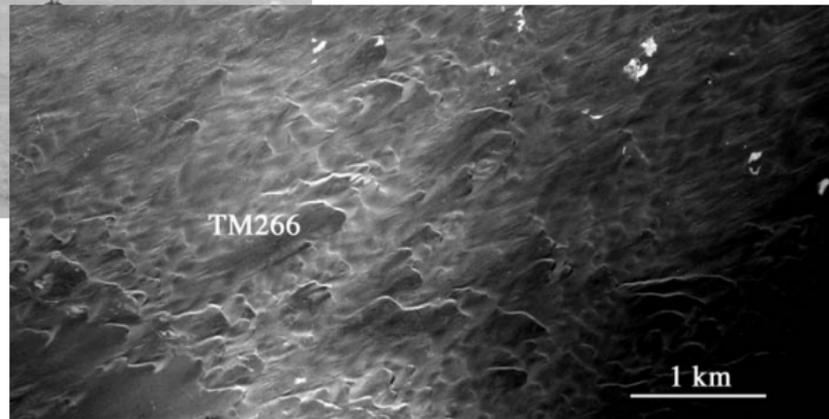
Das Fossil und seine Rekonstruktion





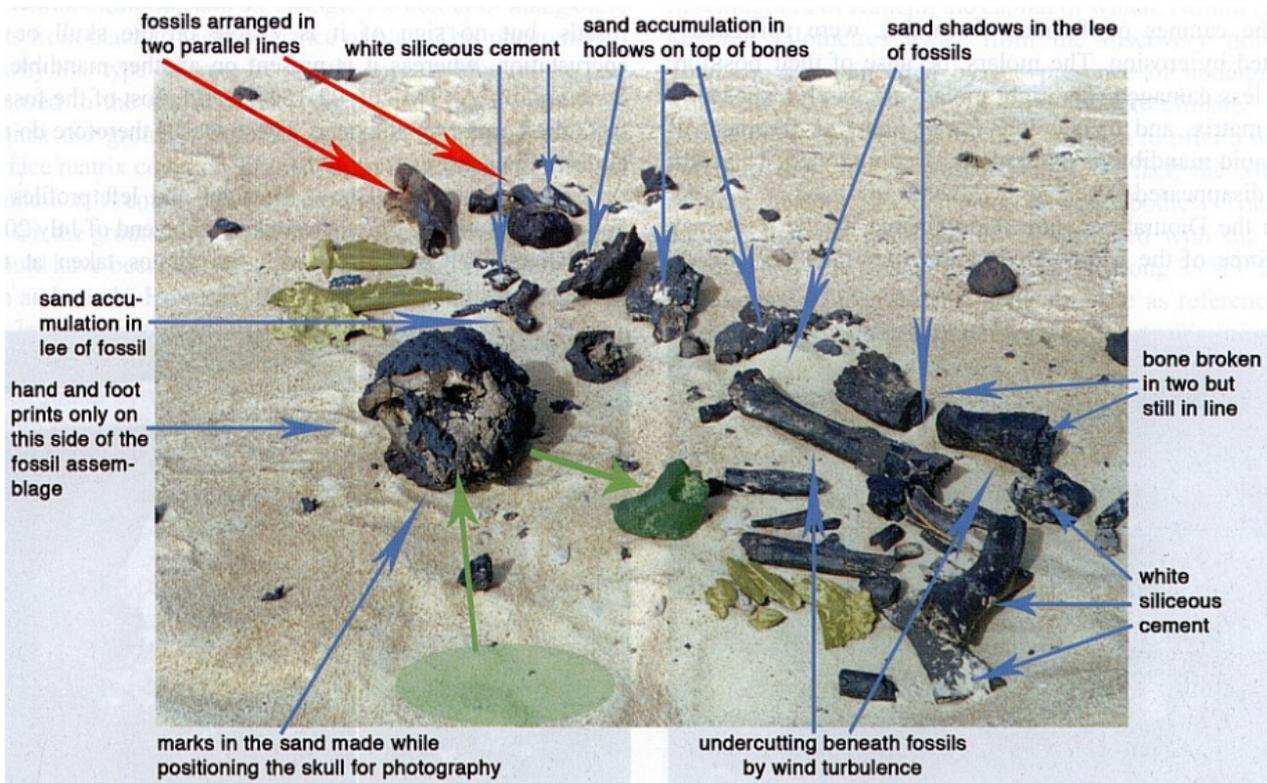
Fundsituation

Das Umfeld





Die Fundsituation





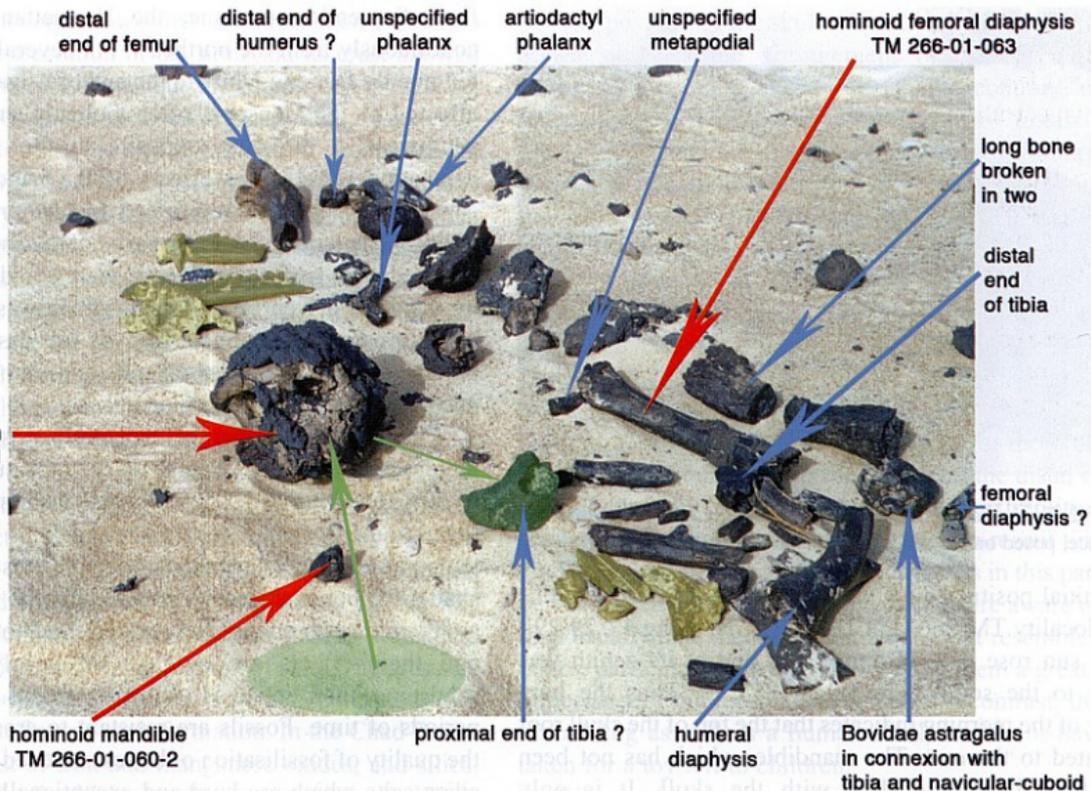
Der Schädel in Fundlage





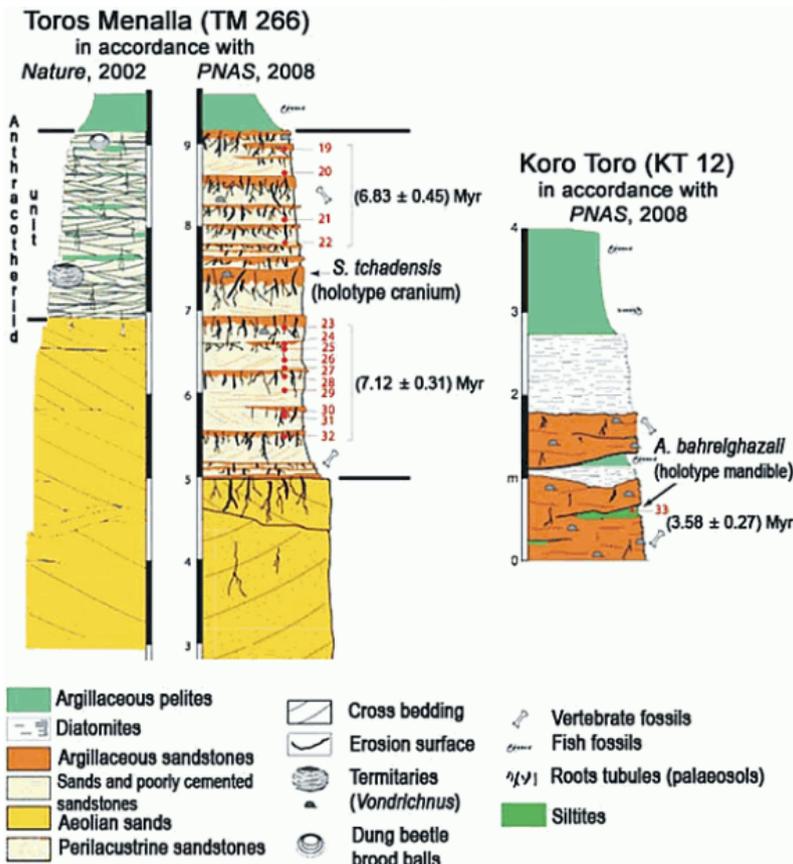
Fundsituation

Der Befund



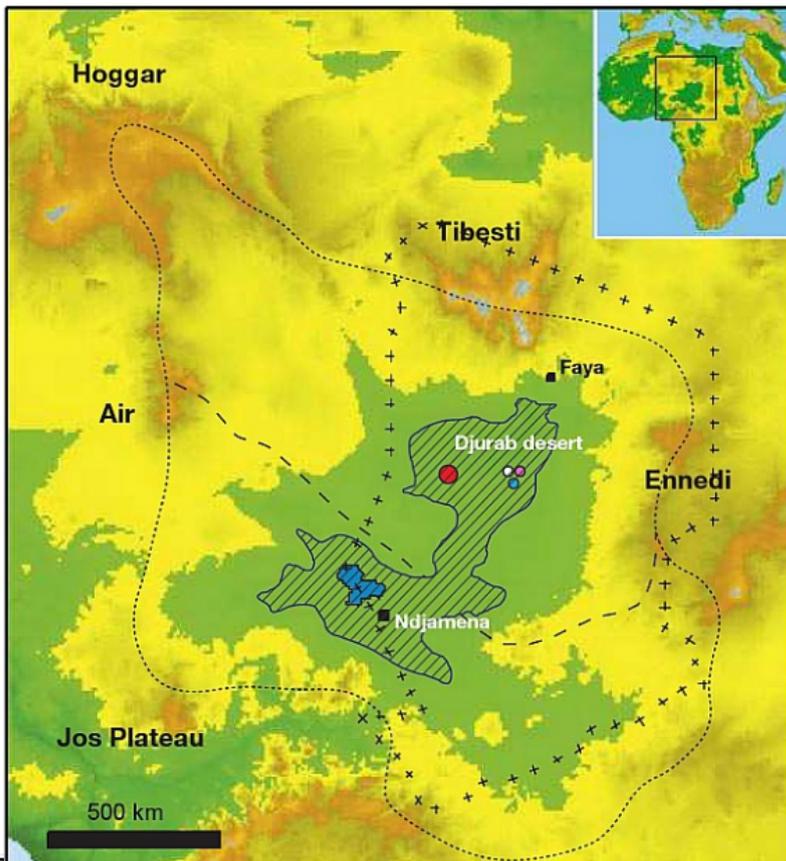


Datierung der Fundschicht über $^{10}\text{Be}/^9\text{Be}$





