

Pagine di Scienza – Biblioteca Classense

Ravenna, 28 marzo 2024

I neandertaliani: un viaggio tra fossili, molecole e manufatti

Stefano Benazzi

Dipartimento di Beni Culturali, Università di Bologna



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

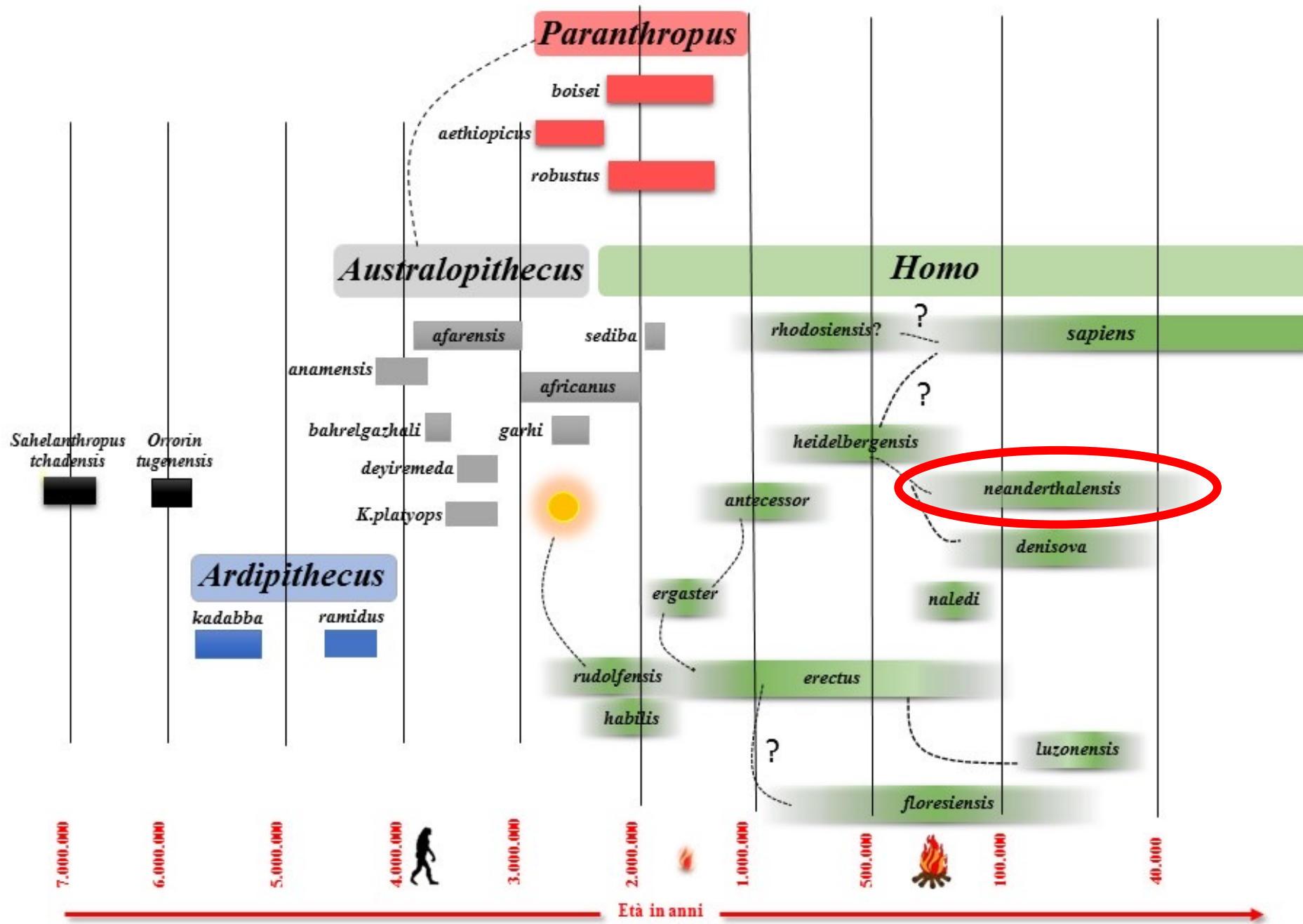
DIPARTIMENTO
DI BENI CULTURALI



CONTENUTI

- ✓ **L'immaginario comune del Neanderthal nel XX secolo**
- ✓ **Sviluppi delle ricerche nel XXI secolo**
- ✓ **La parola ai fossili**
- ✓ **La cultura del Neanderthal**
- ✓ **Incontri ravvicinati: Neanderthal e Sapiens**
- ✓ **L'estinzione del Neanderthal**

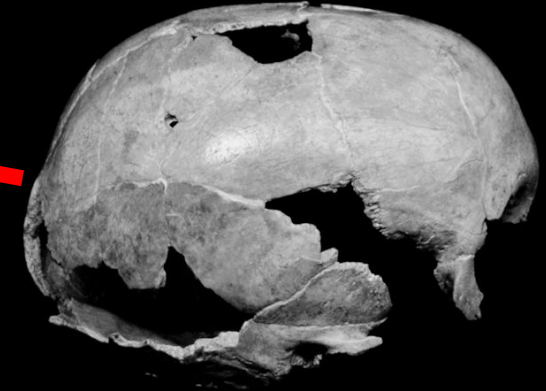
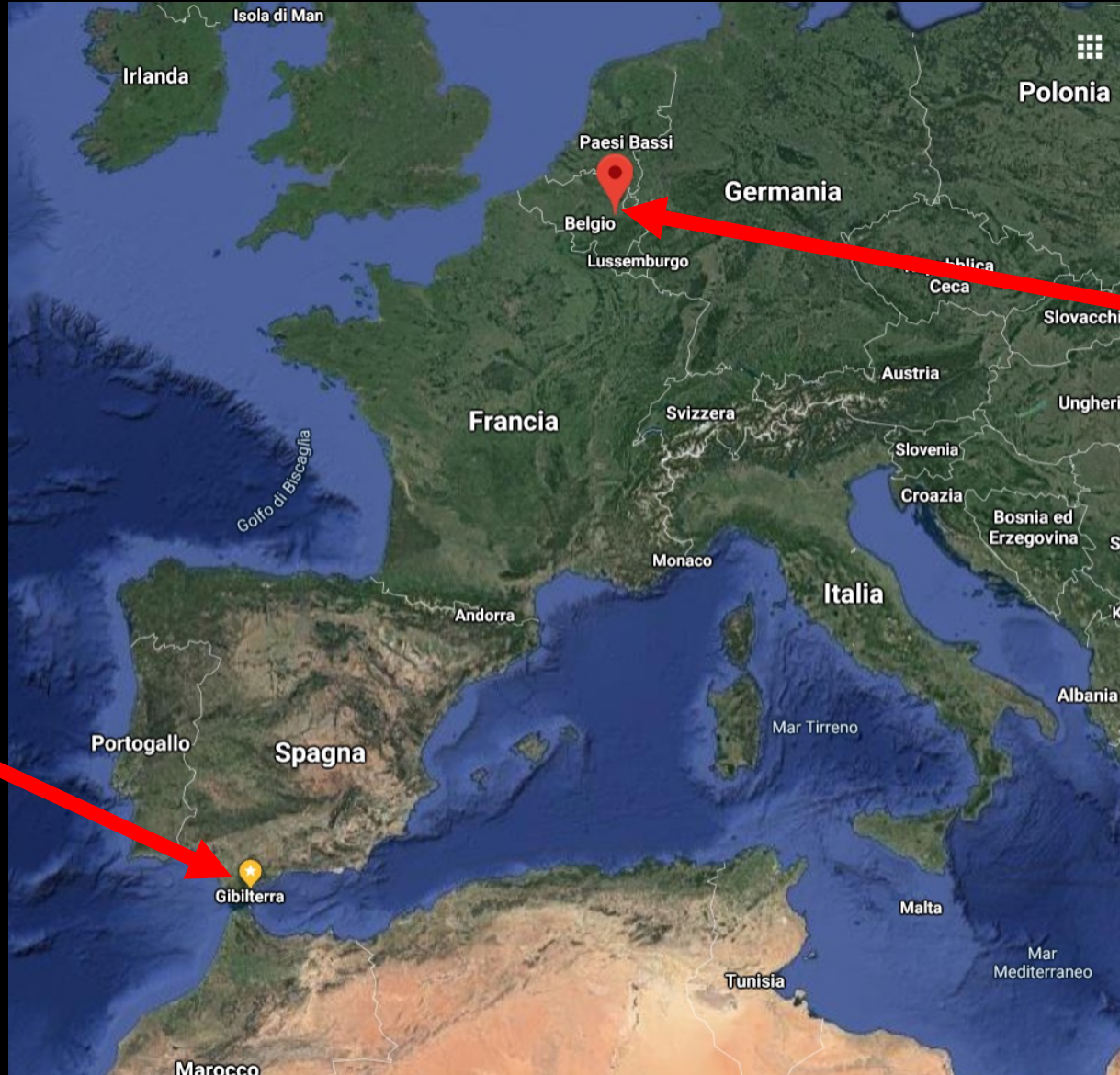
EVOLUZIONE DELL'UOMO



I PRIMI RESTI DI NEANDERTHAL RINVENUTI IN EUROPA



Gibraltar 1 (Forbes' Quarry, 1848)



Engis 2 (Belgio, 1829)

I PRIMI RESTI DI NEANDERTHAL RINVENUTI IN EUROPA



Grotta Feldhofer, valle di Neander
(1856, Mettmann, Germania)

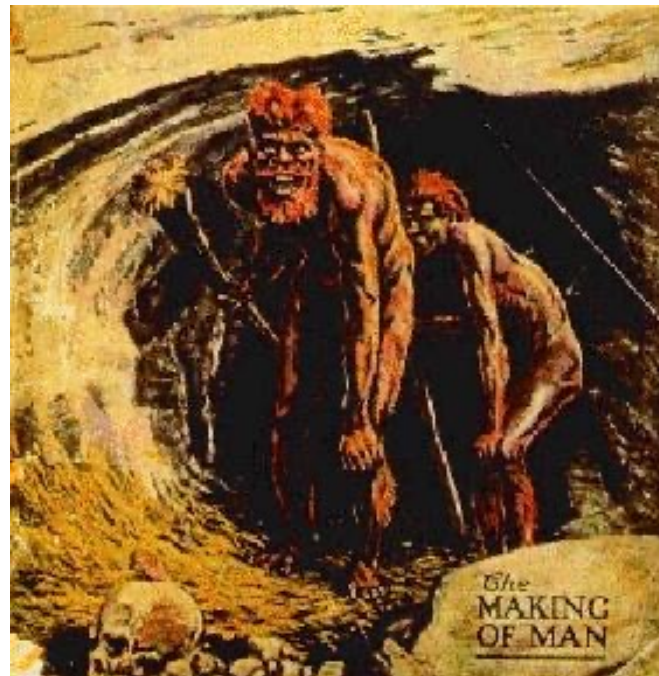
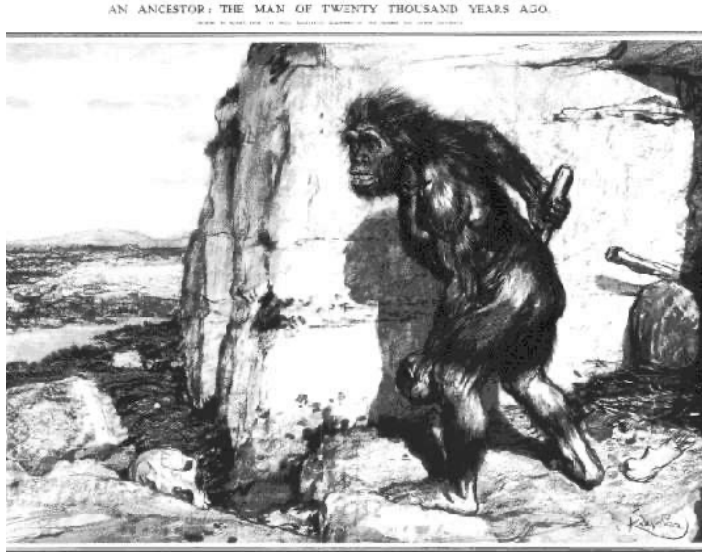


Neanderthal Museum (Mettmann, Germania)

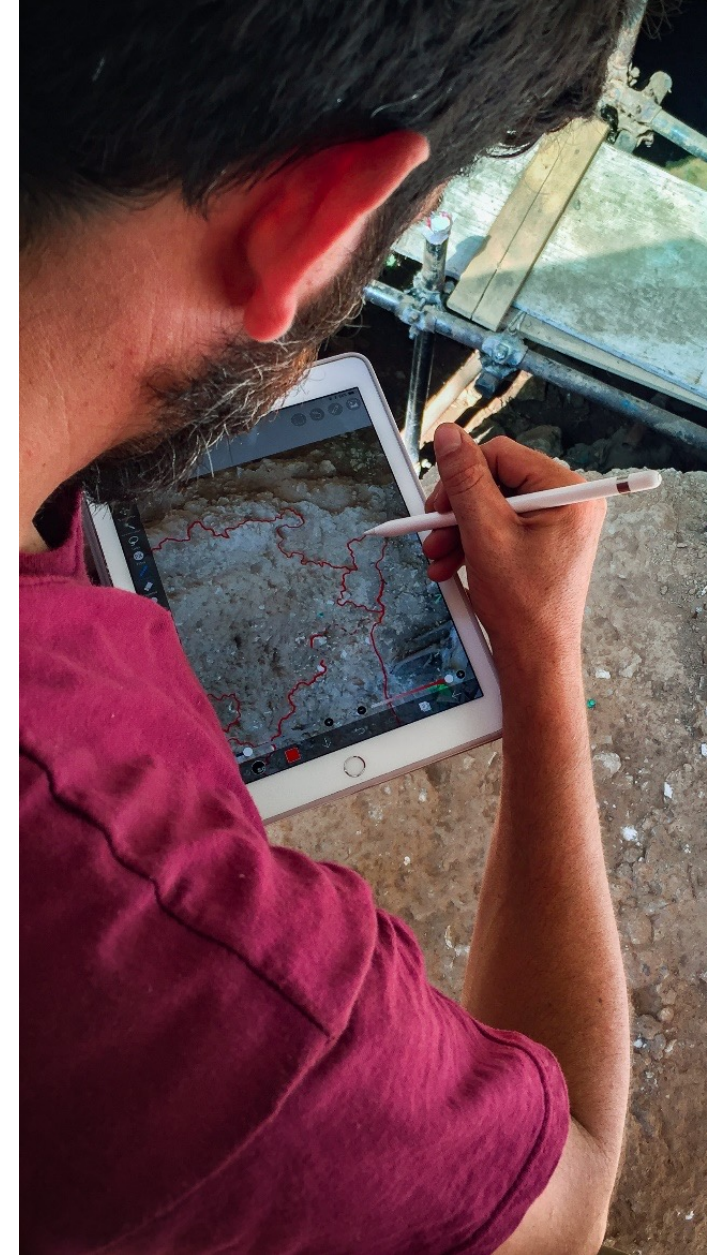
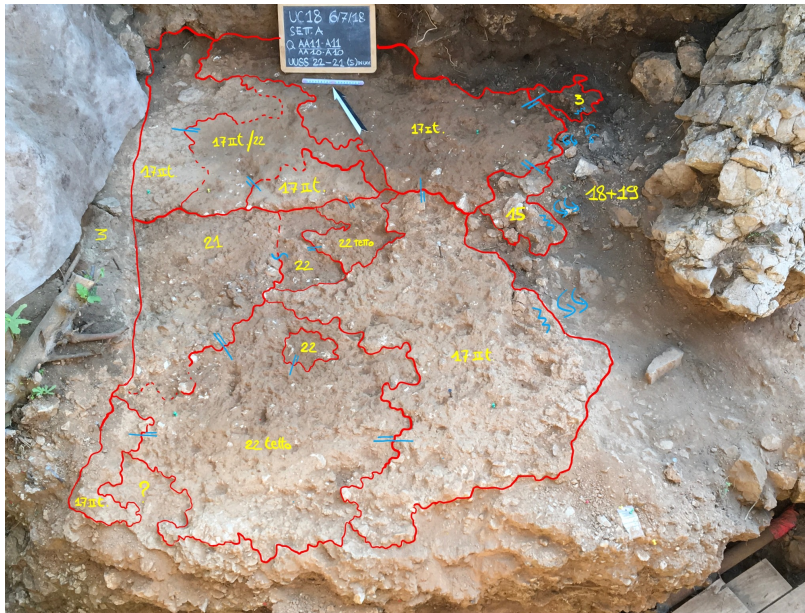


La Chapelle-aux-Saints 1 (1908, Francia)