Klima und Umwelt im Pliozän



Puntlinie:

gesamtes miozänes Chad-Bassin
gestrichelt:

holozäne Maximalausdehnung
des Lake Mega-Chad

blau: heutiger Chadsee

rot: die Fundstelle TM 266
Vi02.



Rekonstruktion und Entzerrung



a

b



c



d

5 cm





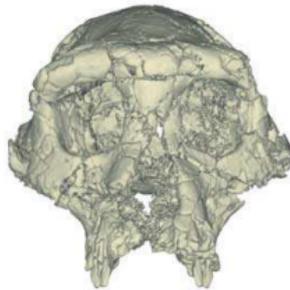
Rekonstruktion und Entzerrung



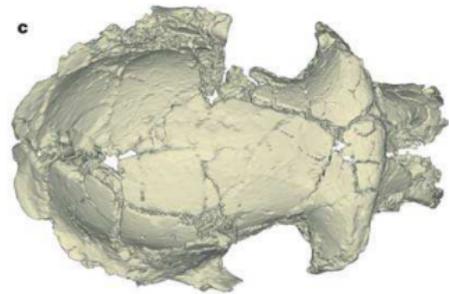
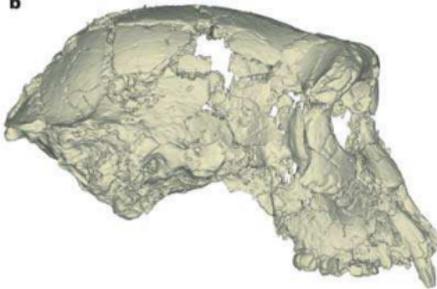
a



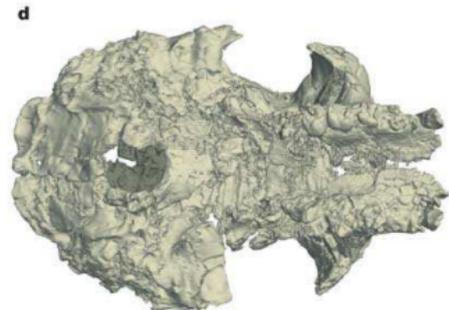
a



b



c

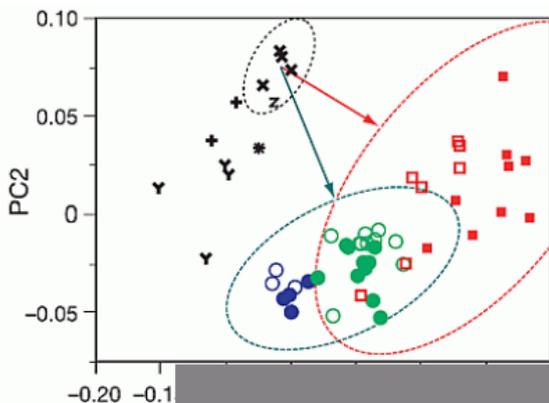


d





Phänotypische Ähnlichkeit



rote Quadrate: Gorilla

Kreise: Pan

grün: troglodytes, blau: paniscus

X: TM 266 Varianten

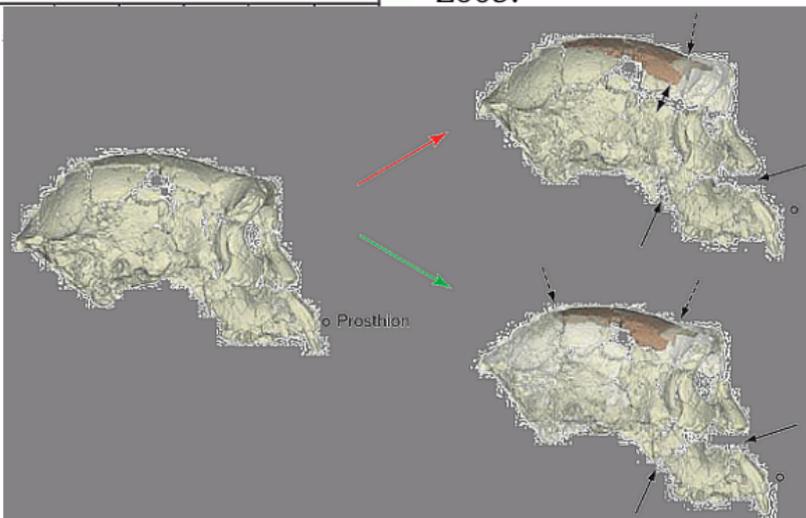
Y: fossiler Homo

Z: Au. africanus

*: Au. afarensis

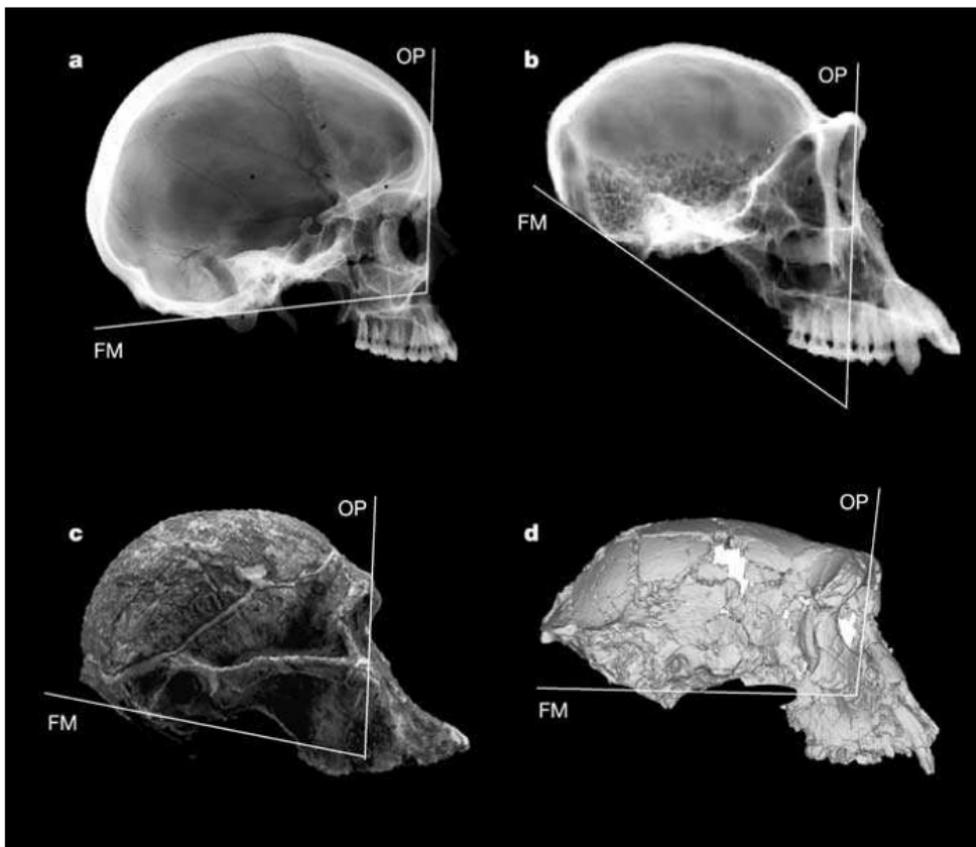
+ : Paranthropus

Zo05.





Sicht- und Körperachse



- a Homo sapiens
- b Pan troglodytes
- c Au. africanus
- d TM 266 Zo05.



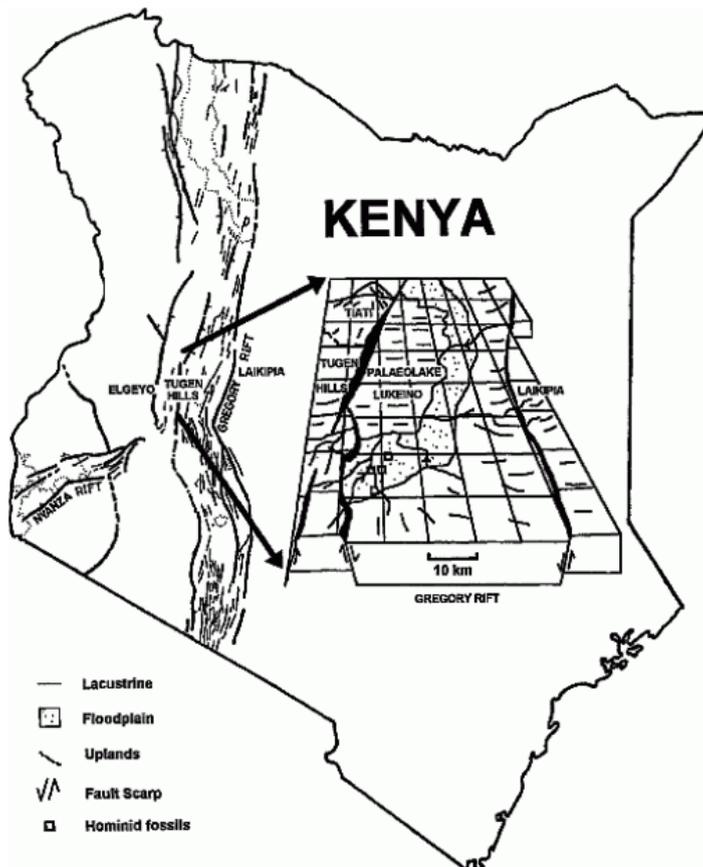
Orrorin tugenensis

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- 3 Orrorin tugenensis**
Fundmaterial und Herkunft
Vergleich und Interpretation
- 4 Ardipithecus ramidus
- 5 Bäume und Verwandtschaften



Fundmaterial und Herkunft

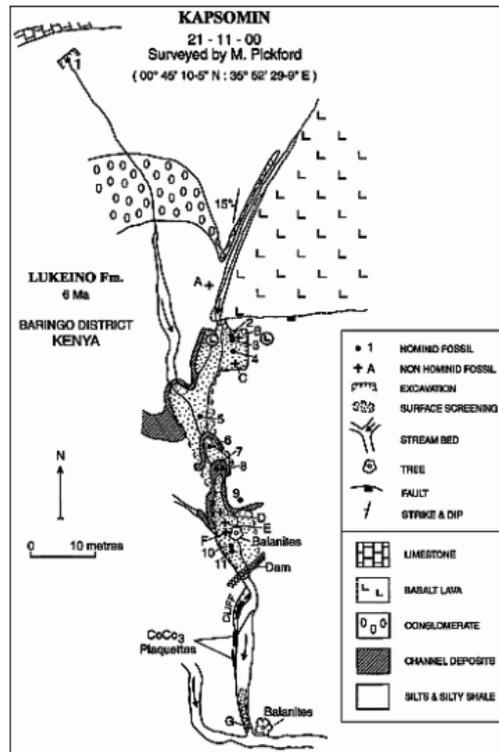
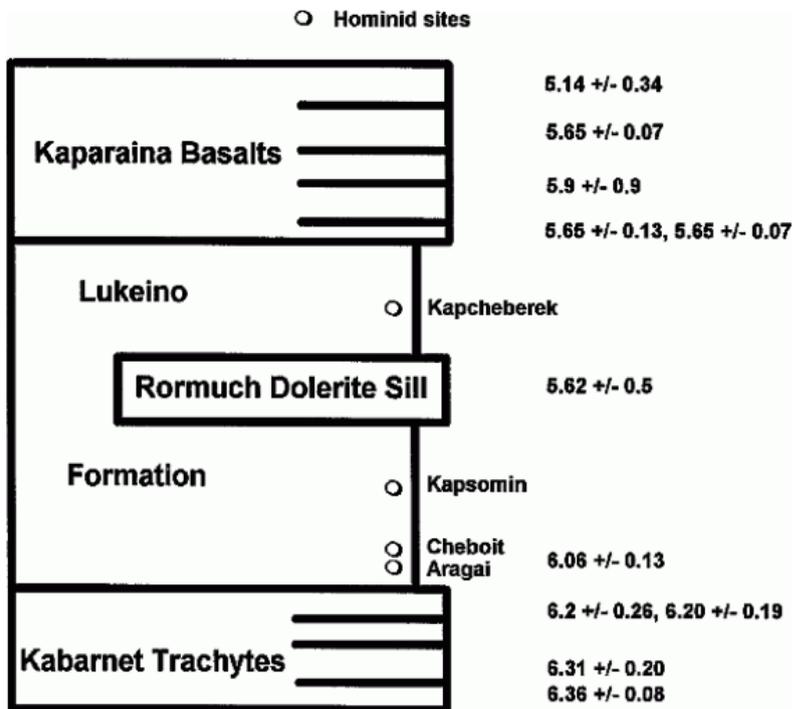
Der Lukeino Paläosee in Kenia