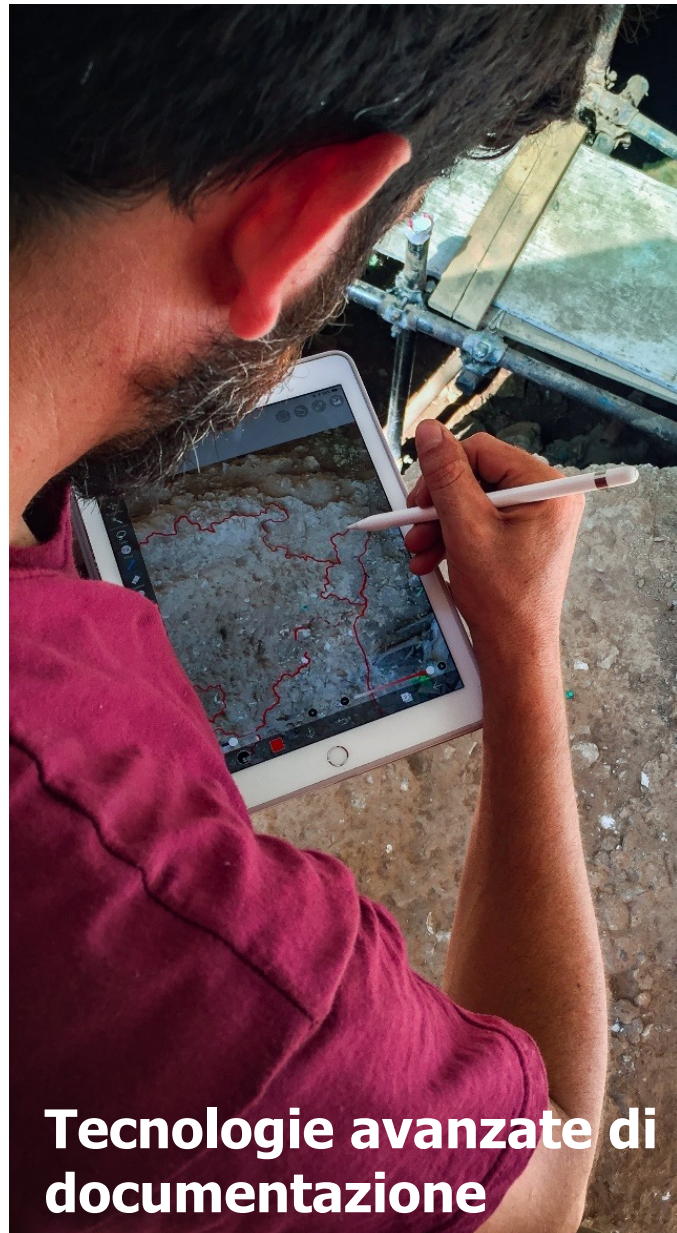
PERCEZIONE DEL NEANDERTHAL



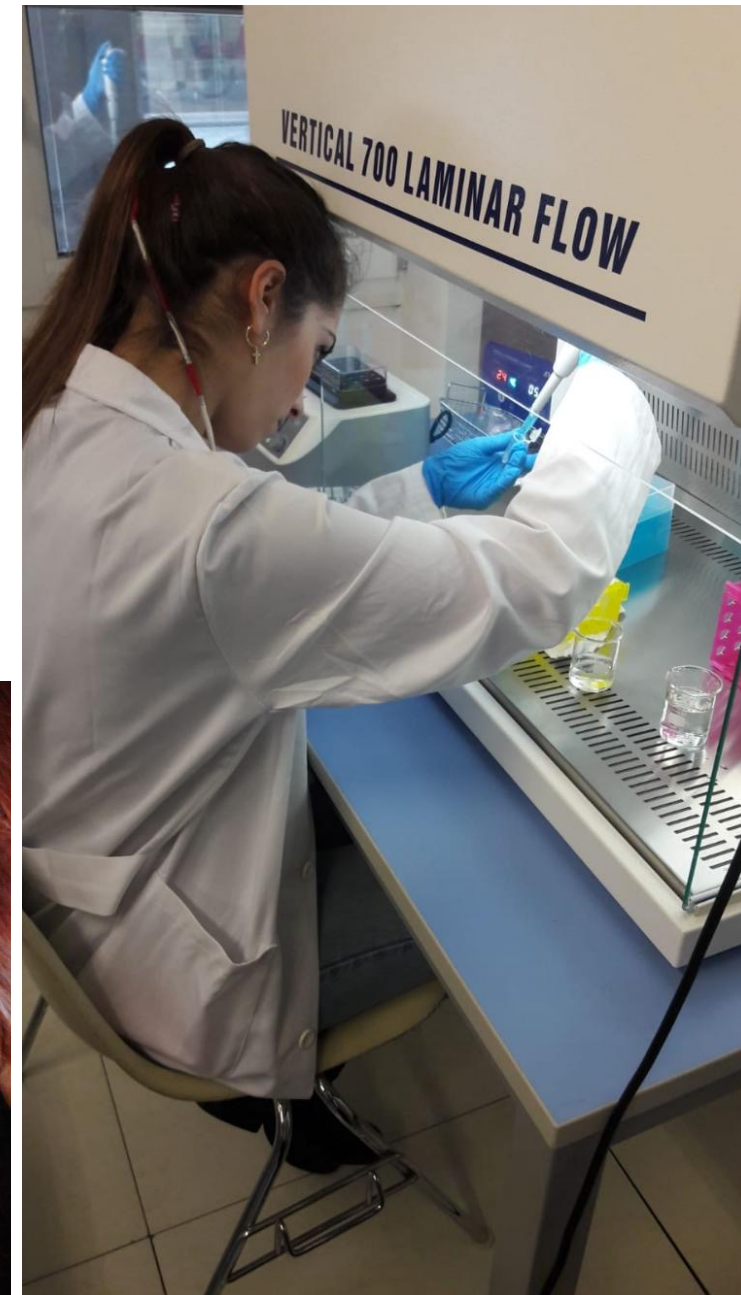
FIELDWORK – SCAVI ARCHEOLOGICI (Grotta Uluzzo C, Puglia)