Fundmaterial und Herkunft

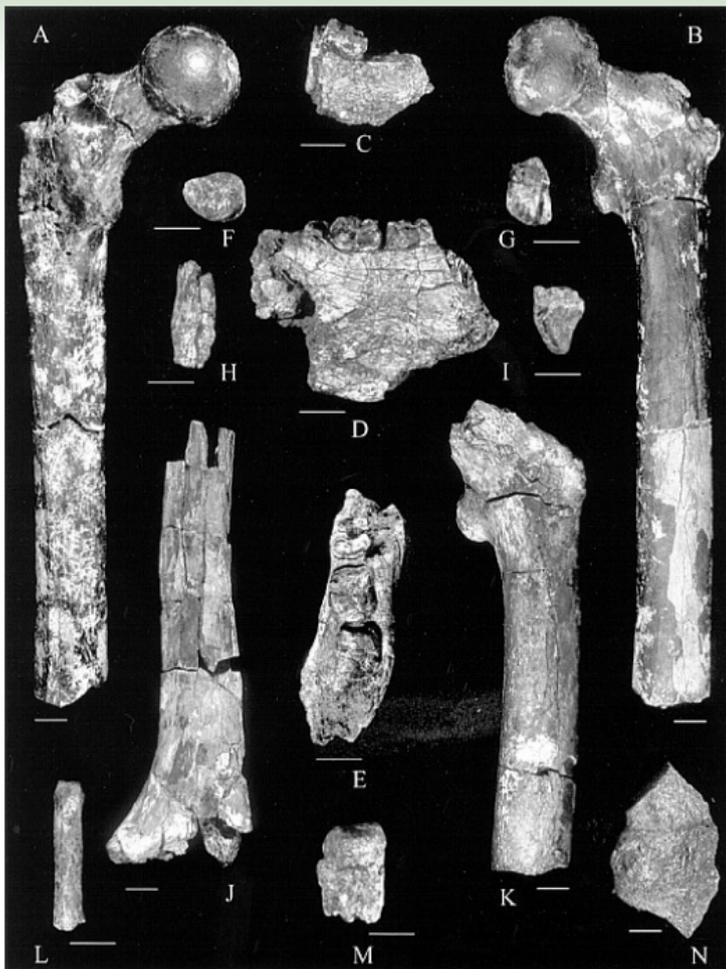
Fundverteilung in der Lukeino-Formation





Fundmaterial und Herkunft

Die Funde





Der Femur im Vergleich

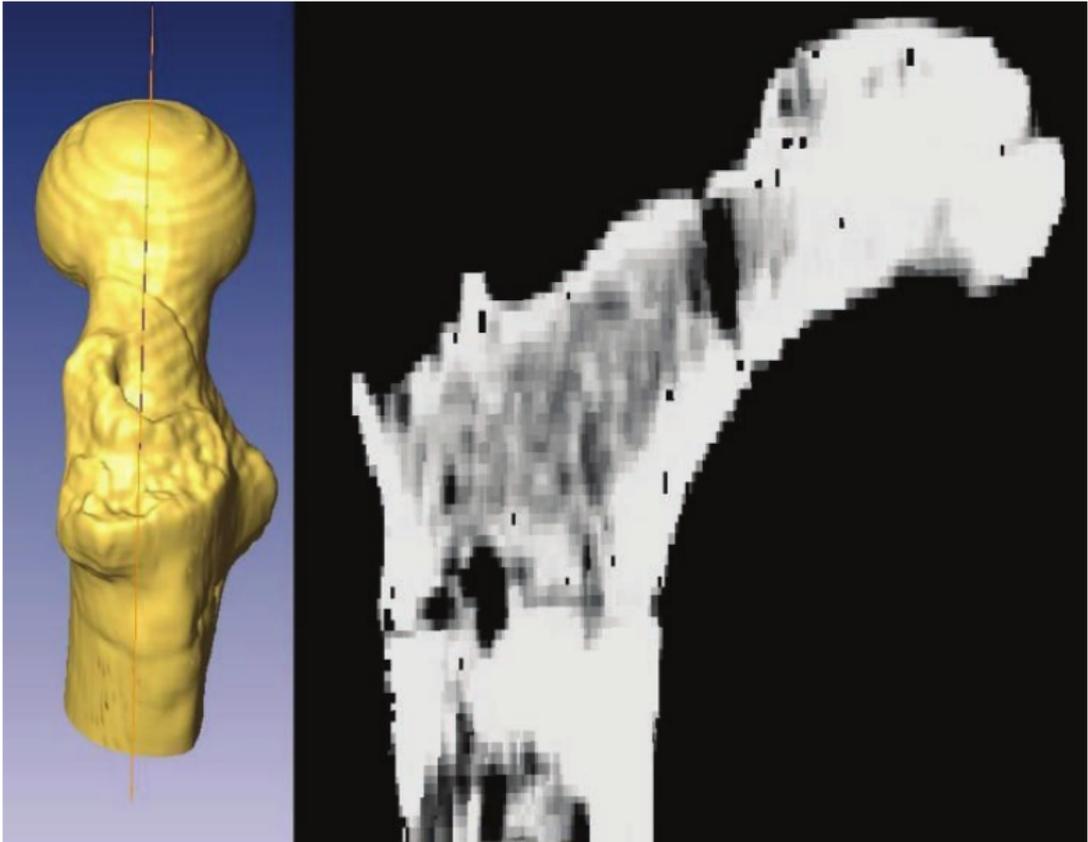


Der Femur des *Orrorin tugenensis* (B) im Vergleich zu rezenten *Pan troglodytes* (A) und *Homo sapiens* (E) und fossilen *Paranthropus* (C,D,F), *Australopithecus afarensis* (E) und frühen *Homo* (G). Maßstab: 2 cm Ri08.



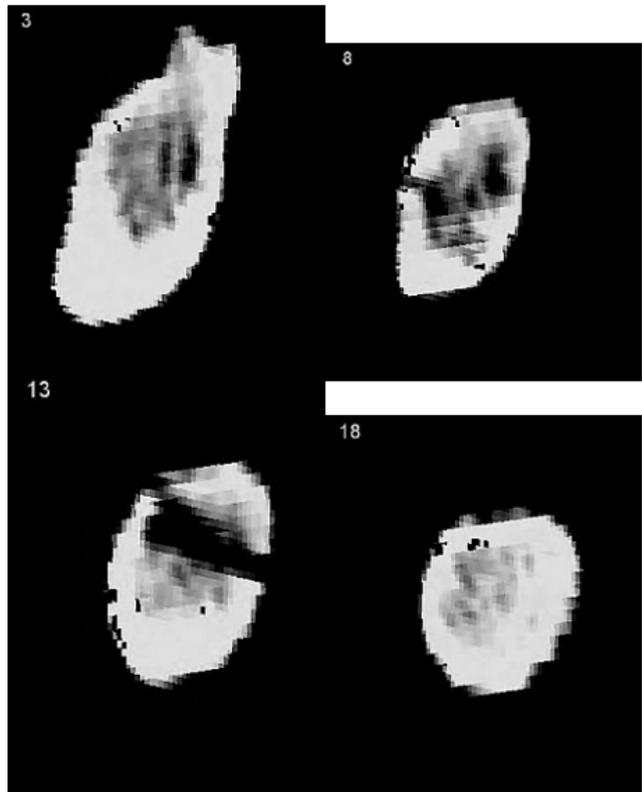
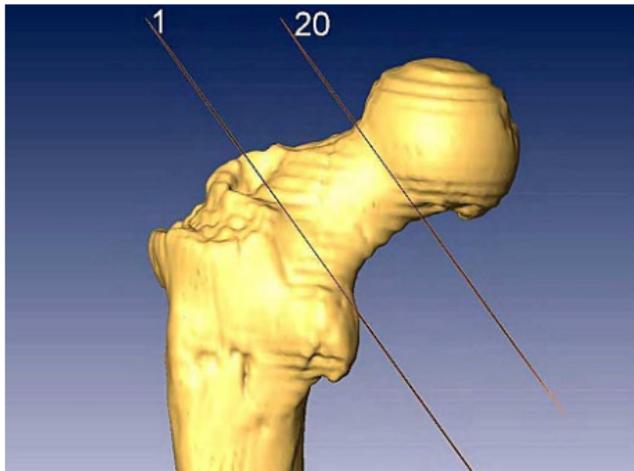
Vergleich und Interpretation

Tomographie des Femurkopfes





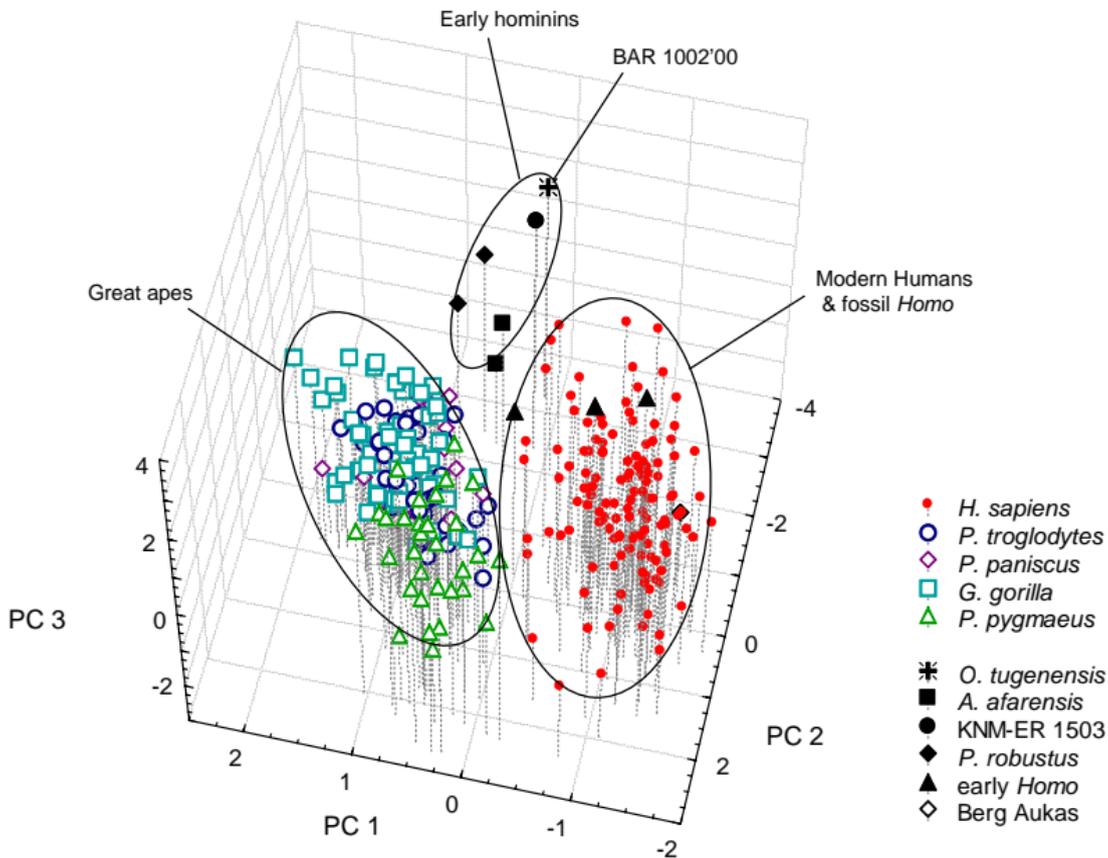
Tomographie des Femurkopfes





Vergleich und Interpretation

Phänotypische Ähnlichkeit



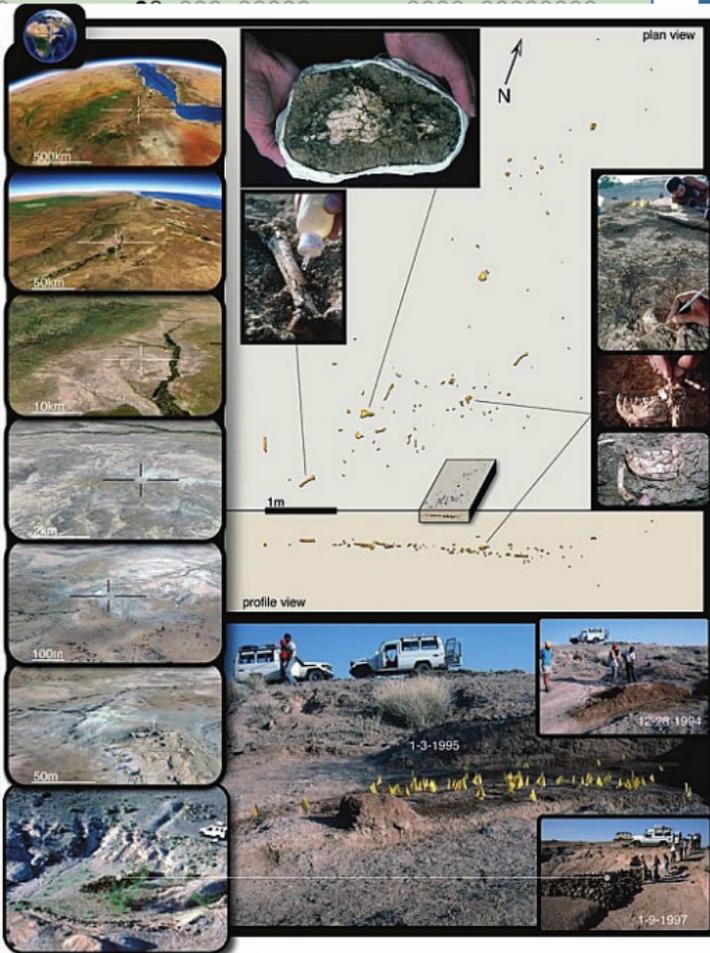
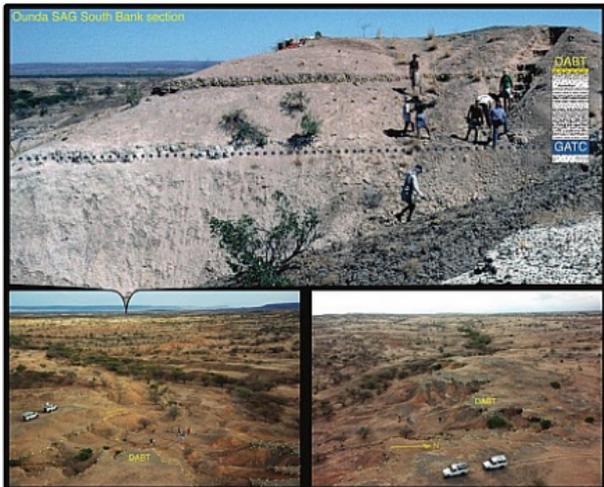


Ardipithecus ramidus

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- 3 Orrorin tugenensis
- 4 Ardipithecus ramidus**
 - Fundmaterial und Herkunft
 - Umwelt und Klima
 - Rekonstruktion und Deutung
- 5 Bäume und Verwandtschaften