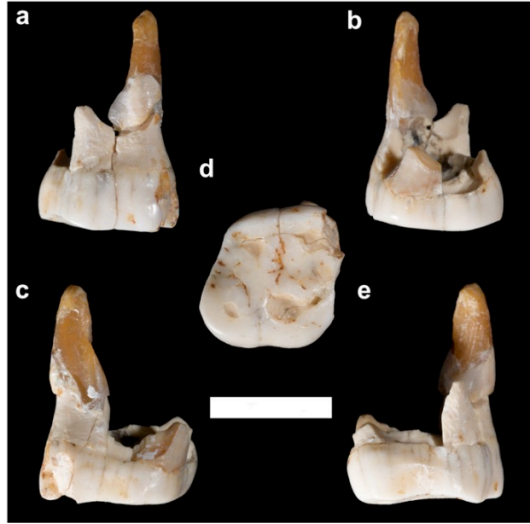
STUDIO DEI DEPOSITI ARCHEOLOGICI



ANALISI DI LABORATORIO



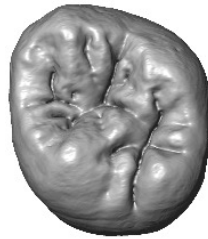
ANALISI DI LABORATORIO



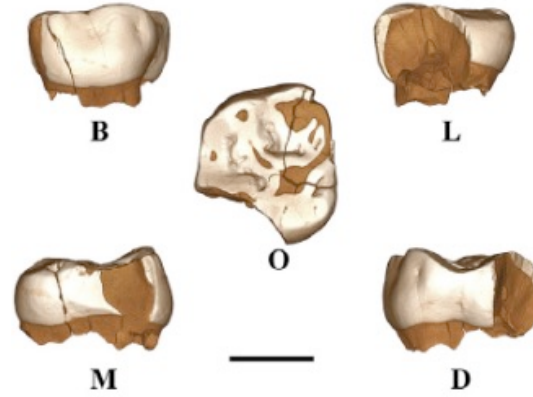
Benazzi et al. 2011. JHE



Benazzi et al. 2011. Nature



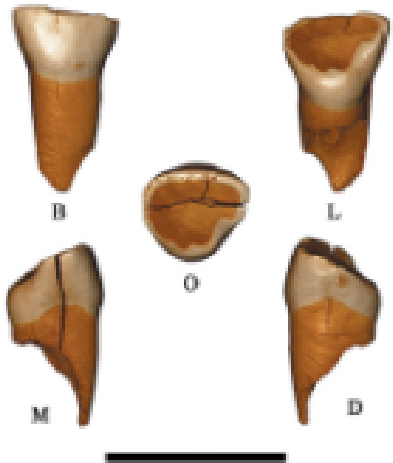
Benazzi et al. 2013. AJPA



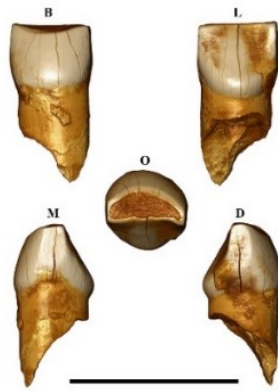
Arnaud et al. 2016. QI



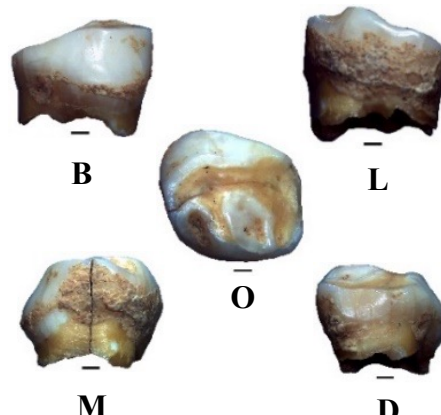
Margherita et al. 2017. JHE



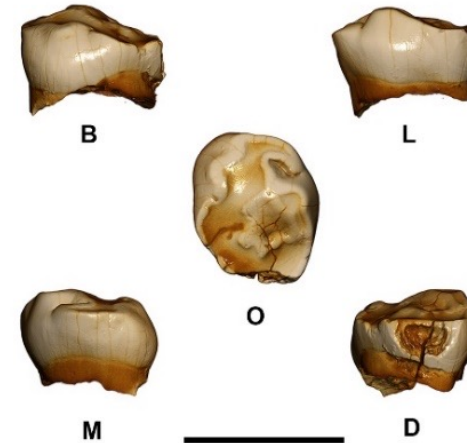
Benazzi et al. 2015. Science



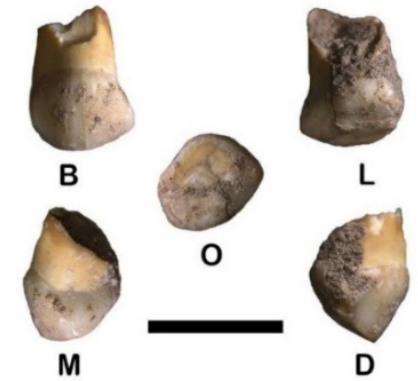
Fabbri et al. 2016. AJPA



Arnaud et al. 2017. AJPA

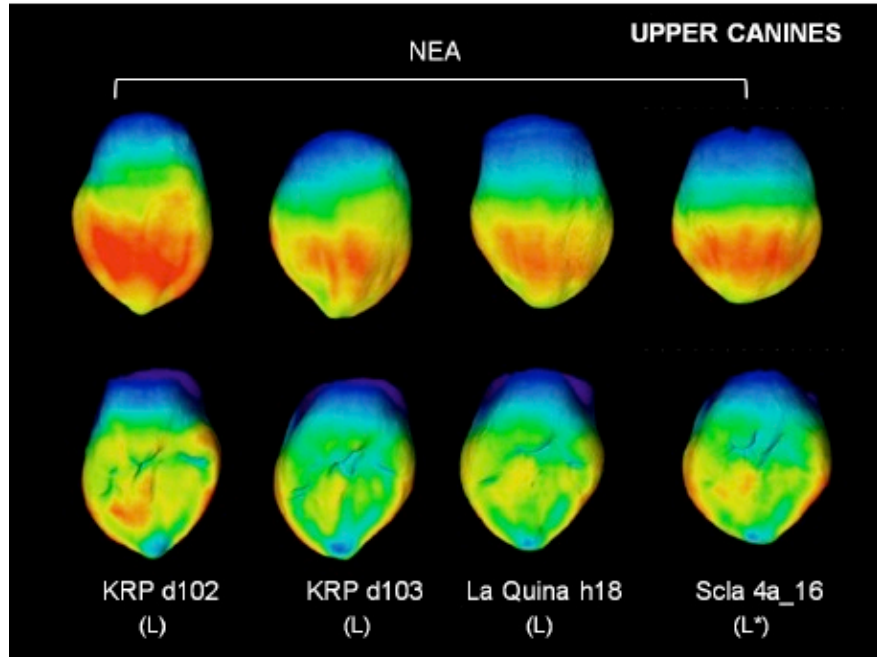


Riga et al. 2018. JASs

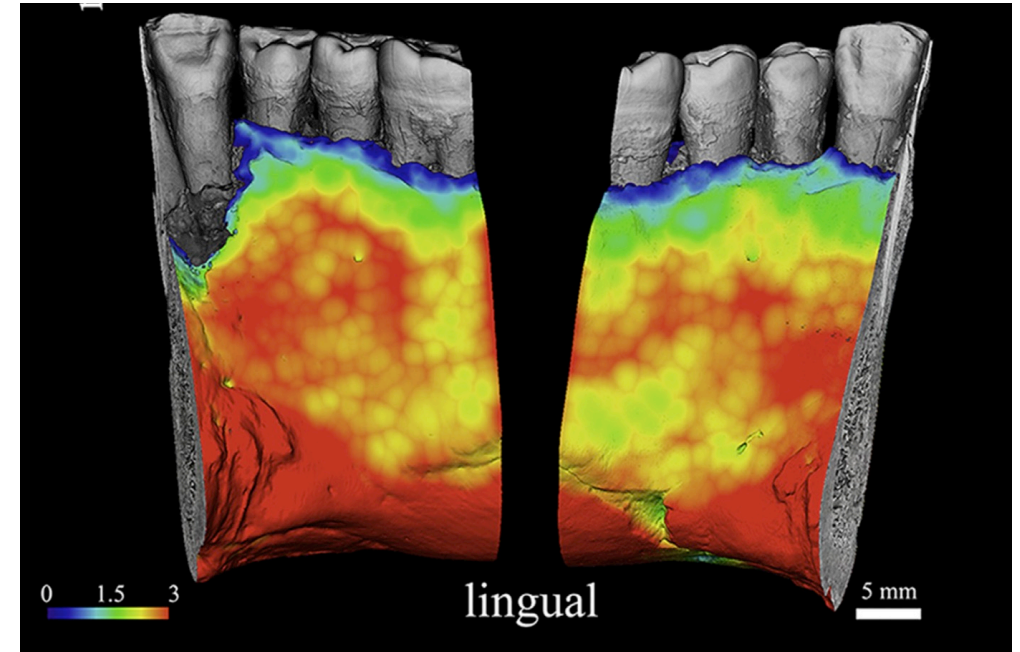


Romandini et al. 2020. JHE

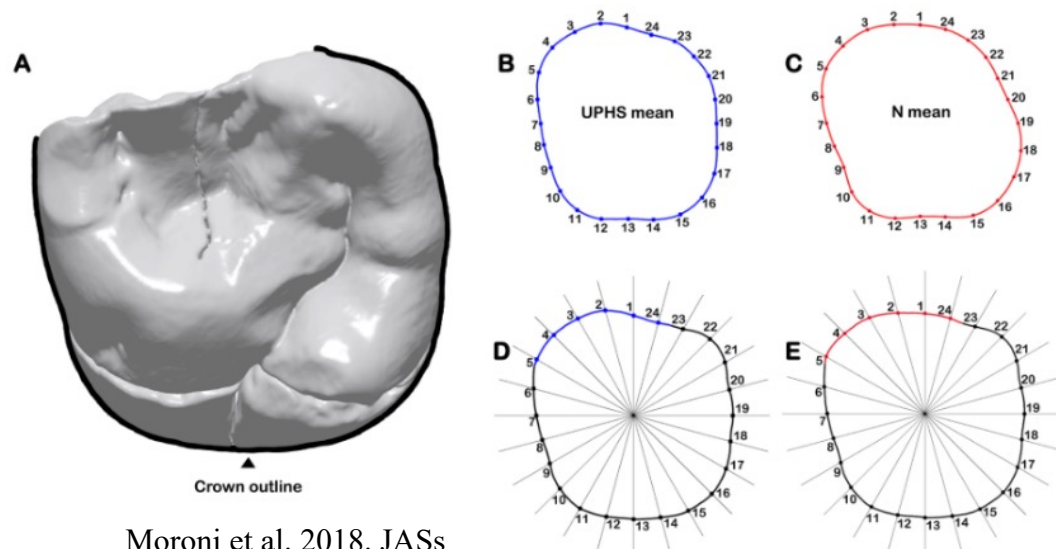
ANALISI DIGITALI DEI RESTI FOSSILI



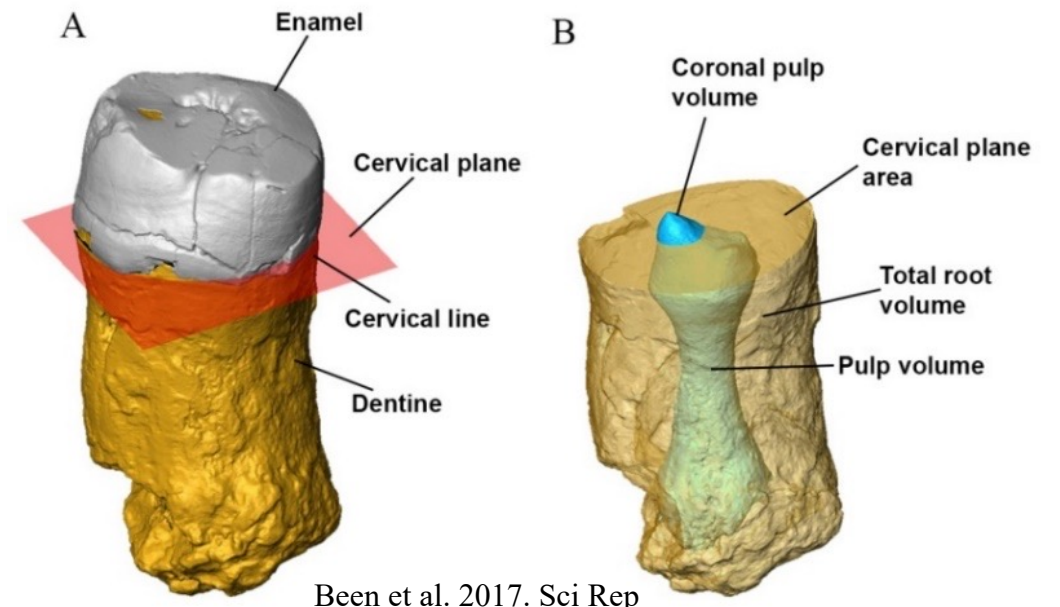
Buti et al. 2017. JHE



Fiorenza et al. 2019. JHE

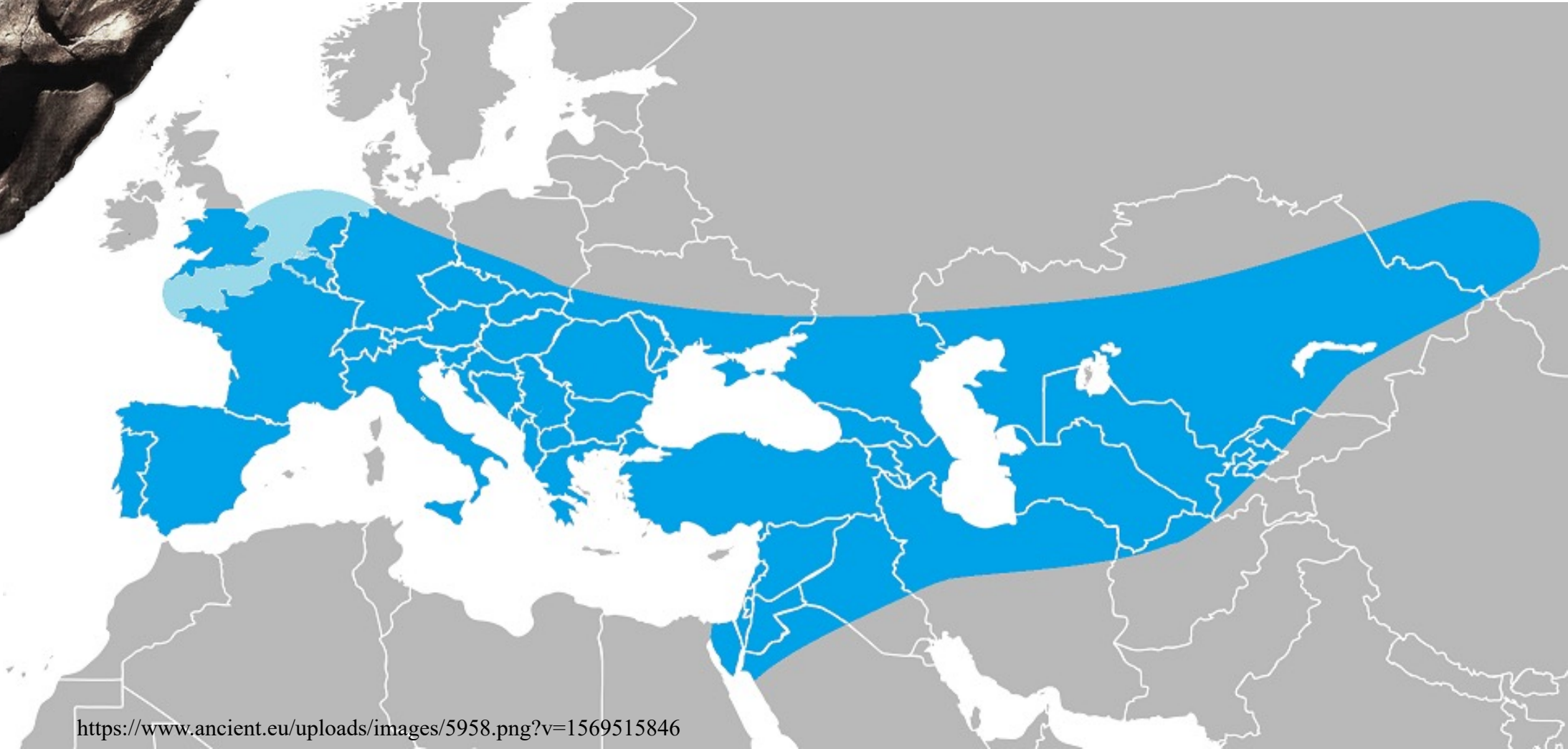


Moroni et al. 2018. JASs



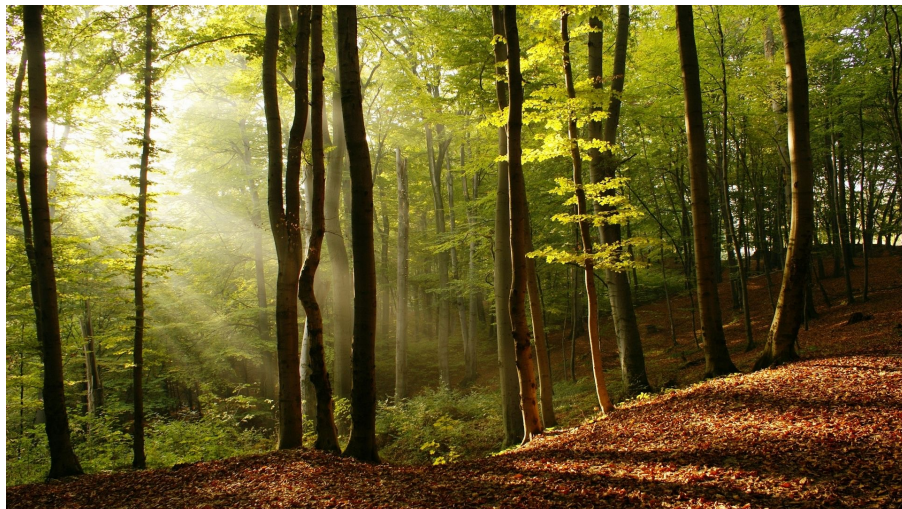
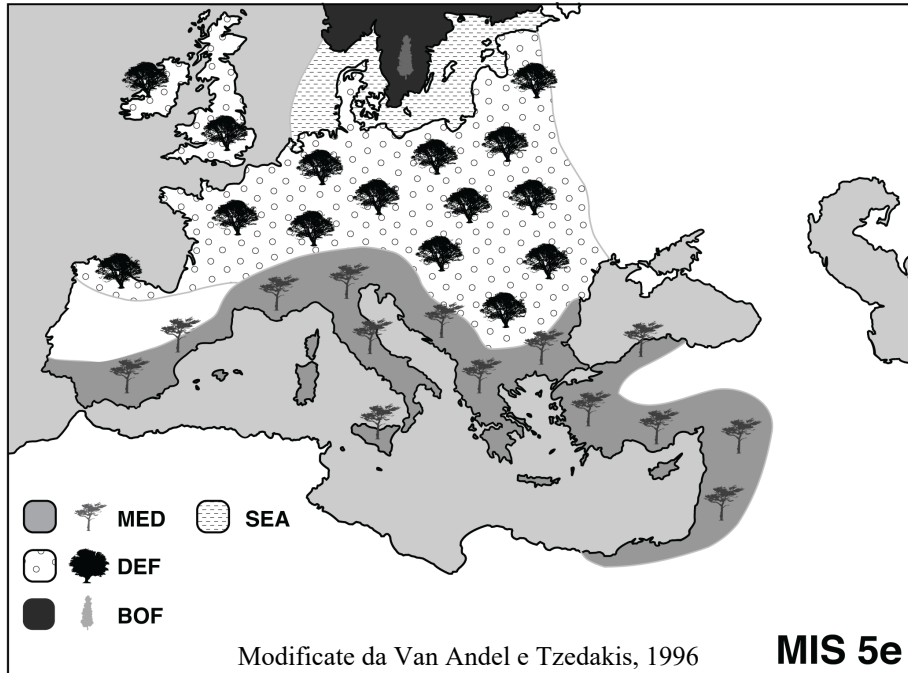
Been et al. 2017. Sci Rep

H. neanderthalensis (400,000-40,000 anni fa)



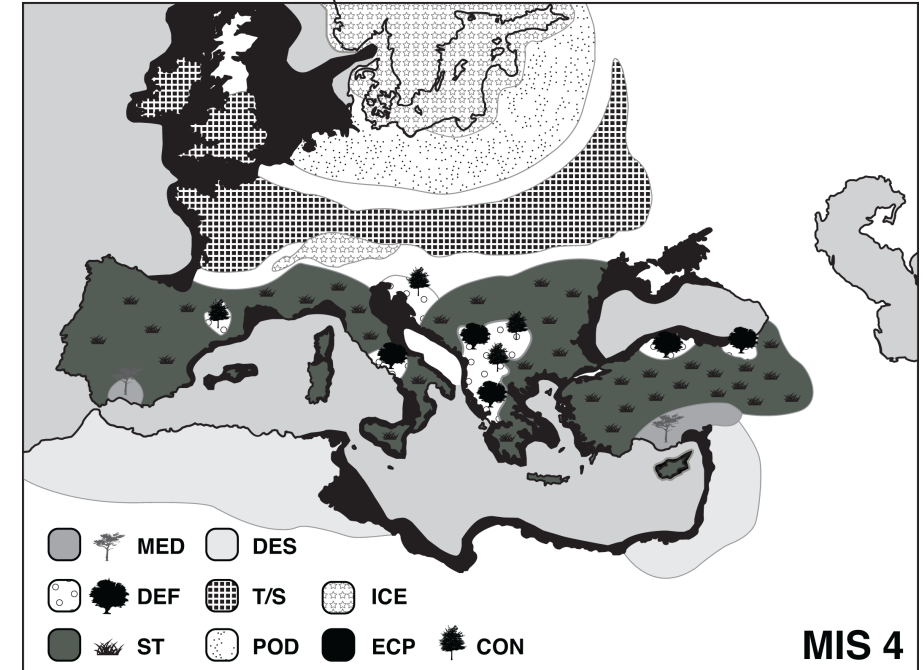
PERIODI GLACIALI E INTERGLACIALI

Circa 125,000-120,000 anni fa



<http://antropocene.it/2017/05/16/foresta-decidua/>

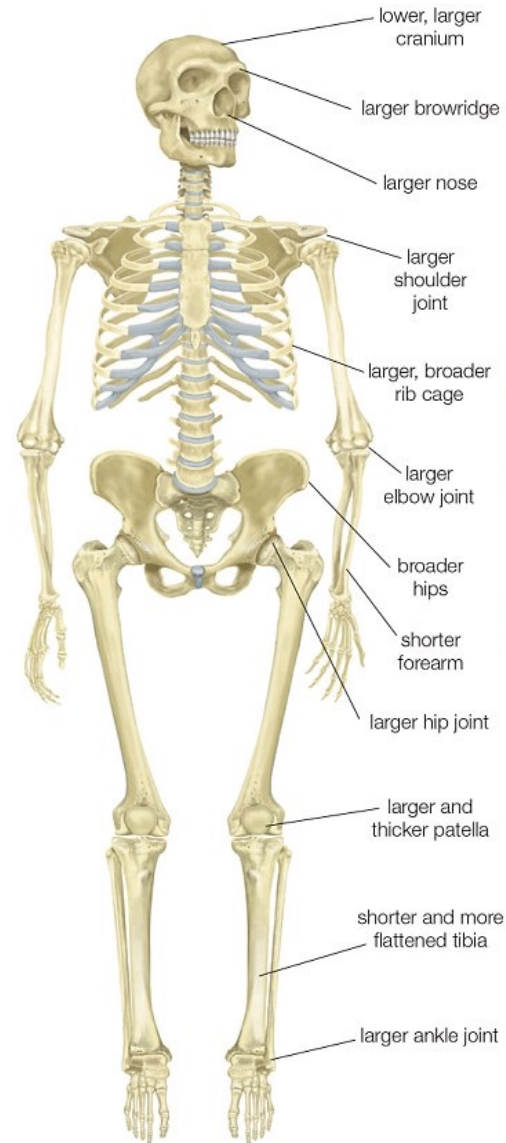
Circa 65,000 anni fa



<https://scholarsark.com/it/question/why-is-the-tundra-biome-notably-the-coldest-biome-in-the-world/>

LA MORFOLOGIA SCHELETRICA DEL NEANDERTHAL

H. neanderthalensis



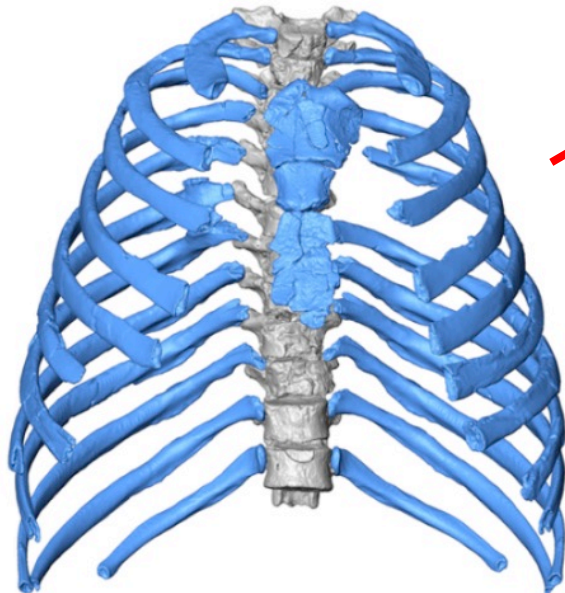
H. sapiens



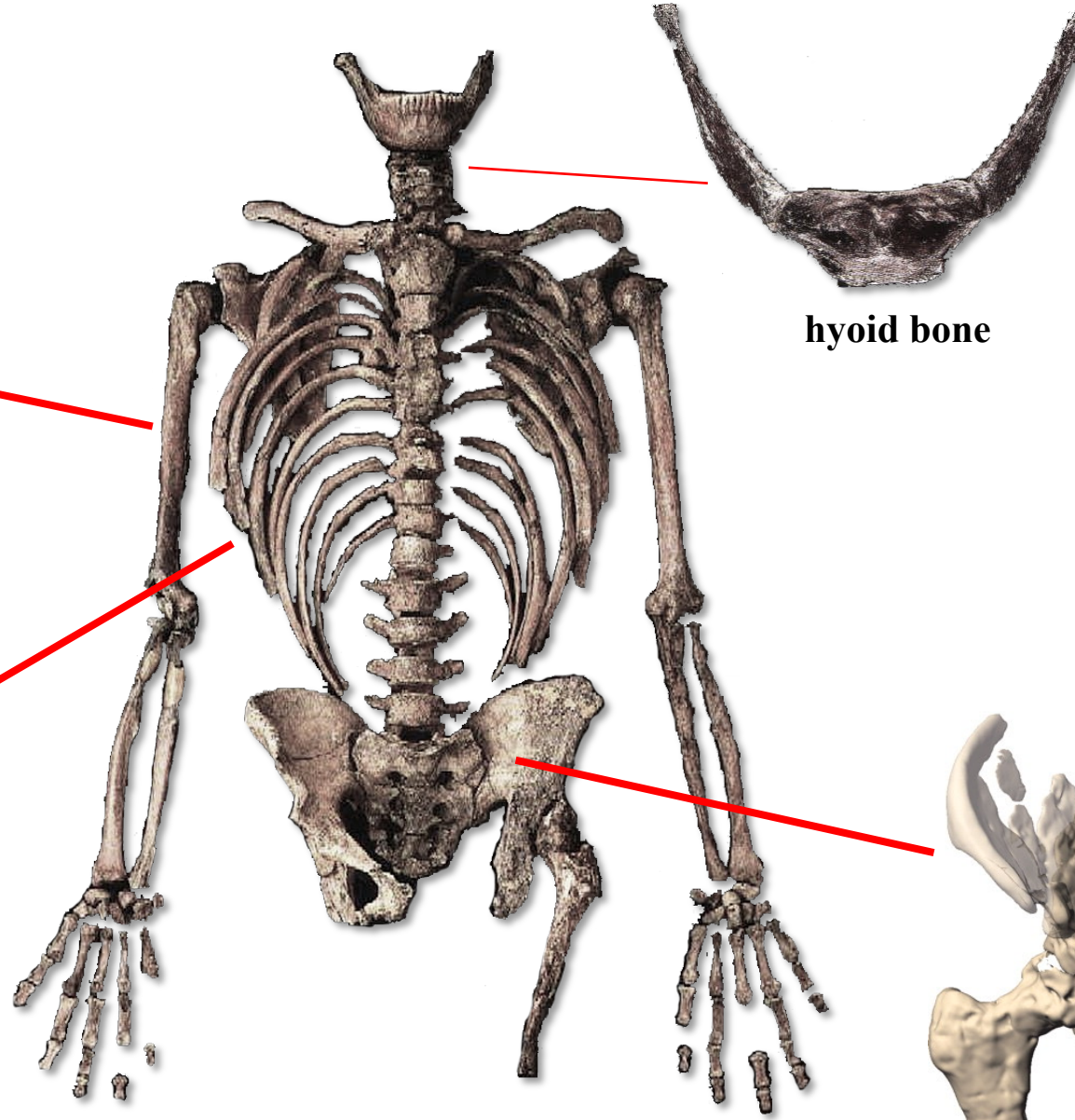
ATTIVITÀ FISICHE, CAPACITÀ RESPIRATORIA, PARTO...



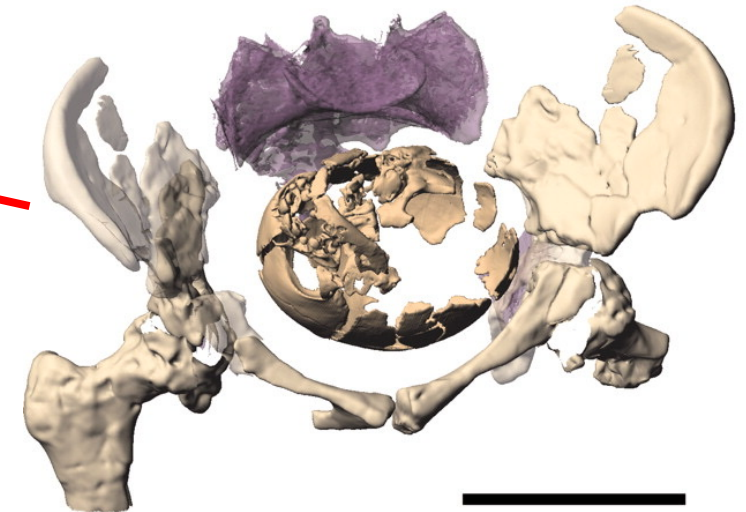
Shaw et al., 2012. PloS One



Gómez-Olivencia et al., 2018. Nat Comm

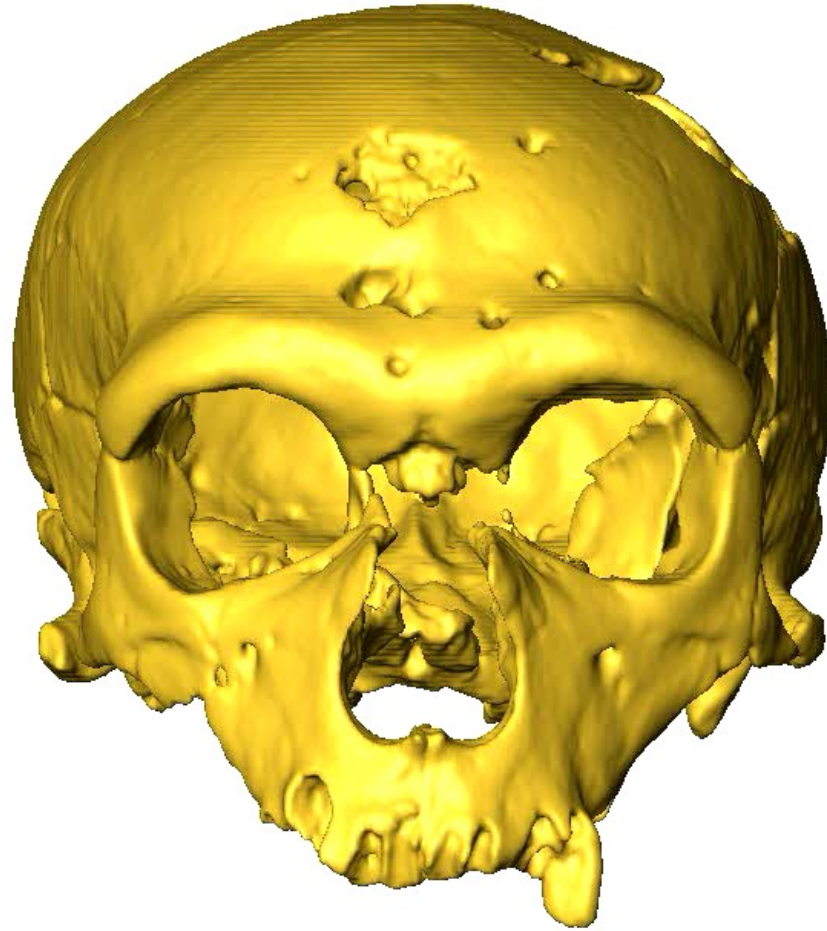


Kebara, Israele (60,000 anni fa)

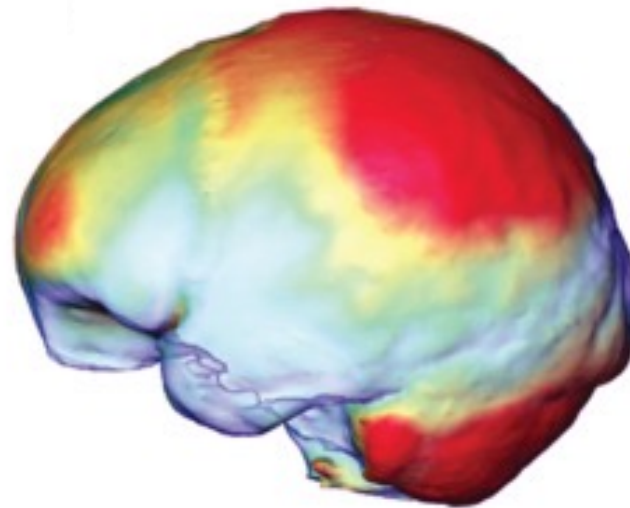
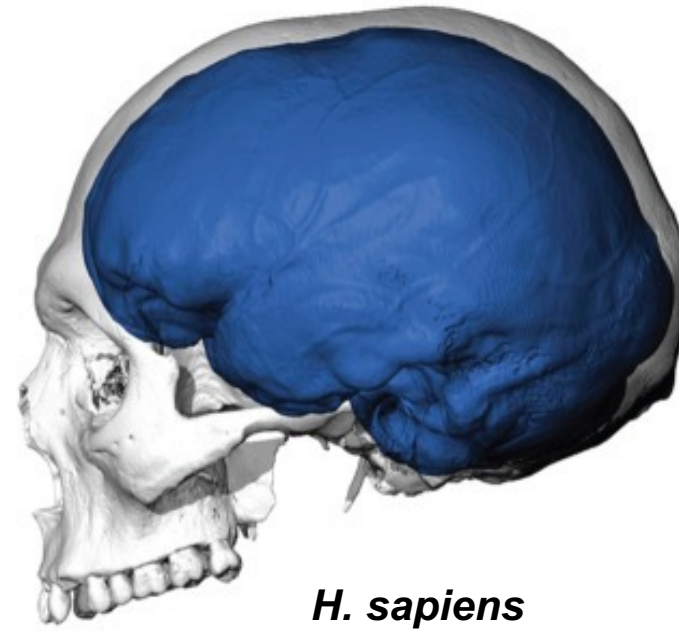
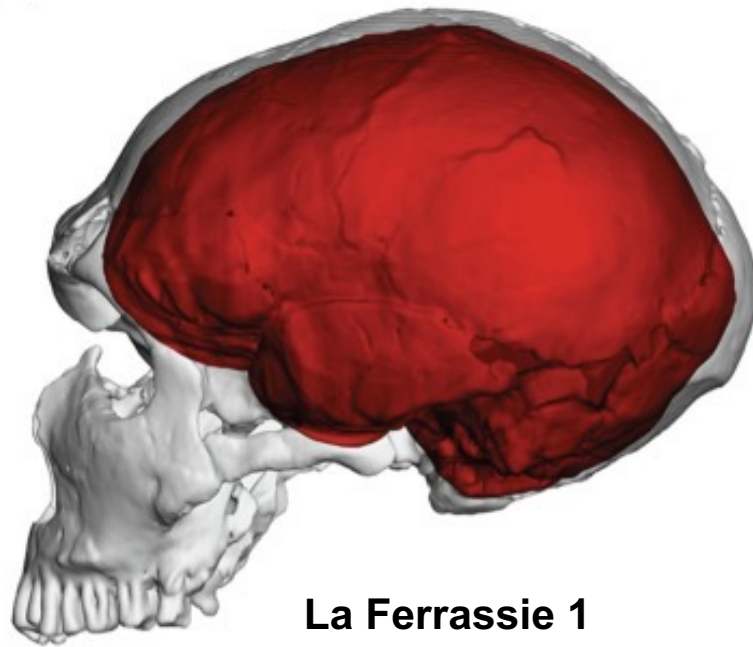