Fundmaterial und Herkunft

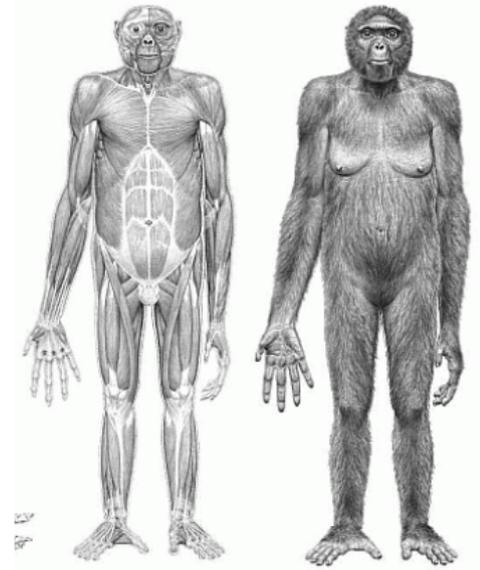
Die Fundstelle





Fundmaterial und Herkunft

Der Fund

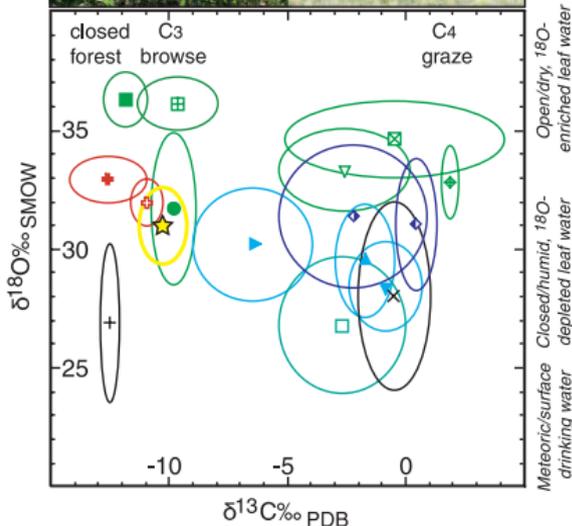




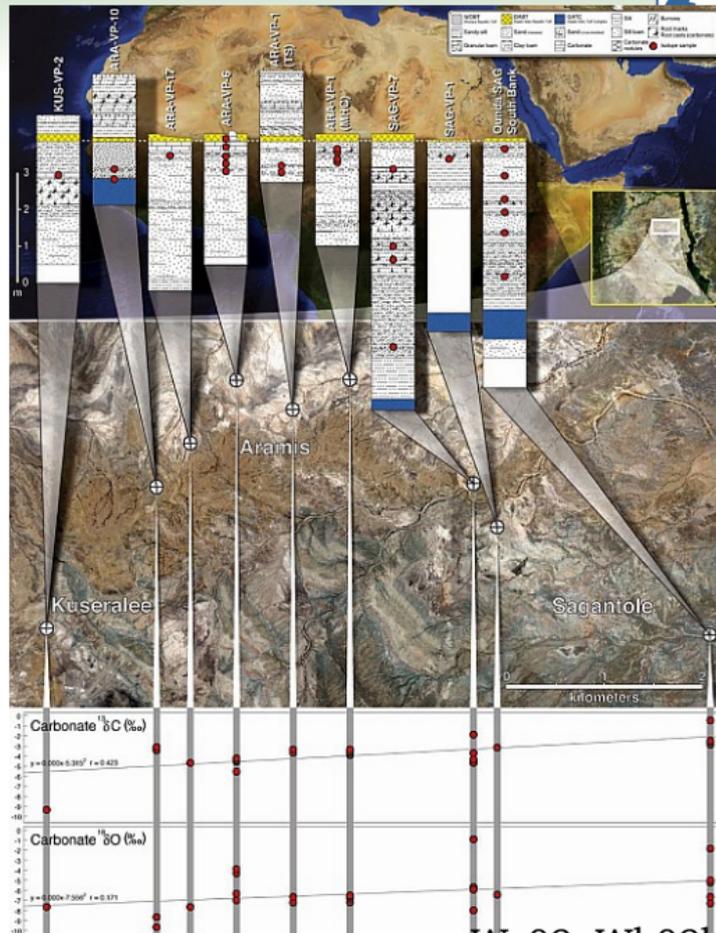


Umwelt und Klima

Klima und Umwelt

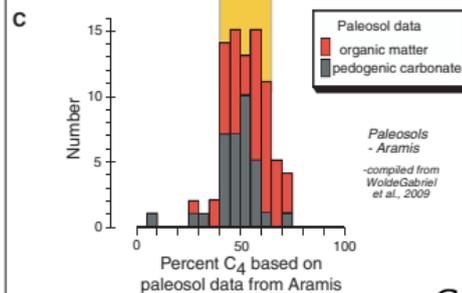
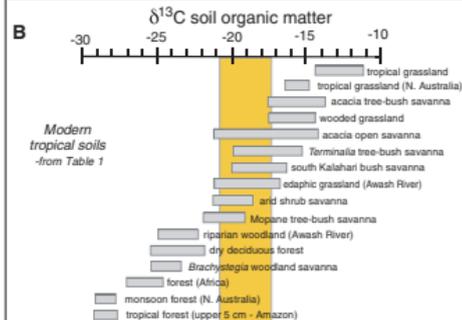
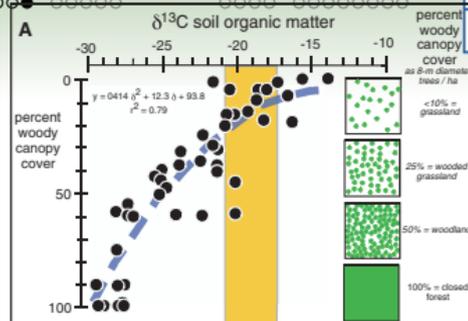
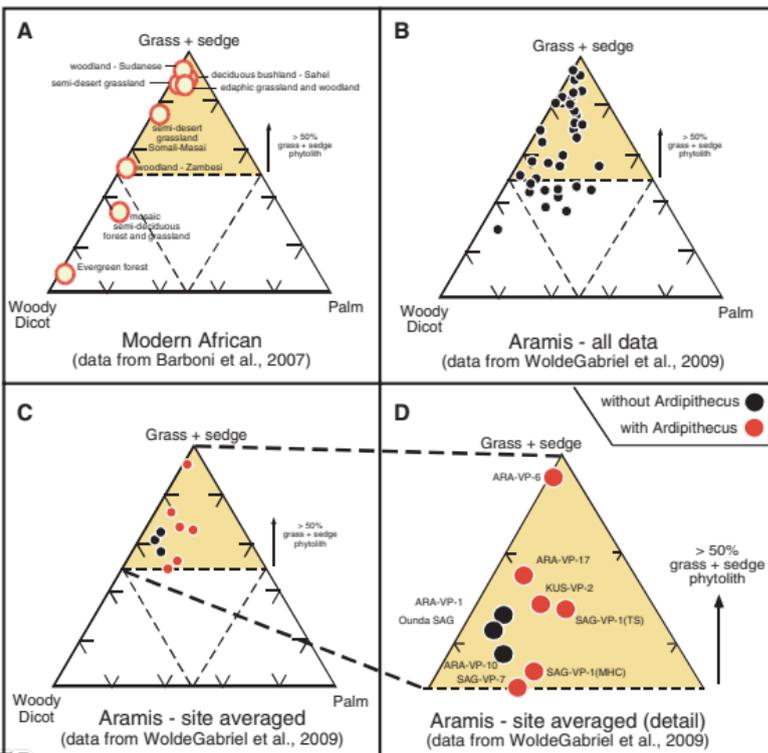


- Tragelaphini (38.7%)
- Kuseracolobus aramisi (17.0%)
- Pliopapio alemui (12.3%)
- ★ Ardipithecus ramidus (5.6%)
- Giraffidae (< 5%)
- ◆ Simatherium (< 5%)
- ◆ Neotragini (< 5%)
- ⊠ Alcelaphini/Hippotragini (< 5%)
- ▽ Aepyceros (< 5%)
- × Anancus (< 5%)
- ⊕ Deinotherium (< 5%)
- ▲ Nyanzachoerus kanamensis (< 5%)
- ▲ Nyanzachoerus jaegeri (< 5%)
- ▲ Kolpochoerus deheinzेलini (< 5%)
- Hippopotamidae (< 5%)
- ◆ Rhinocerotidae (< 5%)
- ◆ Eurygnathohippus (< 5%)



Wo09, Wh09b

Klima und Umwelt



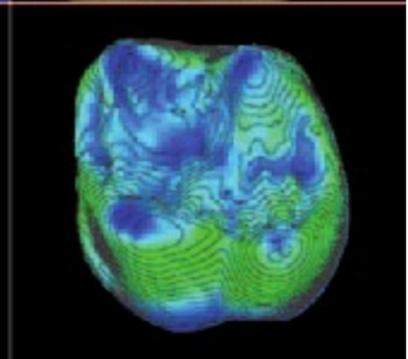
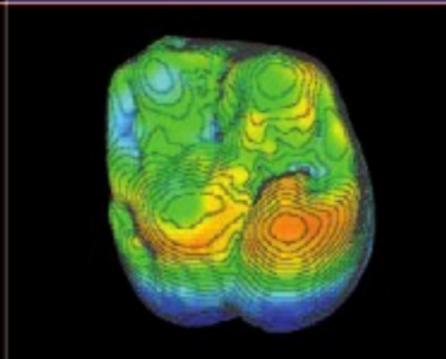
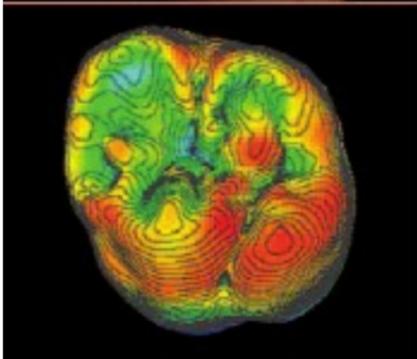
Hand





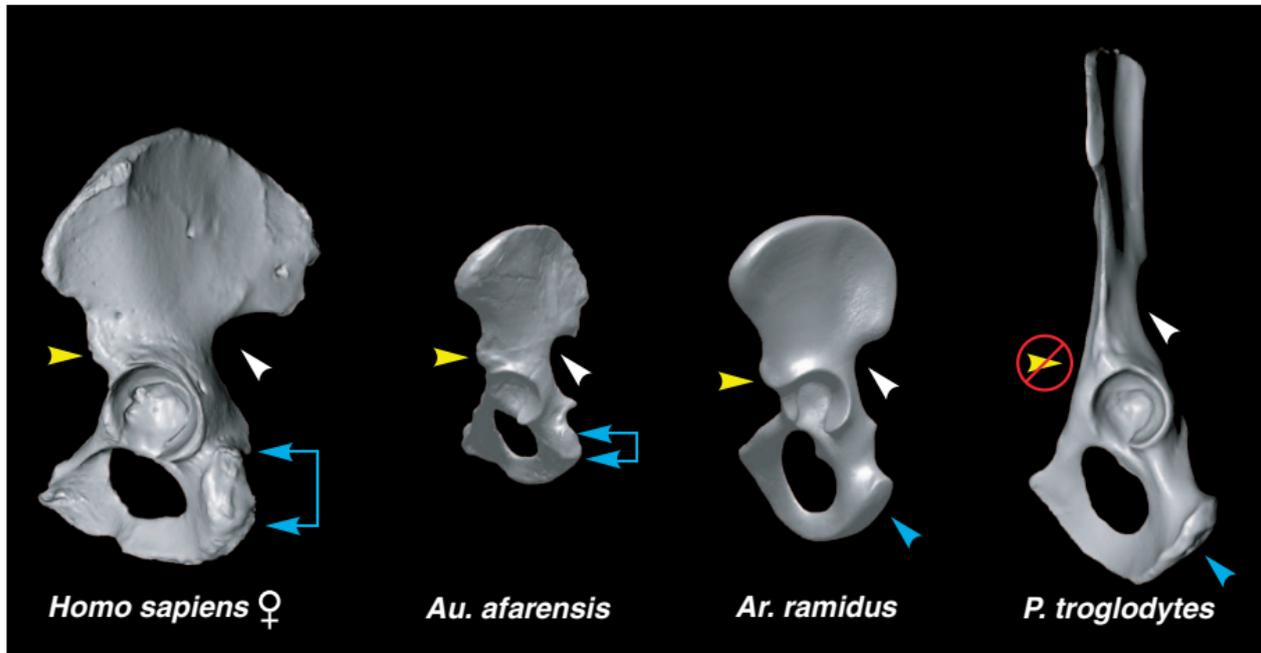
Rekonstruktion und Deutung

Zähne



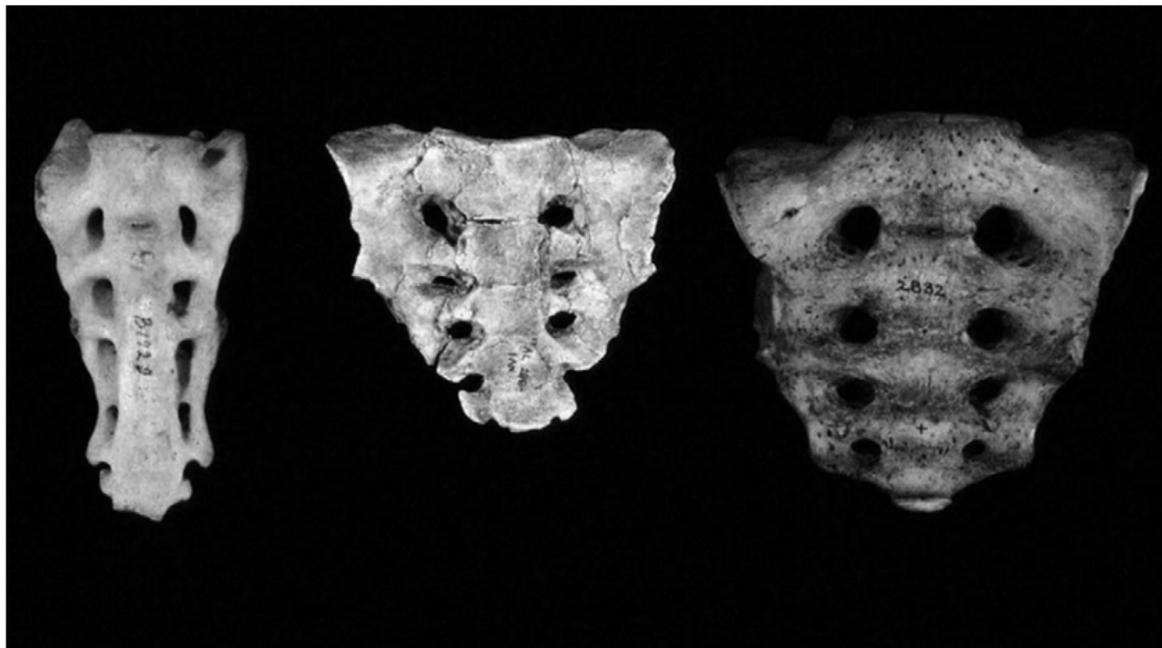


Becken





Kreuzbein



Kreuzbein des Schimpansen, *Au. afarensis*, und Menschen.
 Schimpanse und Gorilla haben mehr mit dem Kreuzbein verwachsene
 Kreuzbein- und weniger Lendenwirbel als *Ardipithecus*, *Australopithecus*
 und *Homo*. Lo10.



Rekonstruktion und Deutung

Fuß



Si09, Lo09d



Bäume und Verwandtschaften

① Einführung

② Sahelanthropus tchadensis

③ Orrorin tugenensis

④ Ardipithecus ramidus

⑤ Bäume und Verwandtschaften

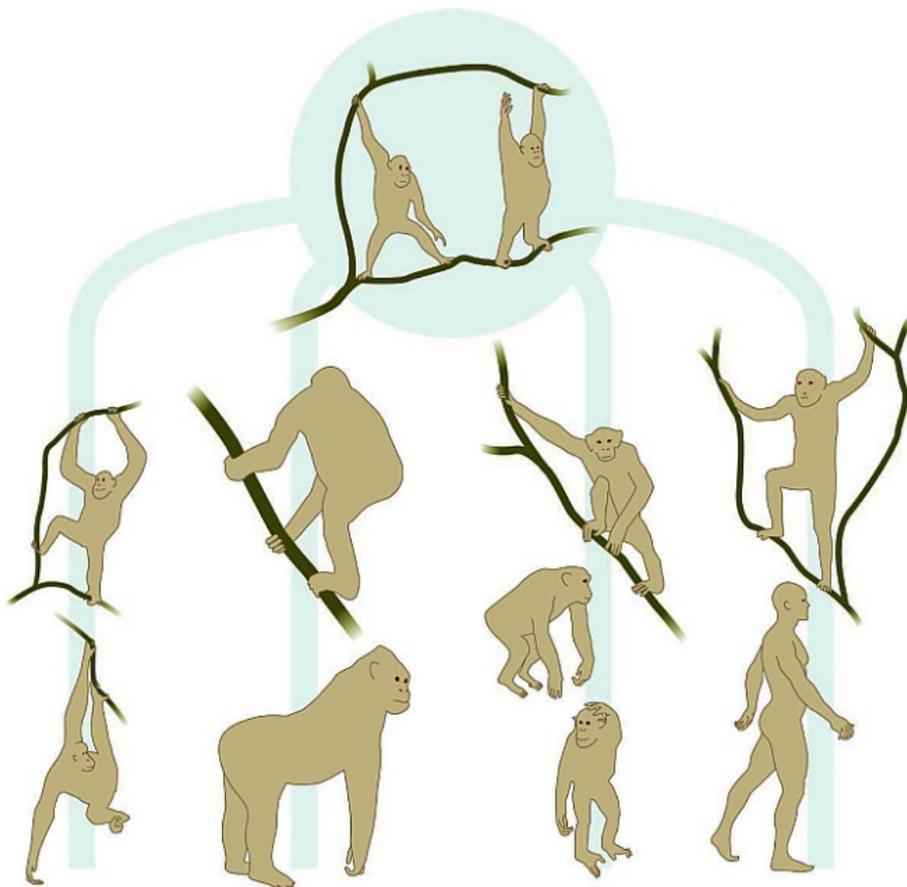
Die aufrechte Haltung und der bipedale Gang

Résumé



Die aufrechte Haltung und der bipedale Gang

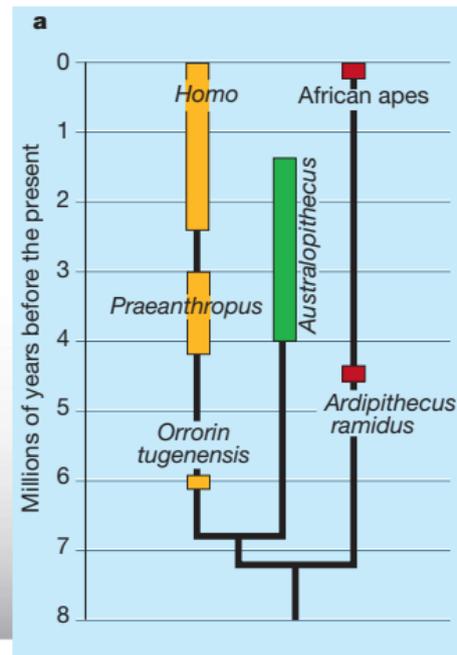
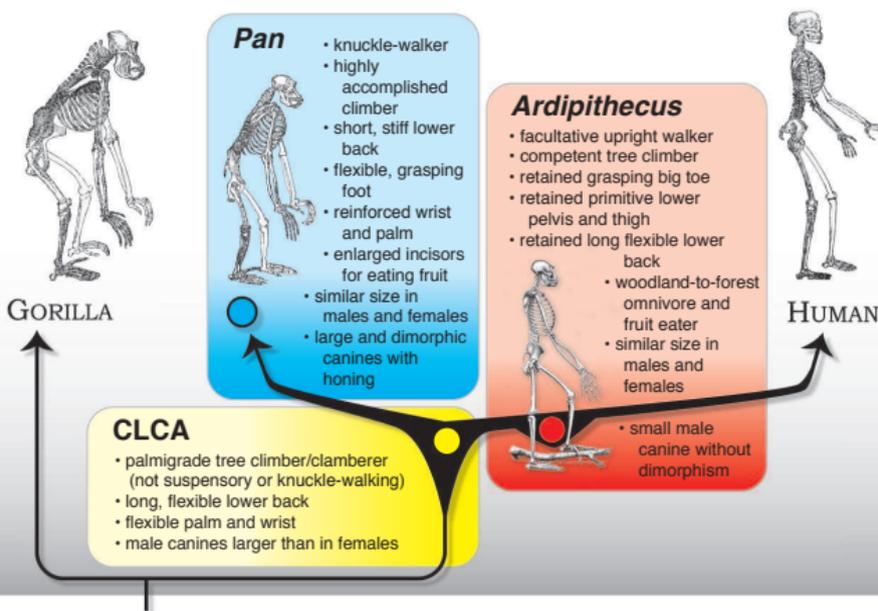
Aufrechte Haltung beim Klettern