Ponce de Leon et al., 2008. PNAS

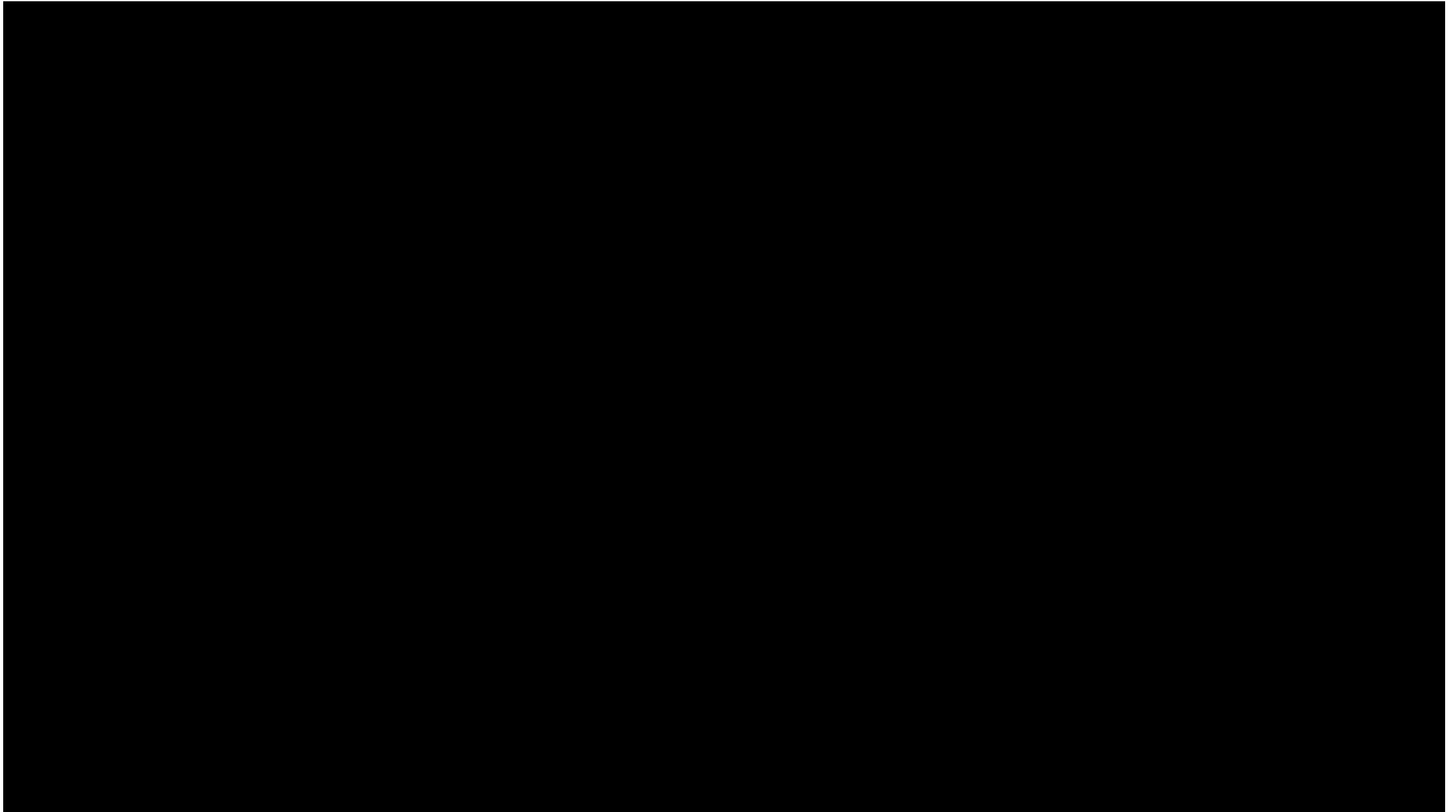
IL CRANIO DEL NEANDERTHAL



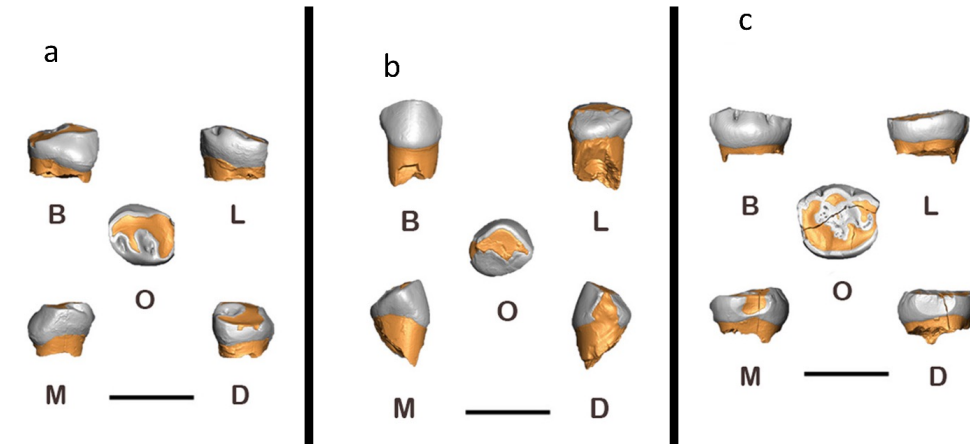
IL CRANIO DEL NEANDERTHAL



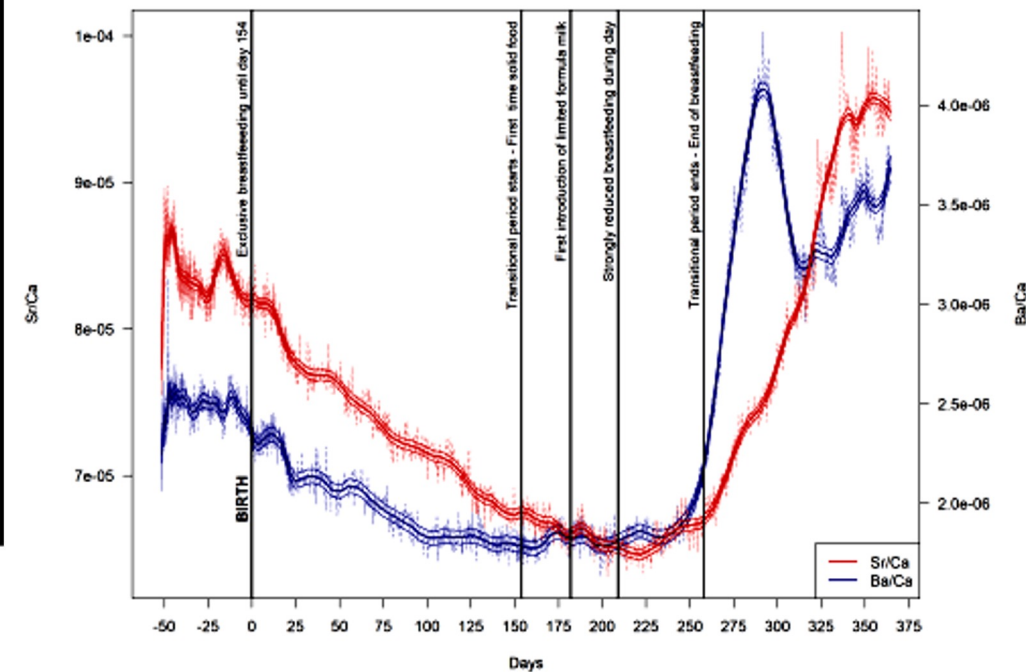
LO STUDIO DEI DENTI



...ALLATTAMENTO E SVEZZAMENTO



Svezzamento da 5-6 mesi

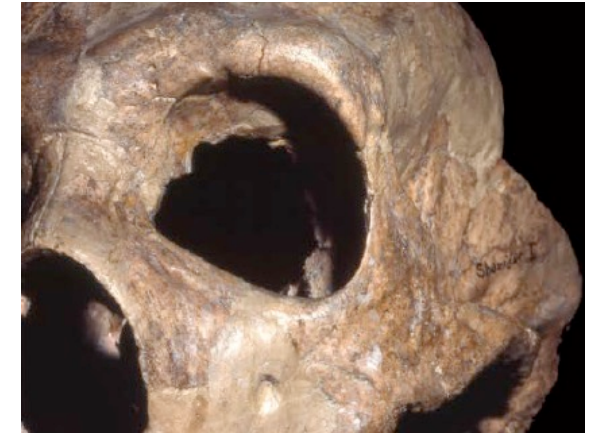


Tre denti decidui neandertaliani provenienti dal Nord Italia (Nava et al., 2020. PNAS)

TRAUMI E SOSTEGNO SOCIALE

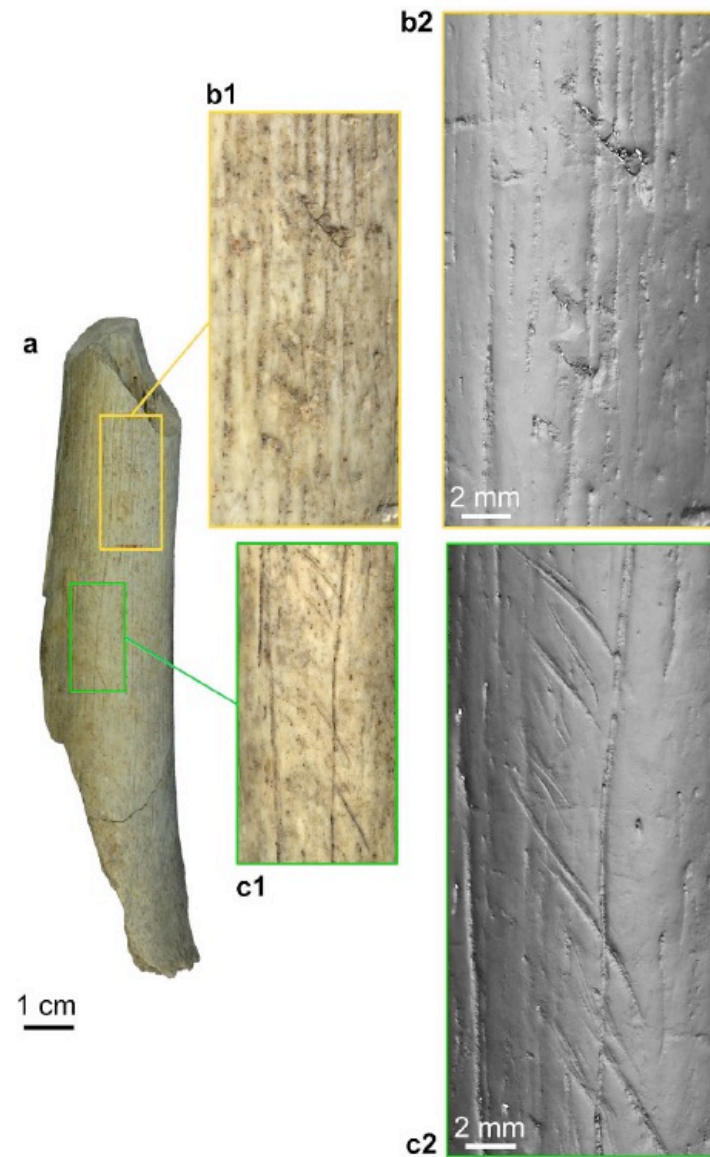
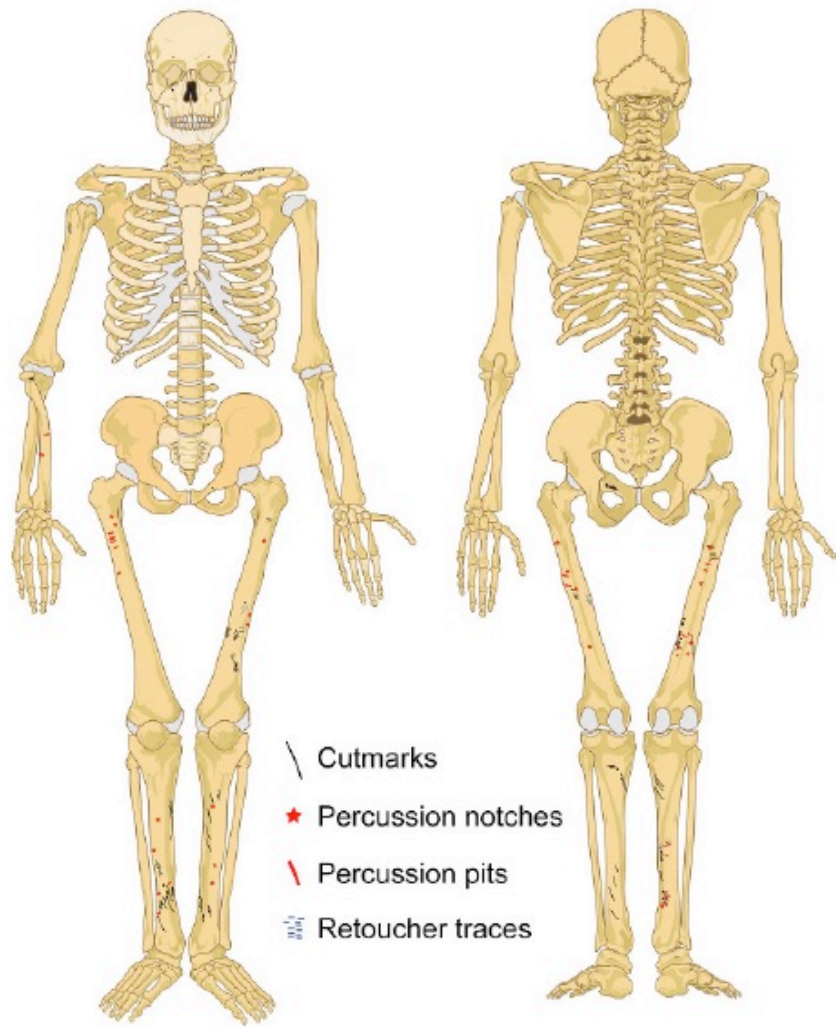


<https://www.discovermagazine.com/planet-earth/neanderthals-were-just-as-violent-as-early-humans>

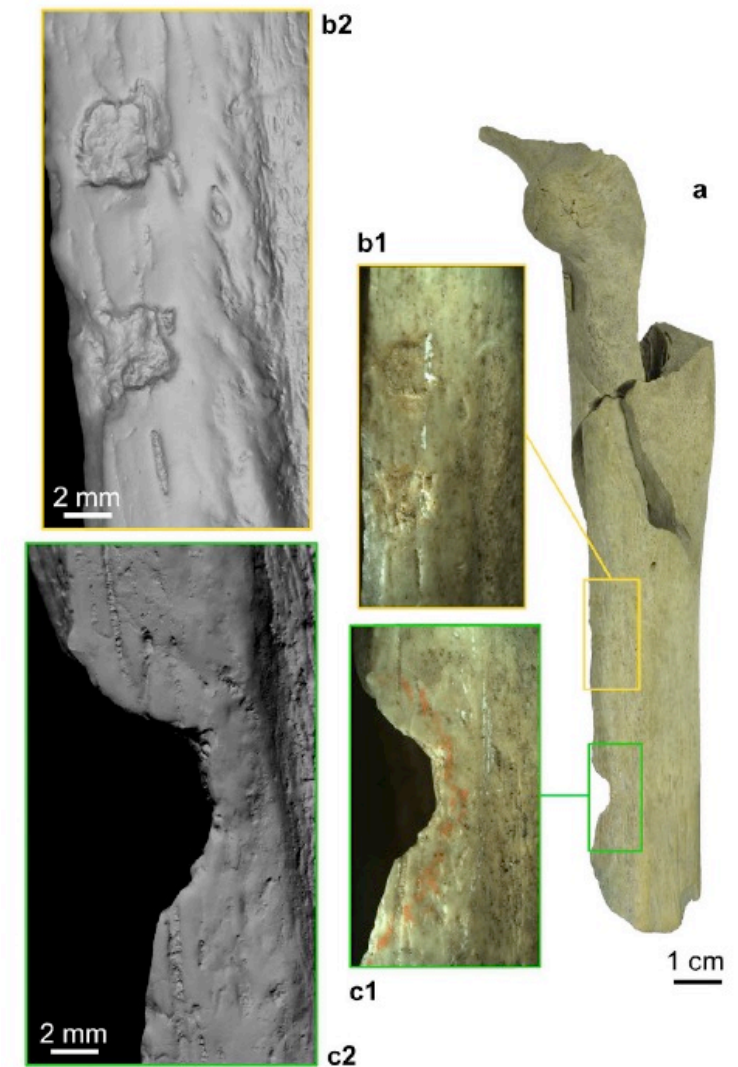


Trinkaus e Villotte, 2017. PlosOne

CANNIBALISMO

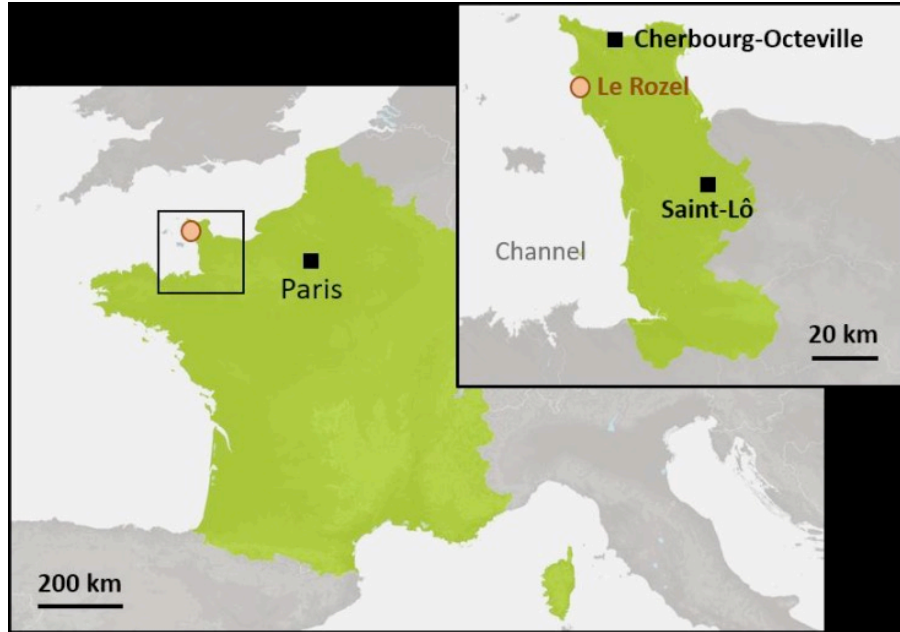


Femore III di Goyet, Belgio (45,000-40,000 anni fa): segni di ritocco e cutmarks



Femore I di Goyet, Belgio (45,000-40,000 anni fa): tracce di percussione

COMPOSIZIONE E DIMENSIONE DEI GRUPPI NEANDERTALIANI



257 impronte di piedi

LA CULTURA DEL NEANDERTHAL



GESTIONE DEGLI SPAZI - RIPARO L'OSCURUSCIUTO (GINOSA, TA)

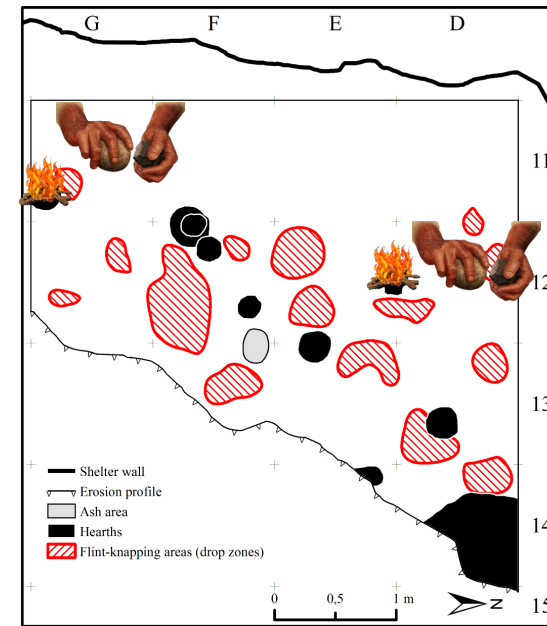


UR Preistoria e Antropologia,
DSFTA – Università di Siena

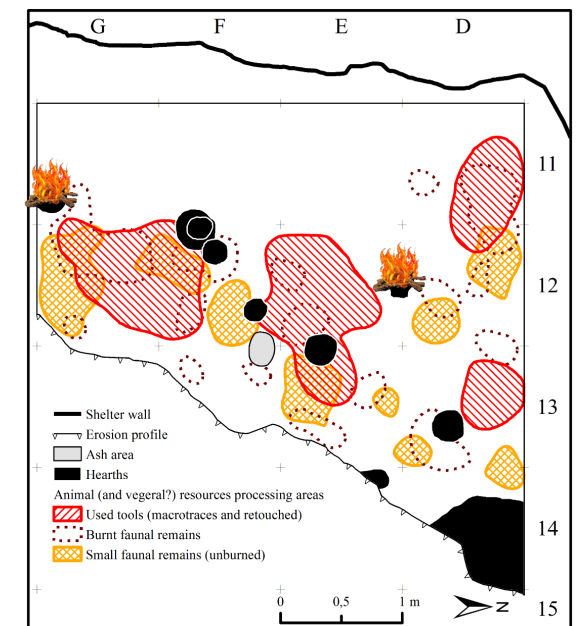


Unità stratigrafica 13

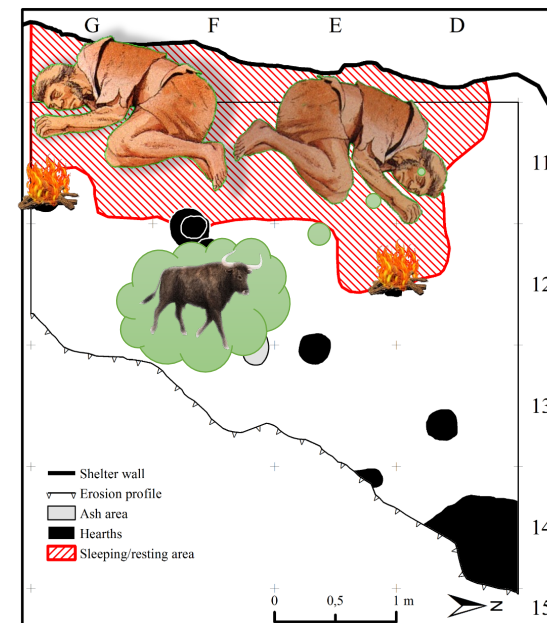
Strumenti litici: 7500; Resti ossei: 2860; Focolari: 10



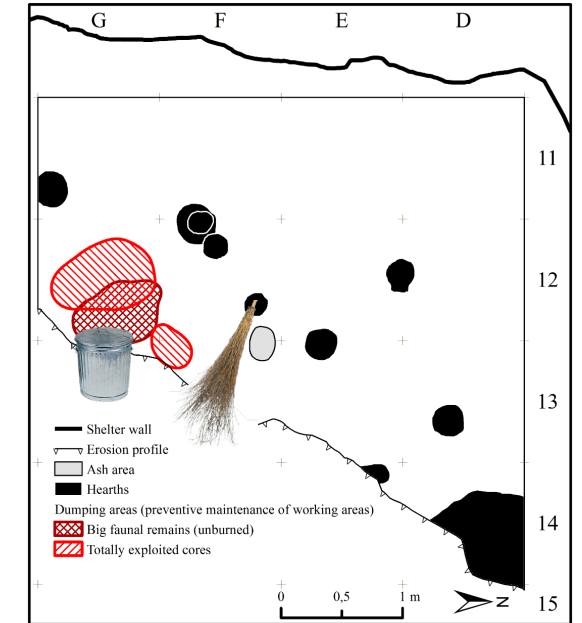
Aree produzione strumenti



Aree attività domestiche



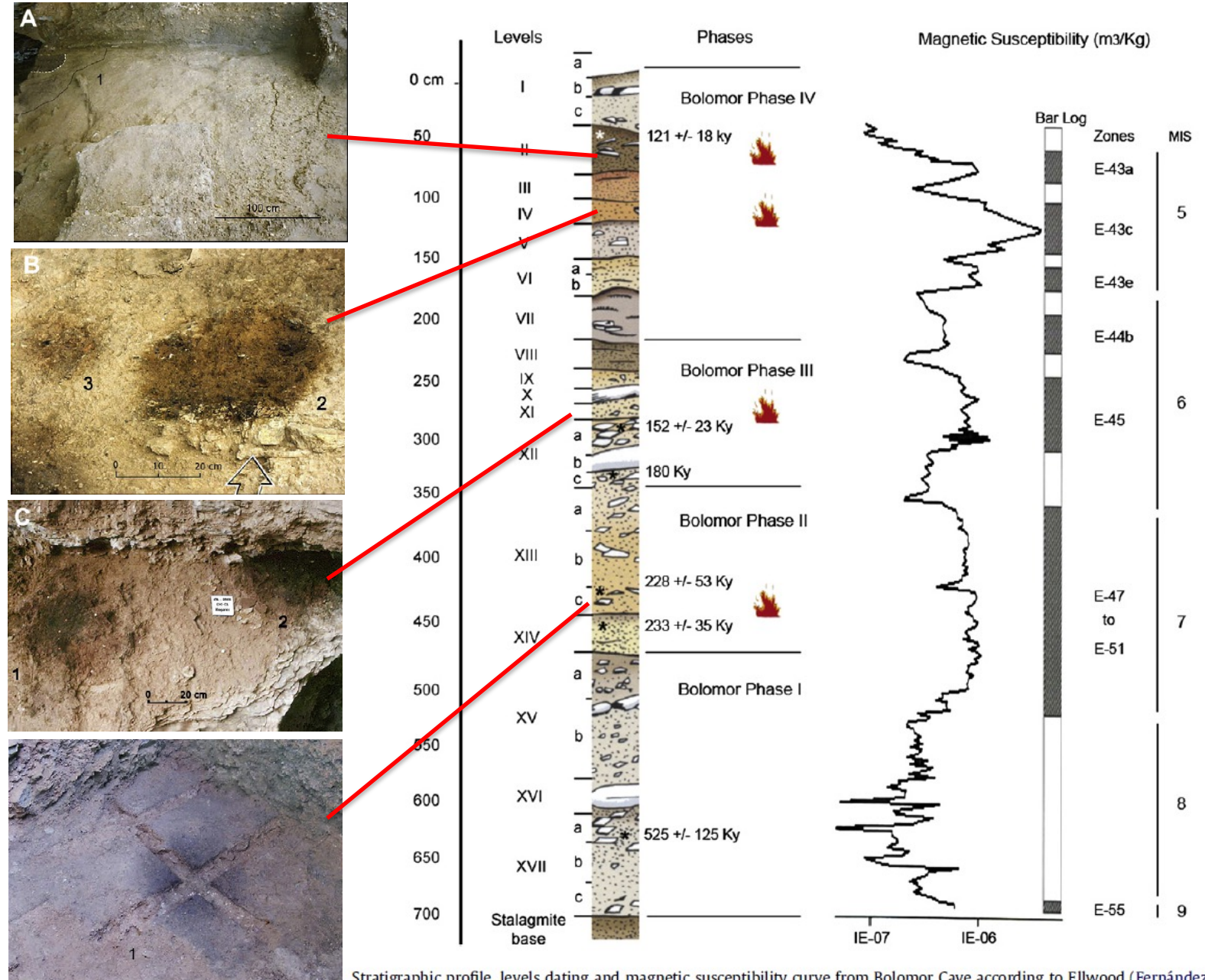
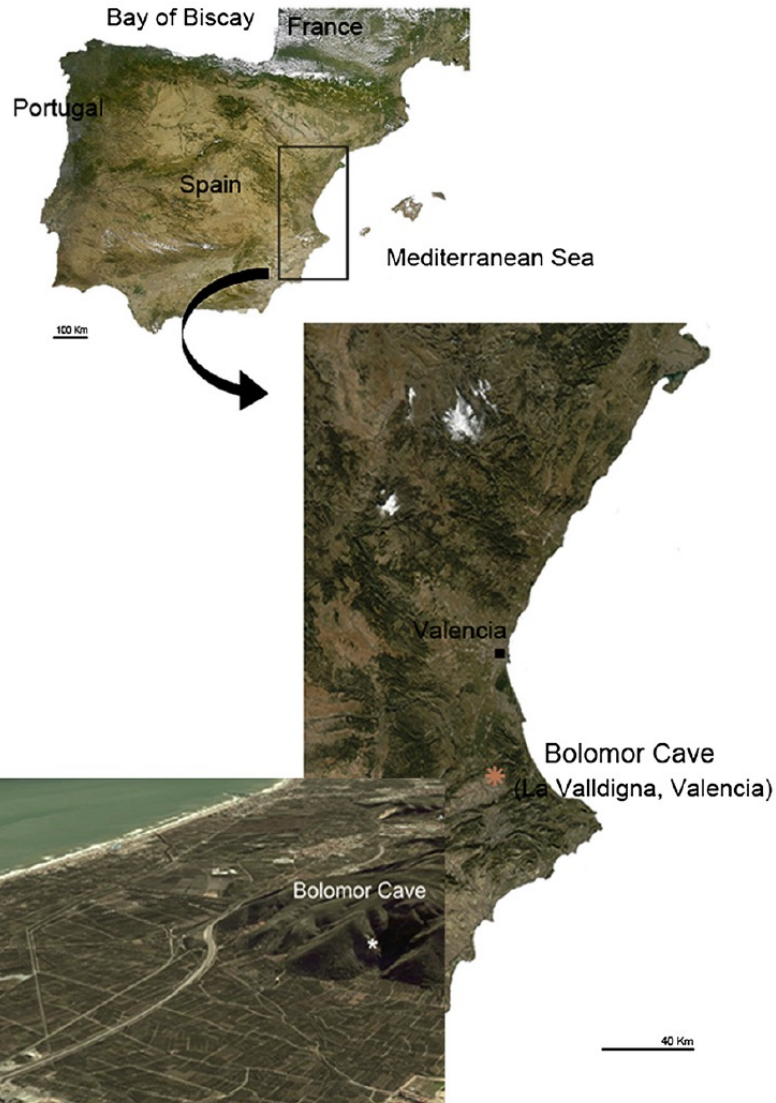
Area notte



Zona rifiuti

Spagnolo et al., 2019

UTILIZZO DEL FUOCO: BOLOMOR CAVE (VALENCIA, SPAIN)



LA CULTURA DEL NEANDERTHAL...COSA RIMANE



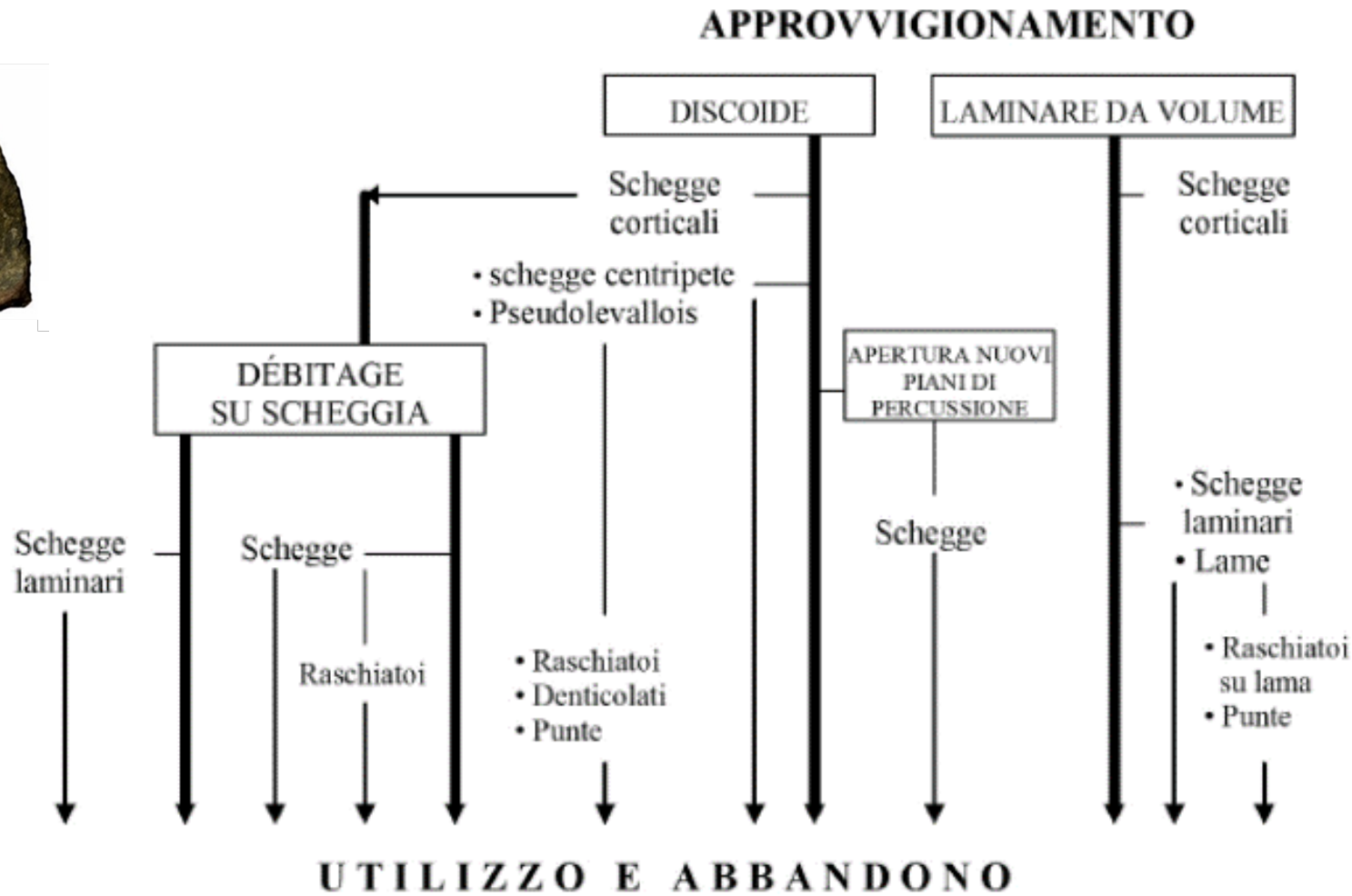
Raschiatoi laterali, trasversali, bilaterali



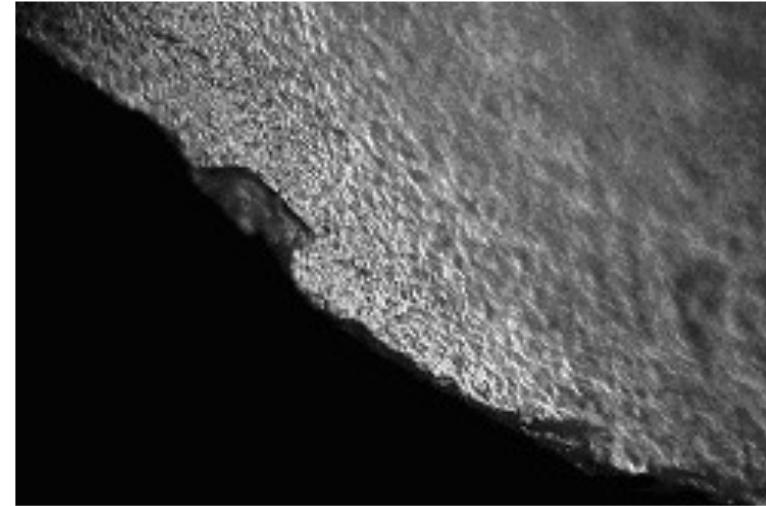
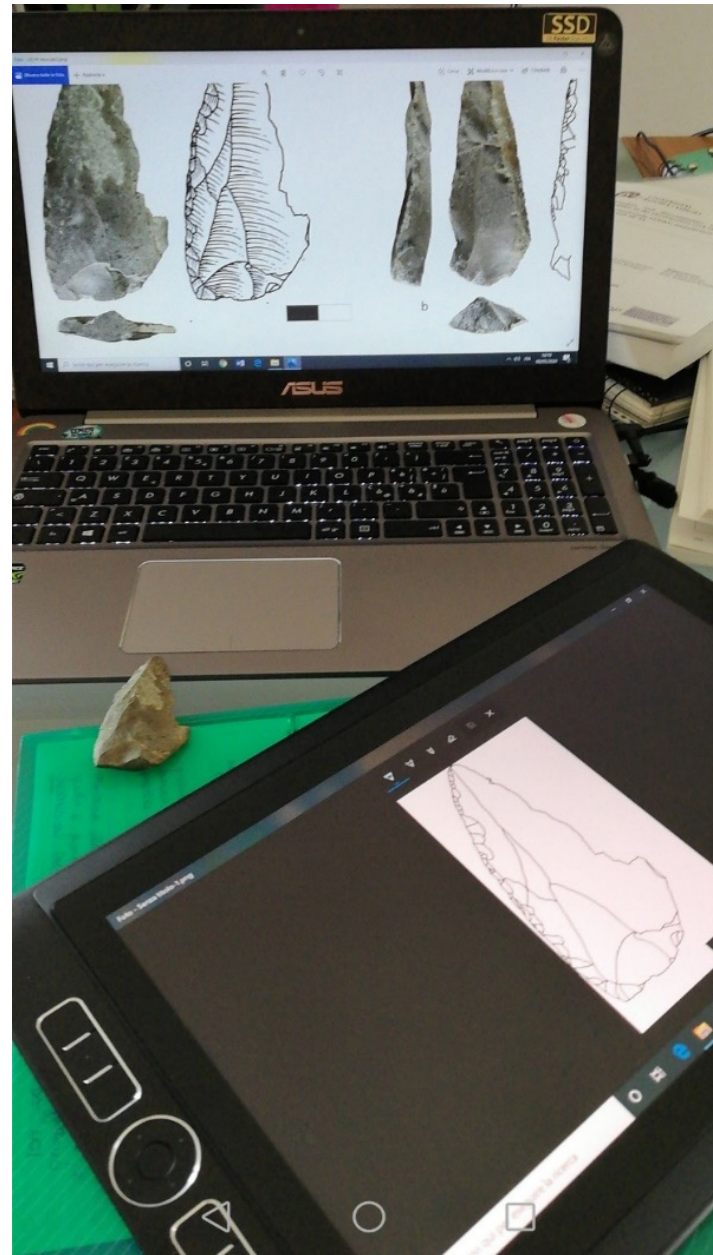
Punte