Die aufrechte Haltung und der bipedale Gang

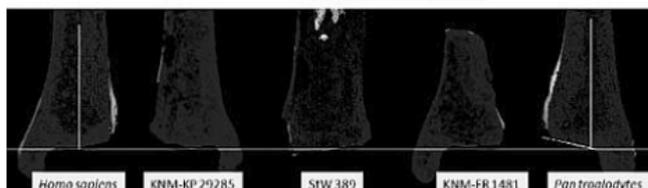
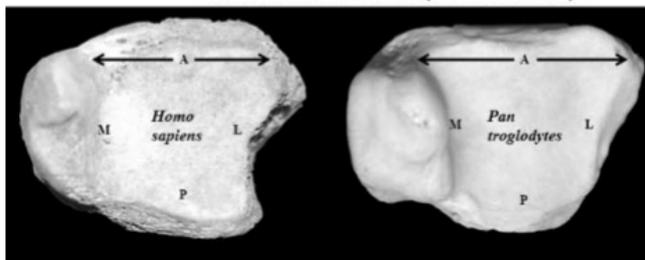
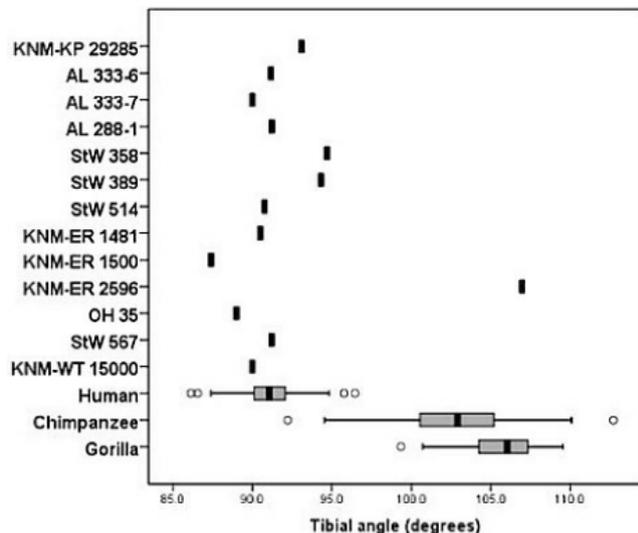
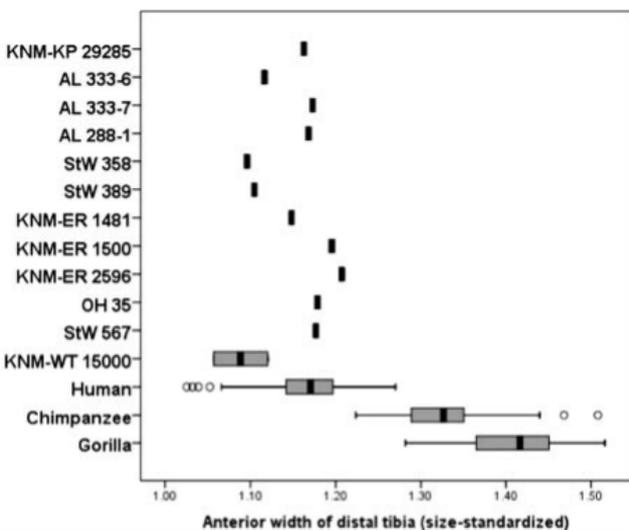
Mensch oder Affe?





Die aufrechte Haltung und der bipedale Gang

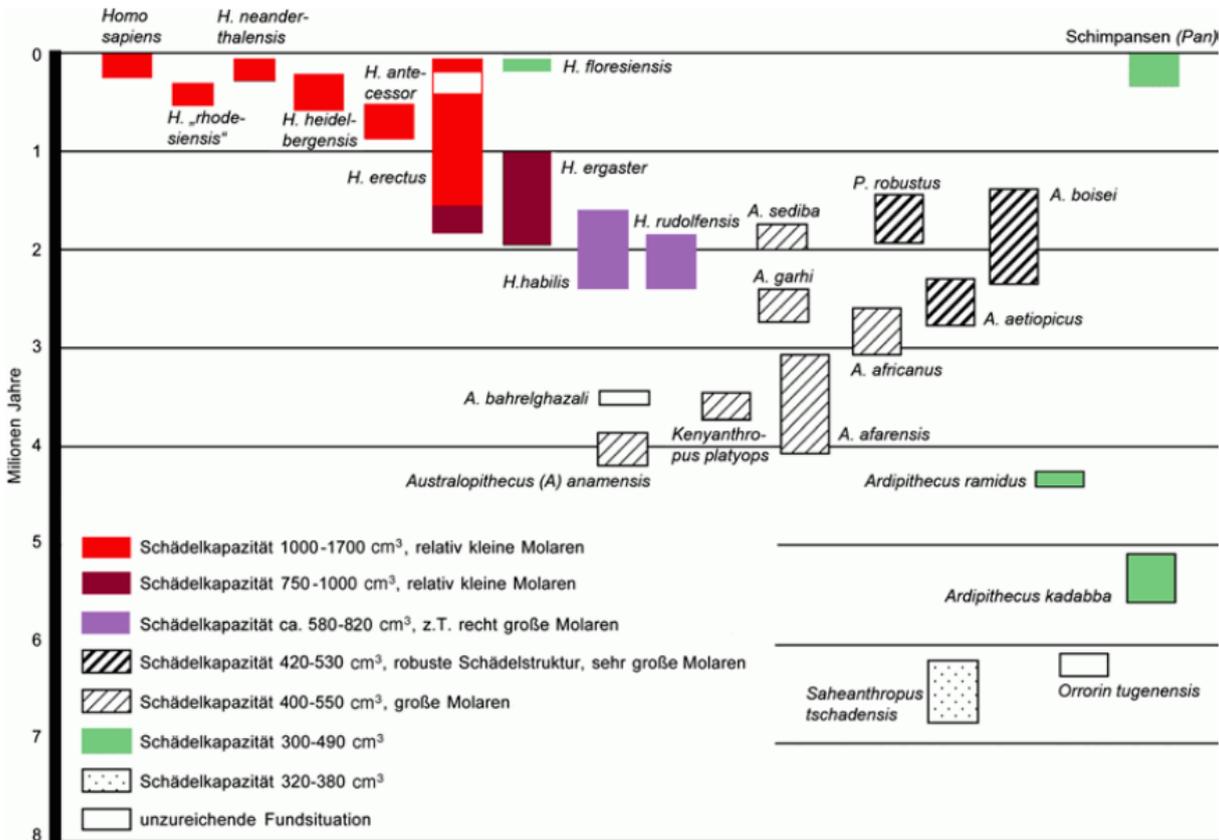
Breite und Winkel am Schienbeingelenk





Die aufrechte Haltung und der bipedale Gang

Gehirngrößen





- Die drei vorgestellten fossilen Hominiden fallen zeitlich in den Bereich des letzten gemeinsamen Vorfahren der Gattungen Pan und Homo und erlauben vermutlich Rückschlüsse auf dessen Lebensraum und Eigenschaften.
- Eine Zuordnung auf einen der Äste des vermutlich stark verzigten Stammbaumes ist nicht möglich. Menschenähnliche Eigenschaften können urtümliche Vorläufer der späteren Entwicklung zum Affen sein.



Vielen Dank

Das Handout und die Literatur liegen auf:
axel.berger-odenthal.de/work/Referat/



Résumé

Literatur

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