Denticolati



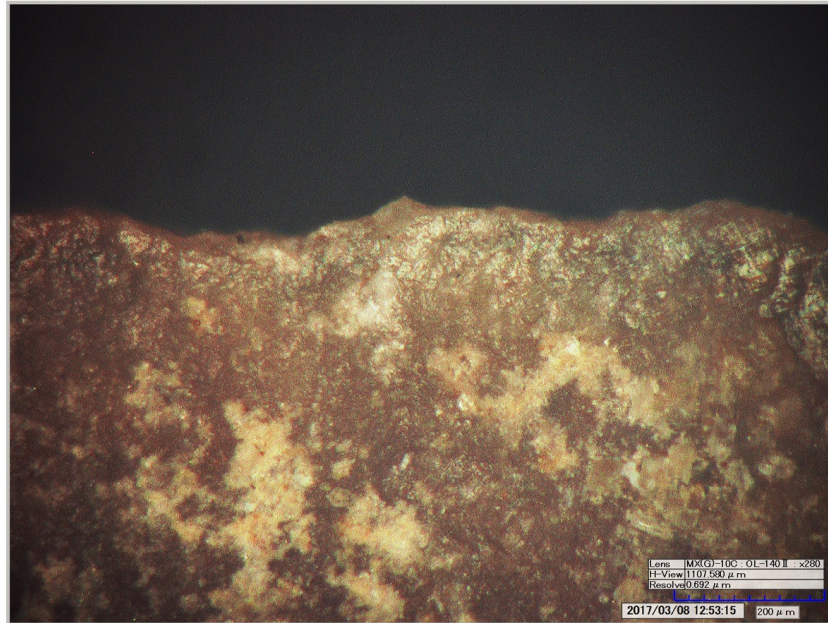
LO STUDIO DEGLI STRUMENTI LITICI



STRUMENTI LITICI AL MICROSCOPIO...



1 cm

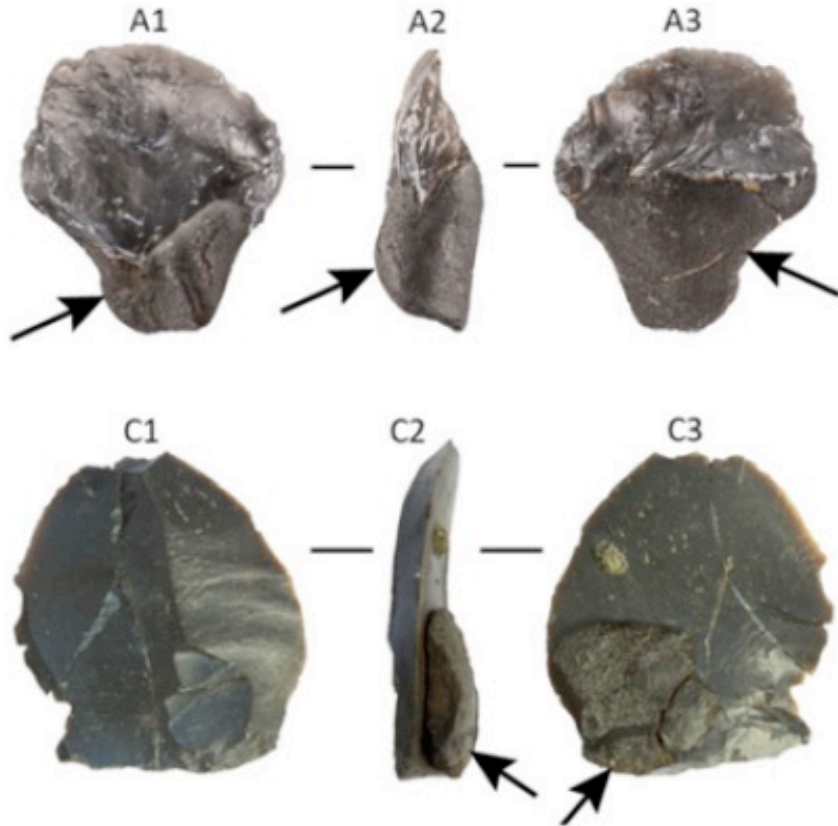


1 cm



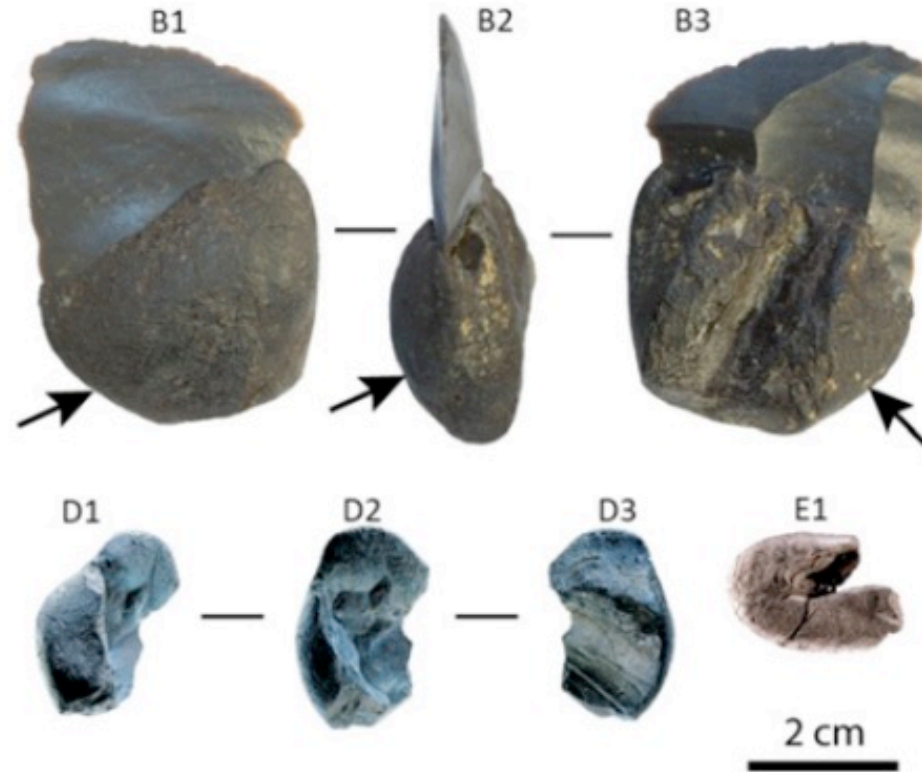
PECE DI BETULLA PER IMMANICARE STRUMENTI DI PIETRA

Zandmotor, Olanda



Campitello, Italia

Campitello, Italia



Königsau, Germania



STRUMENTI DI LEGNO



Bastoni intagliati e riscaldati partendo da legno di bosso (area di Poggetti Vecchi, Grosseto, Toscana, 170,000 anni fa)



Aranguren et al., 2018. PNAS



Otto lance di legno dal sito di Schöningen, Germania, datate circa 300,000 anni fa

Thieme et al., 1997. Nature



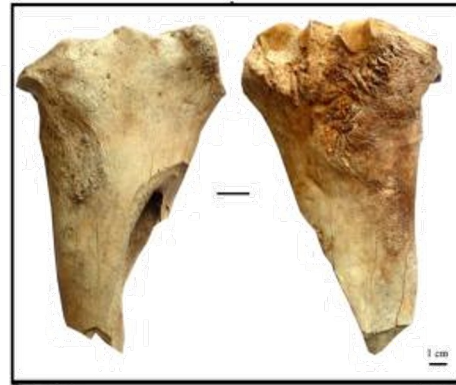
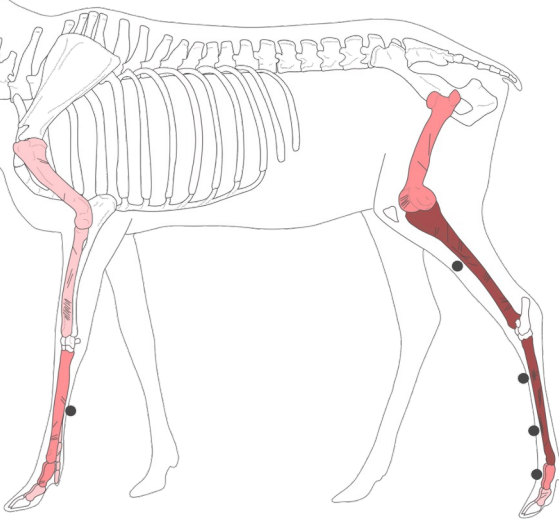
LA DIETA DEL NEANDERTHAL



Riparo Tagliente (ricostruzione di Mauro Cutrona)

NR tot 248

- < 5
- 5 - 14
- 15 - 29
- 30 - 55
- impacts
- cut marks (scrapers)
- cut marks (striae)



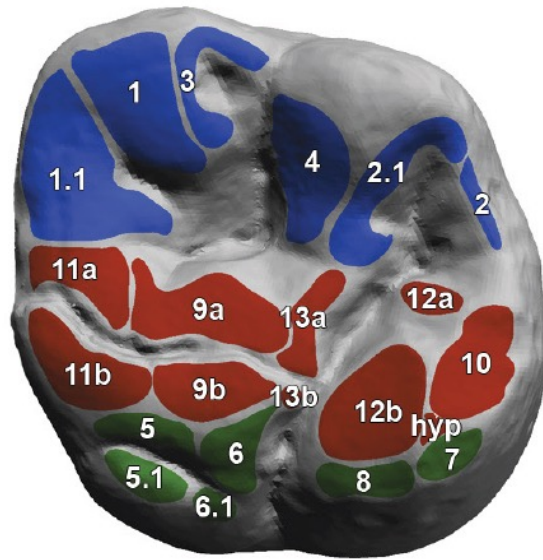
Radio di bisonte



Metapodiale di cervo

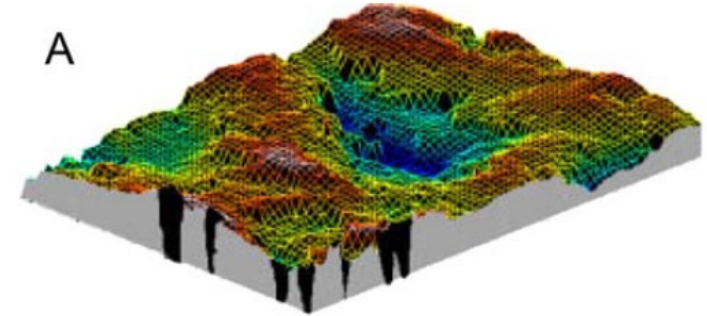


LA DIETA DEL NEANDERTHAL: USURA DENTALE



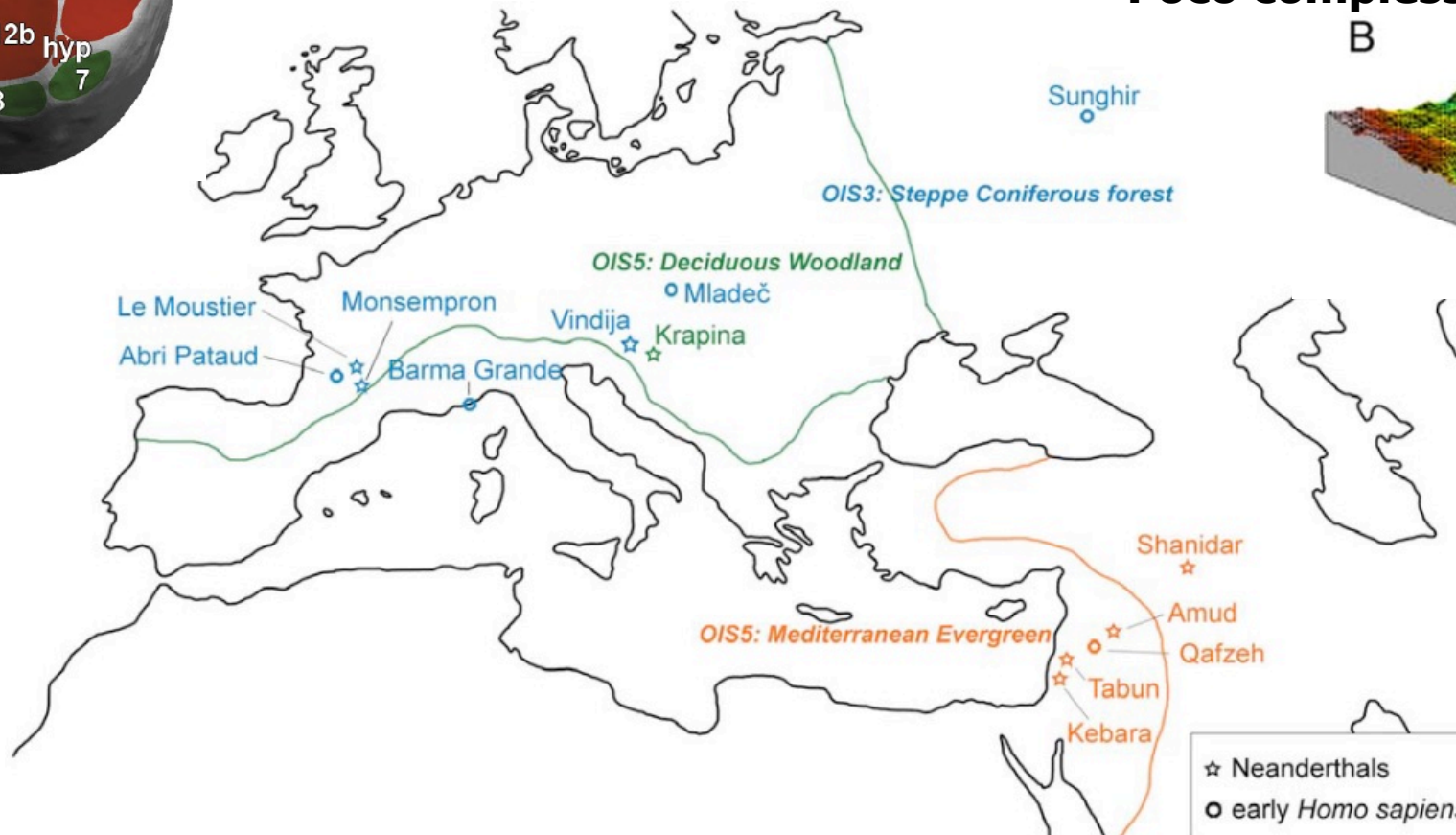
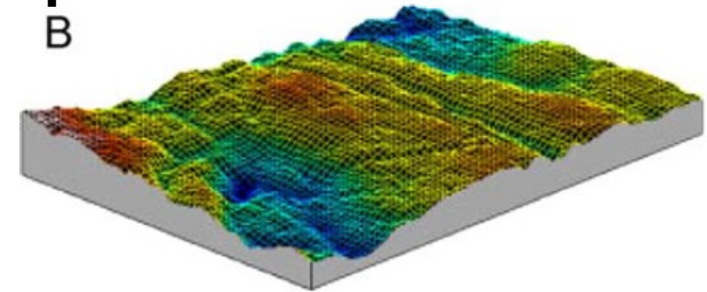
Molto complessa

A

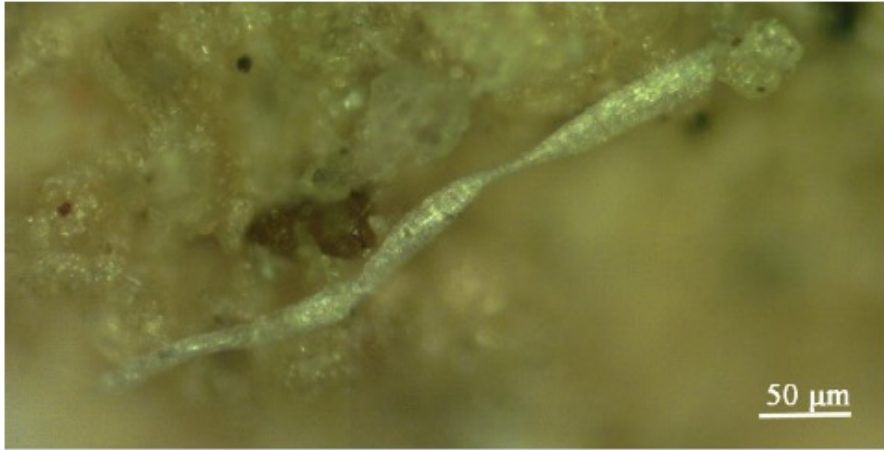


Poco complessa

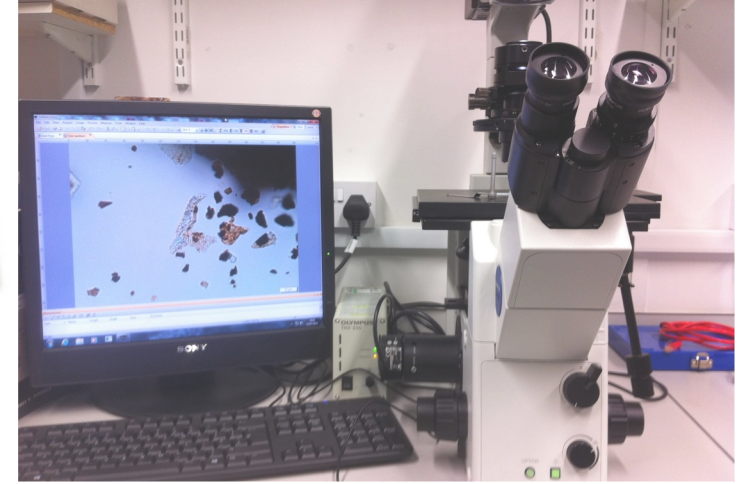
B



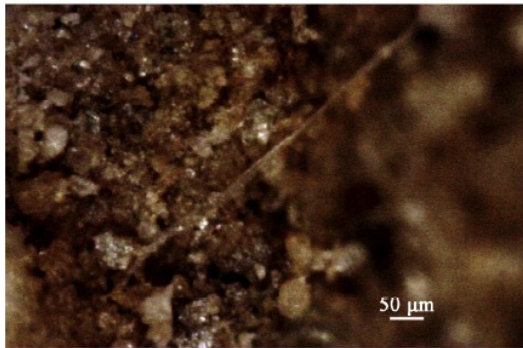
RICOSTRUIRE LA DIETA DALL'ANALISI DEI RESIDUI E CALCOLO DENTALE



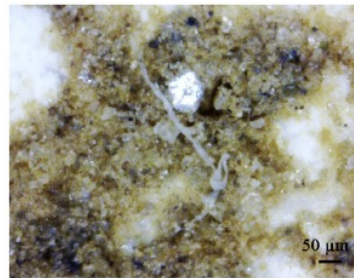
A



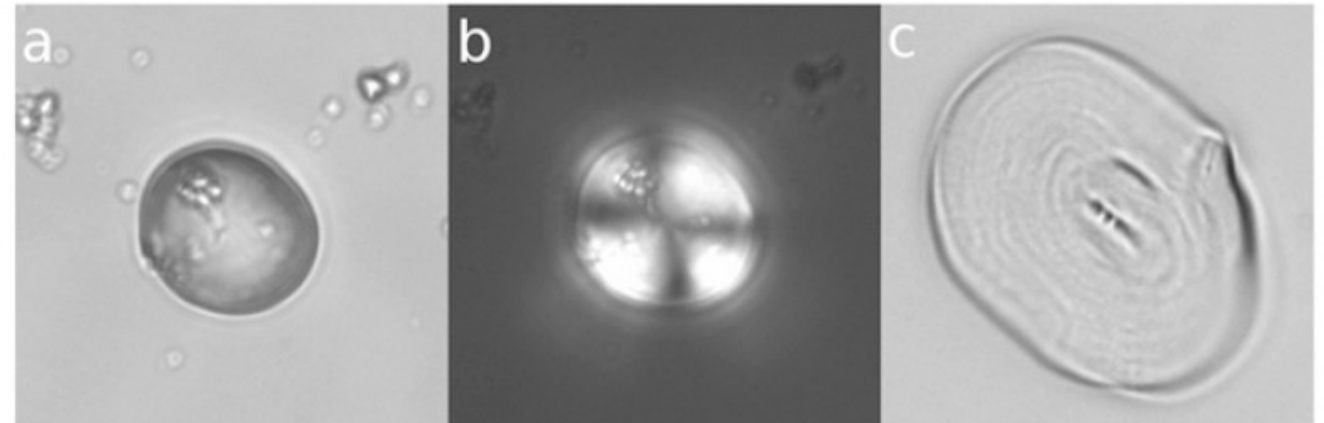
C



D



E



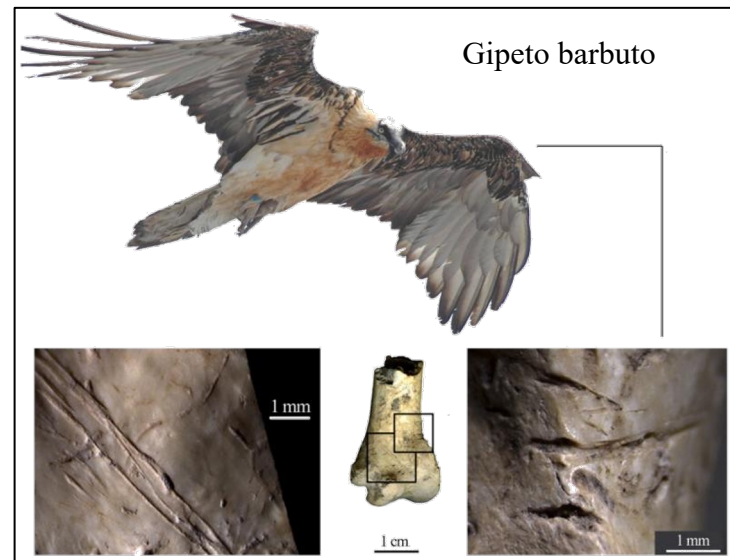
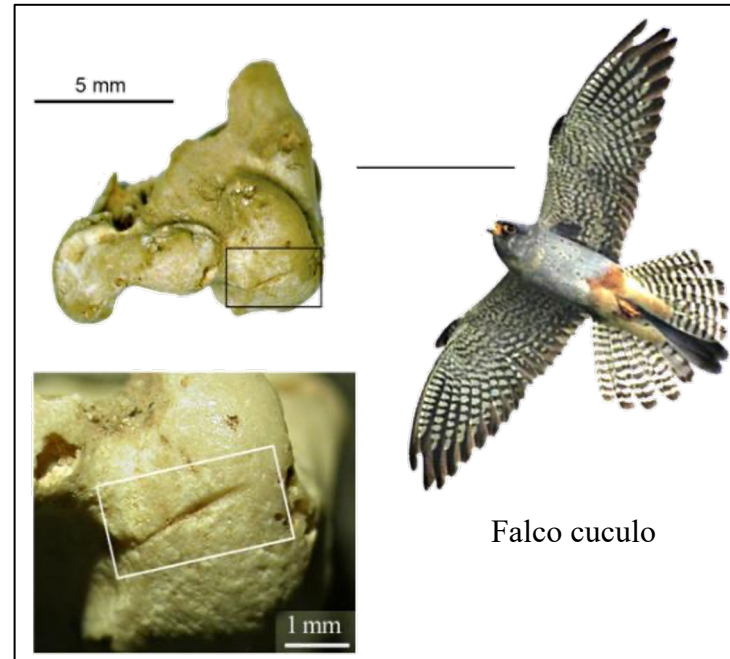
Hordeum spp. Granuli di amido dal dente di Shanidar 4

Amido cotto di *Hordeum* spp. Dal dente di Shanidar 5

RIMOZIONE INTENZIONALE DELLE PIUME



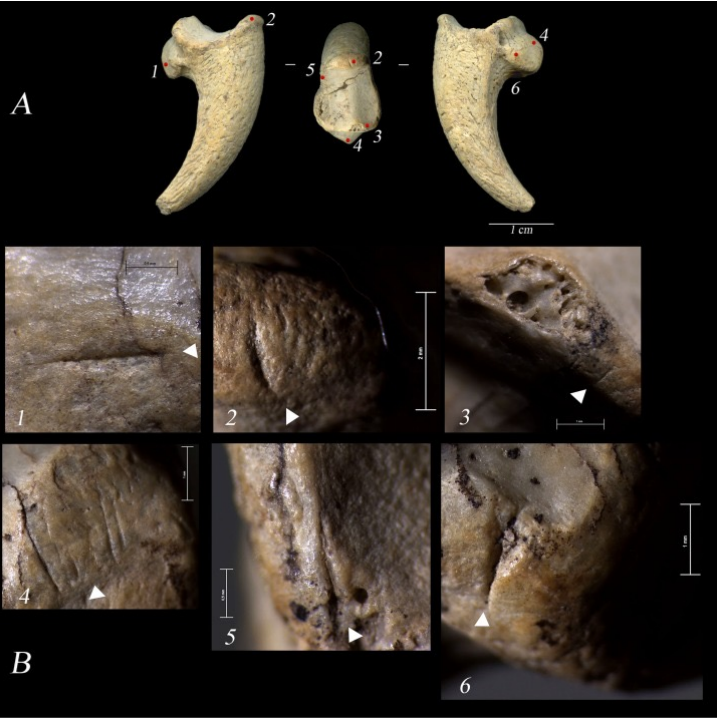
Peresani et al., 2011. PNAS



by F. Fogliazza, 2012

UTILIZZO DEGLI ARTIGLI

Artigli di aquila



Romandini et al. 2014. PlosOne

Artigli di aquila



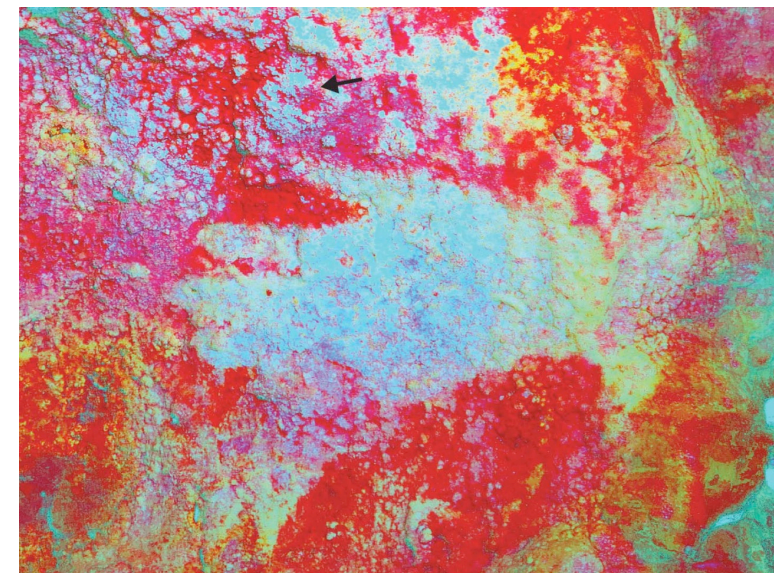
Radovic et al. 2015. PlosOne



ARTE?

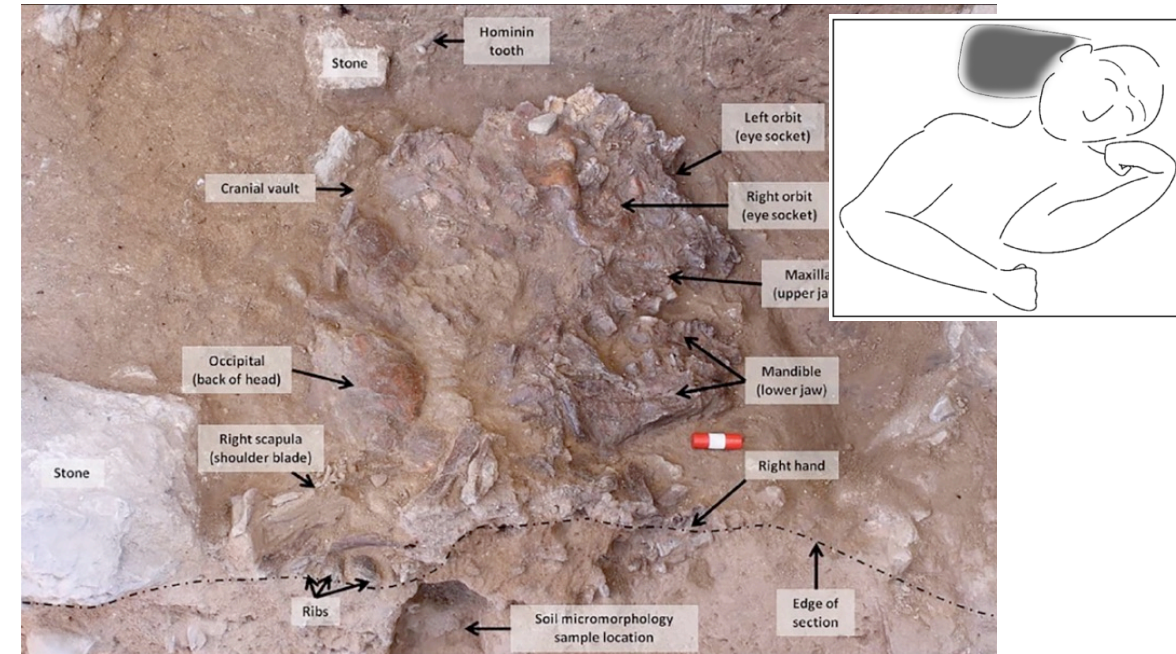


**Motivi lineari rossi a La Pasiega
(Cantabria, Spagna, >65,000)**



**Impronta della mano nella grotta di Maltravieso
(Estremadura , Spagna, >65,000)**

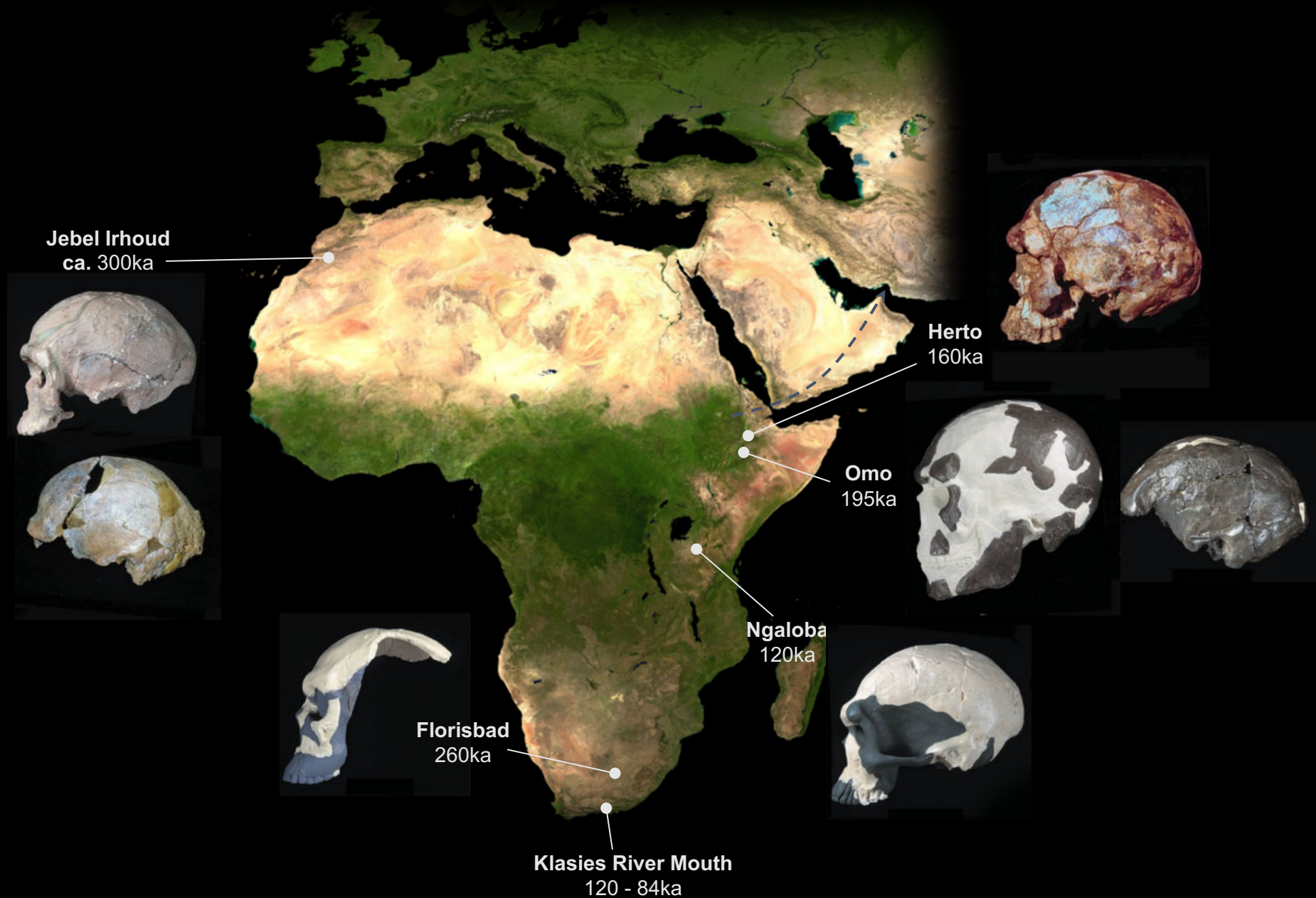
IL NEANDERTHAL SEPELLIVA I MORTI?



Pomeroy et al. 2020. *Antiquity*\\



ORIGINE DI *Homo sapiens*



I PRIMI SAPIENS FUORI DALL'AFRICA

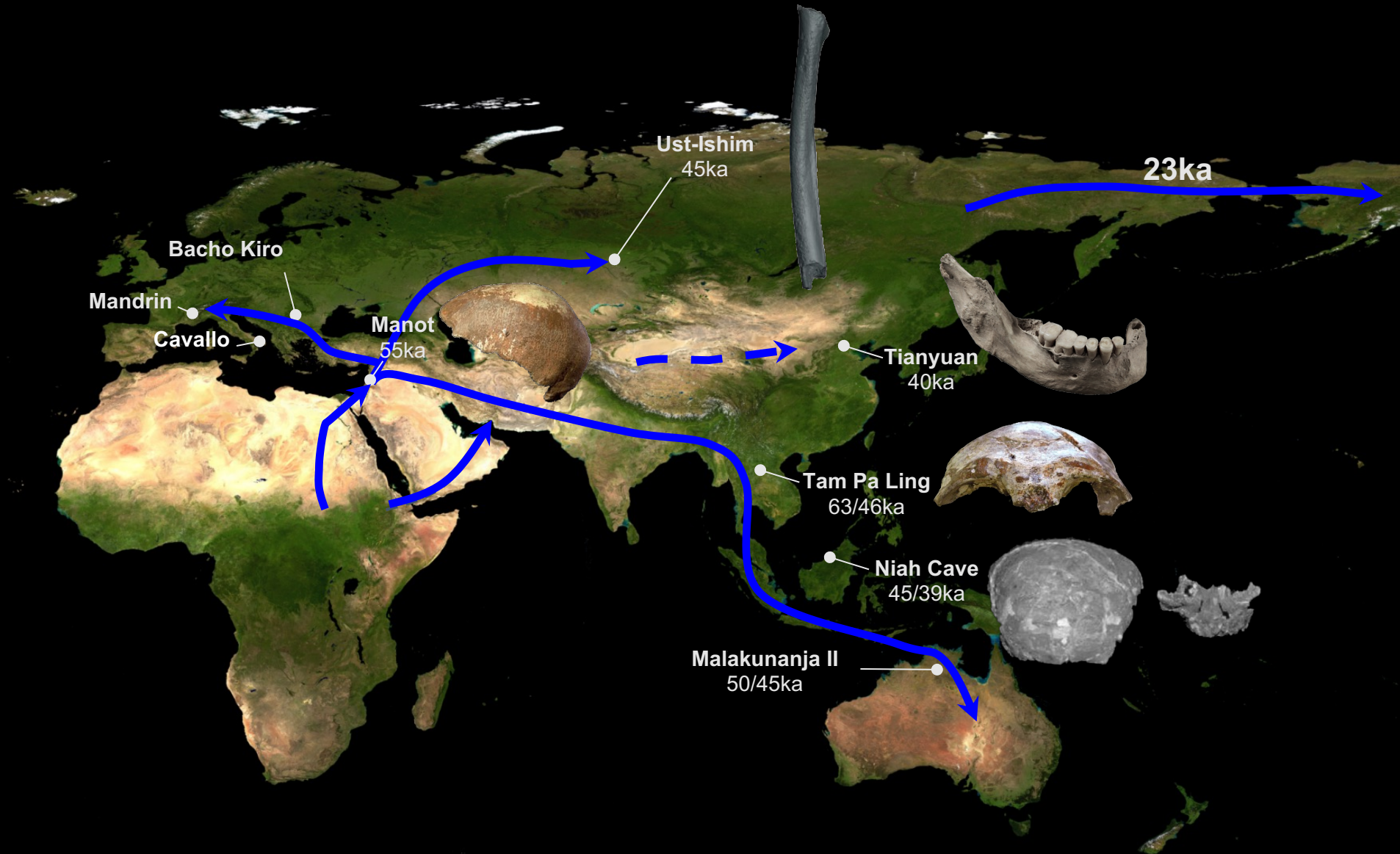


Hershkovitz et al., 2018. Science

Liu et al., 2015. Nature

Harvati et al., 2019. Nature

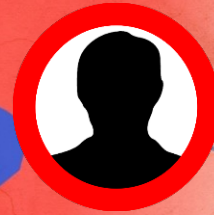
DISPERSIONE DEL SAPIENS TRA 60,000-40,000 ANNI FA



IL MONDO 60,000 ANNI FA



Neanderthals



Denisovans



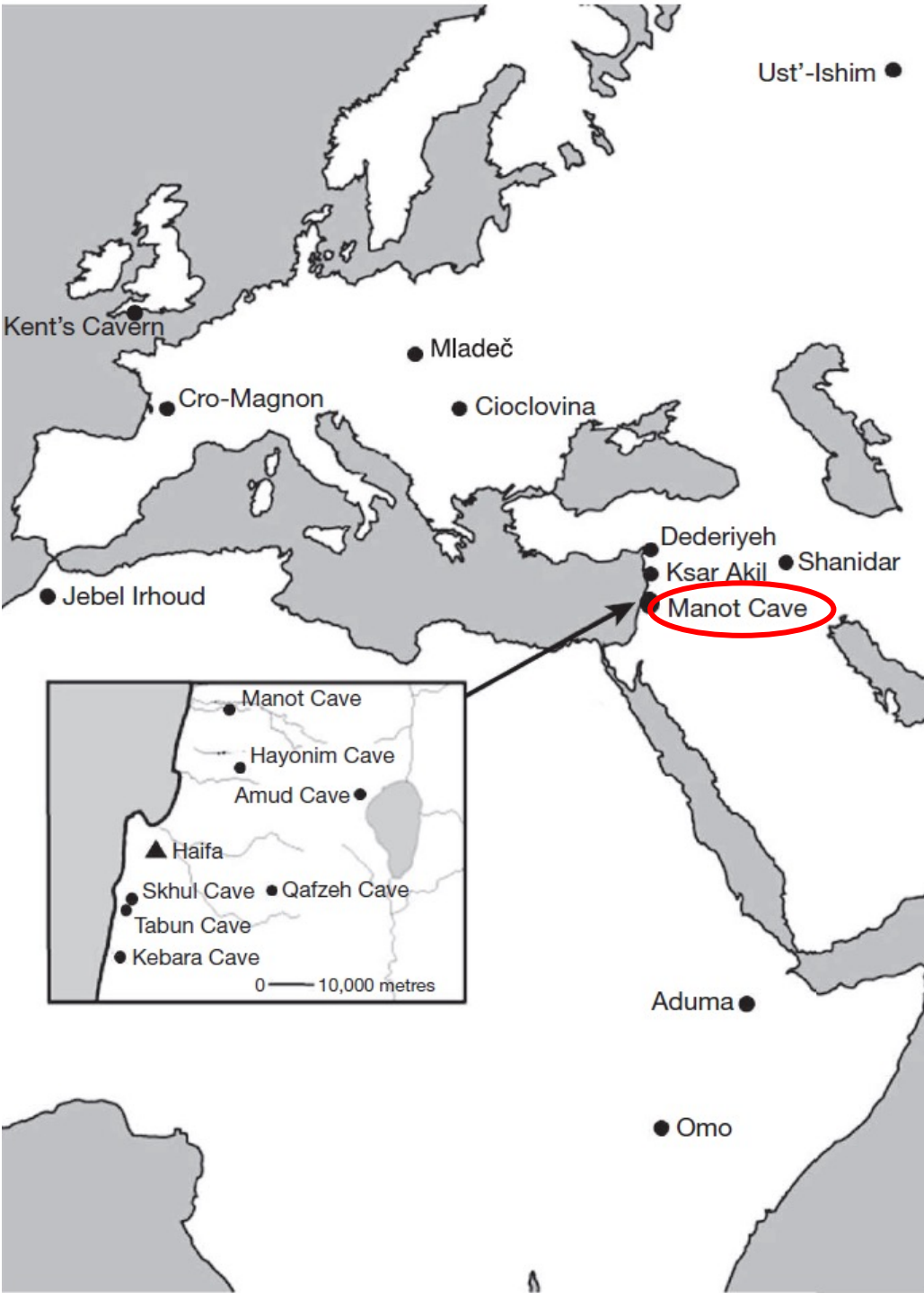
Sapiens



Floresiensis

MANOT CAVE (ISRAELE)

60,000-50,000 anni fa



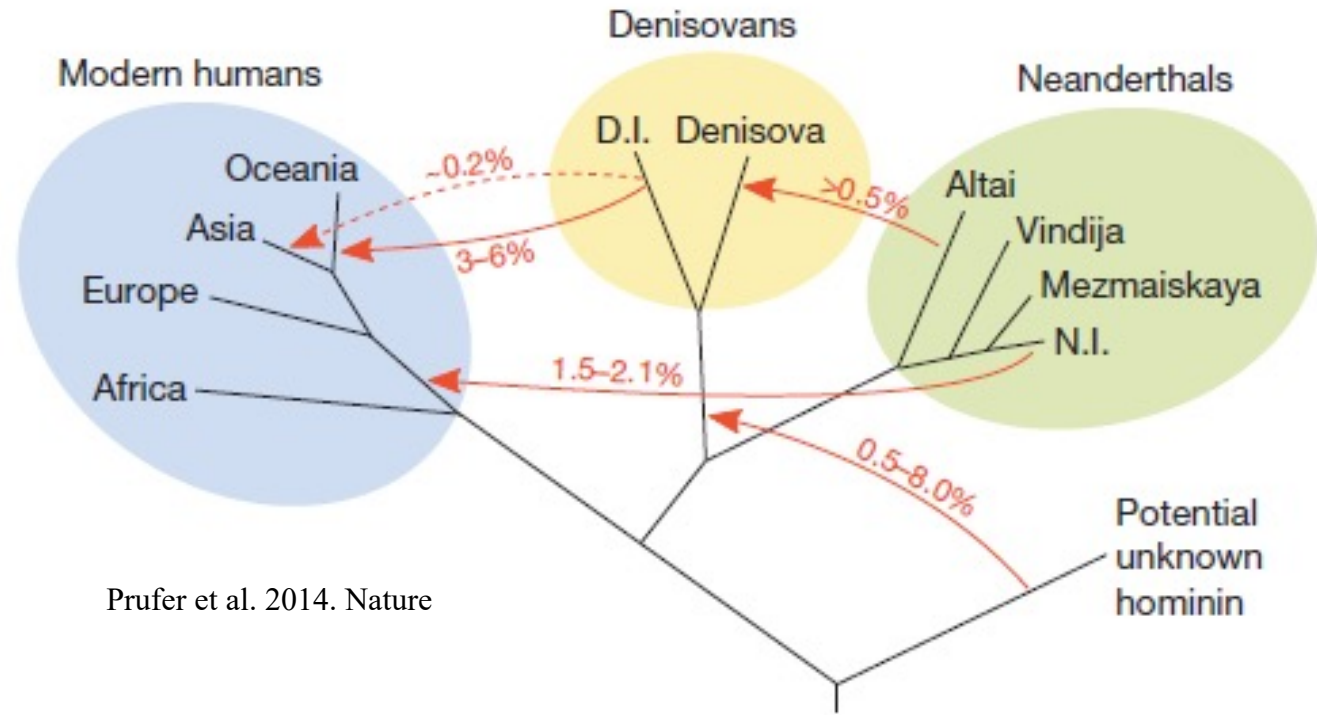
INTERAZIONI BIOLOGICHE



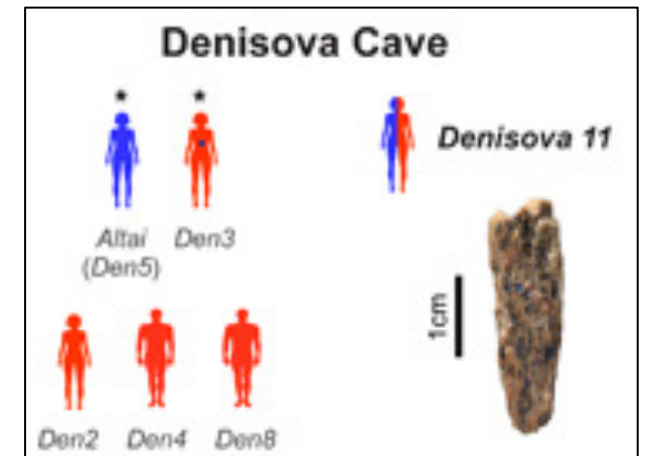
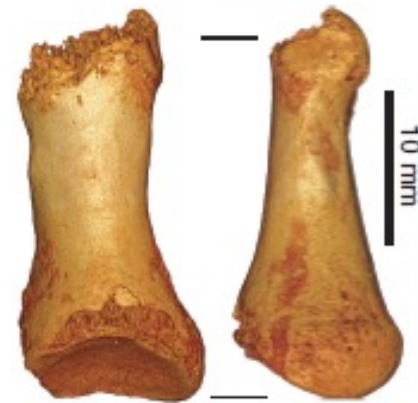
GROTTA DI DENISOVA (RUSSIA)



Krause et al. 2010. Nature



Prufer et al. 2014. Nature



Slon et al. 2018. Nature

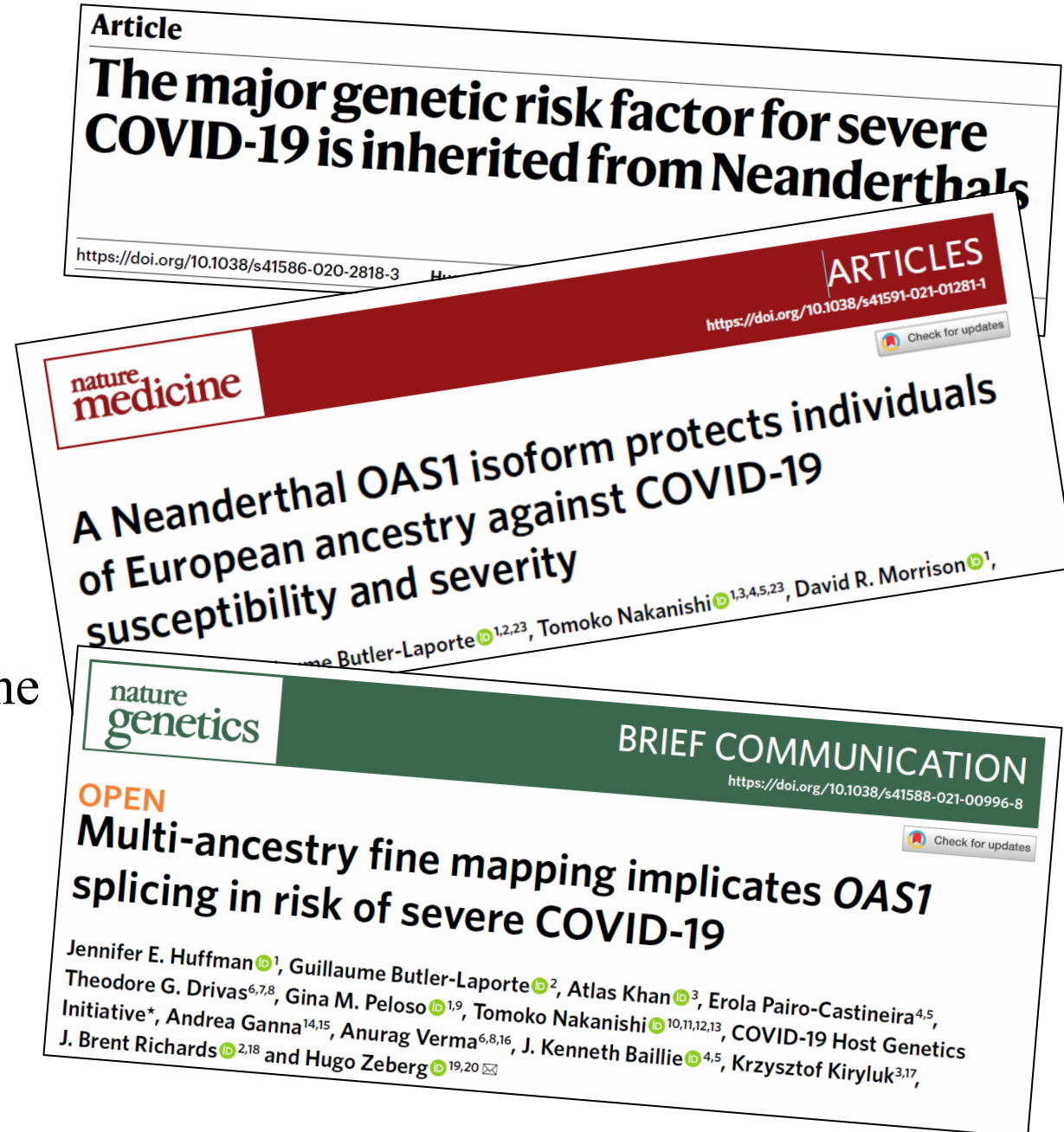
PRESENZA DI GENI EREDITATI DAL NEANDERTHAL E CORRELATI CON:

- Dipendenza da nicotina
- Malattia di Crohn
- Diabete mellito di tipo 2
- Metabolismo dei lipidi (propensione ad assimilare i grassi)
- Disturbi dell'umore (disinteresse, poco entusiasmo, isolamento)
- Maggiore efficienza della coagulazione del sangue
- Forma del cranio
- Produzione di cheratina (pelle, capelli e unghie più resistenti)
- Pigmentazione della pelle e dei capelli
- Risposta immunitaria (vedi Covid 19)

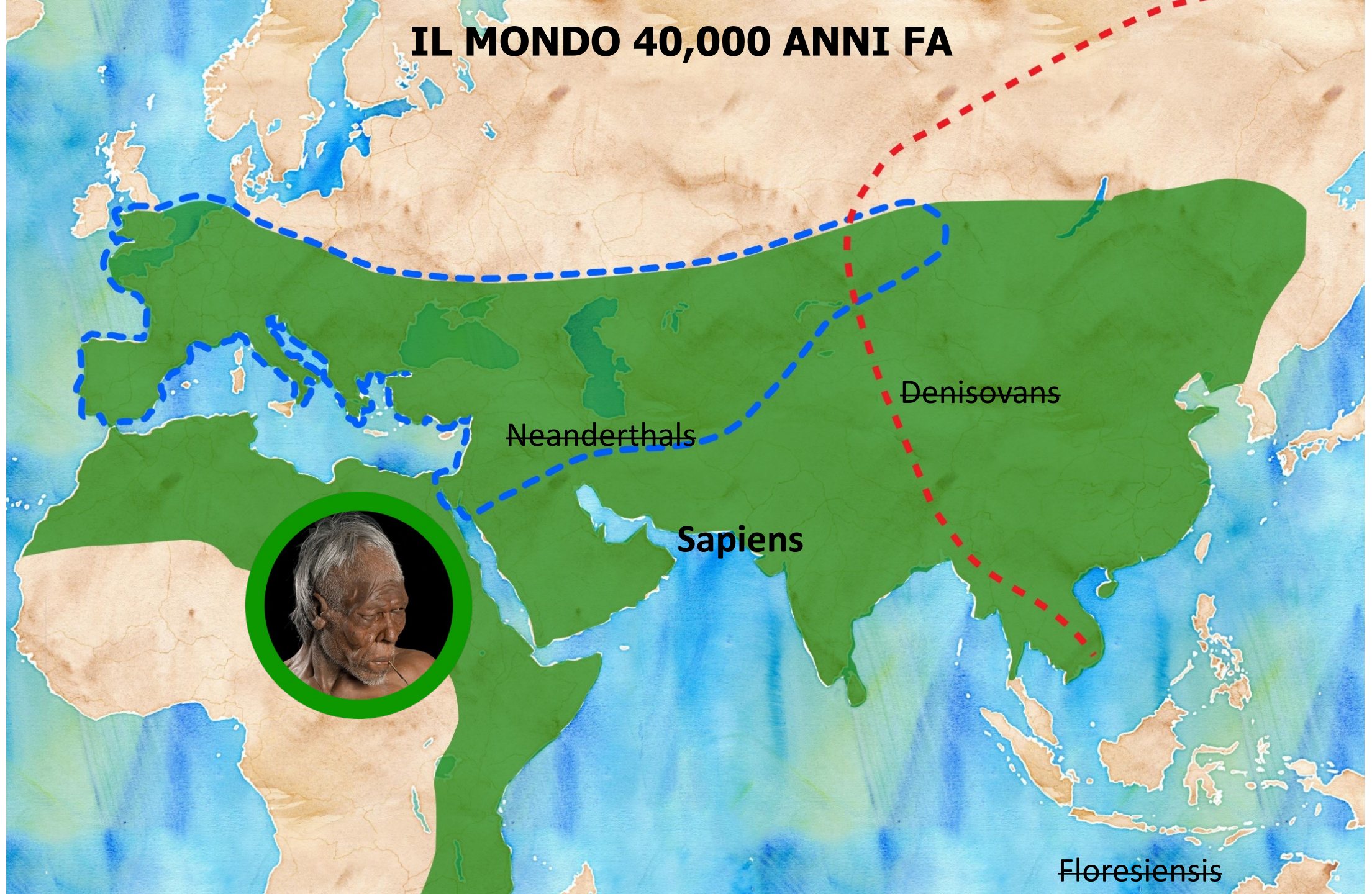


NEANDERTHAL E COVID

- **Cromosoma 3** – varianti genetiche ereditate dal Neanderthal associate a Covid grave
- **Cromosoma 12** – varianti genetiche ereditate dal Neanderthal che aumentano le prestazioni antivirali (riduce del 23% il rischio di infezione grave Covid 19)



IL MONDO 40,000 ANNI FA





Tenfold Population Increase in Western Europe at the Neandertal-to-Modern Human Transition
Paul Mellars, *et al.*
Science 333, 623 (2011);
DOI: 10.1126/science.1206930

Research Article

Neanderthals versus Modern Humans: Evidence for Resource Competition from Isotopic Modelling

Comparing fitness and drift explanations of Neanderthal replacement

Daniel R. Shultz^{1,2}, Marcel Montrey³ and Thomas R. Shultz^{3,4}



Contents lists available at ScienceDirect

Journal of Human Evolution

journal homepage: www.elsevier.com/locate/jhevol

Modeling the role of fire and cooking in the competitive exclusion of Neanderthals

Anna E. Goldfield^{a,*}, Ross Booton^b, John M. Marston^a

RESEARCH ARTICLE

Inbreeding, Allee effects and stochasticity might be sufficient to account for Neanderthal extinction

Krist Vaesen^{1,2,*}, Fulco Scherjon², Lia Hemerik³, Alexander Verpoorte²

...nni,¹ and Estelle Herrscher²

ecocultural model predicts Neanderthal extinction through competition with modern humans

William Gilpin^a, Marcus W. Feldman^{a,b}, and Kenichi Aoki^c

^aDepartment of Applied Physics, Stanford University, Stanford CA 94305; ^bDepartment of Biology, Stanford University; ^cOrganization for the Strategic Coordination of Research and Intellectual Properties, Meiji University, Tokyo

Contributed by Marcus W. Feldman, December 21, 2015 (sent for review October 6, 2015; reviewed by Marc J. Weissing)

SCIENTIFIC REPORTS

OPEN Climate deteriorations and

Neanderthal demise in interior

...araz-Castaño^{1,2,*}, S. Heinrich³, P. Baumgart¹, R. C. M. Bledtner⁴, R. Zech^{4,7}, L. Zöller² & D. Faust¹

scientific reports

OPEN

An emerging consensus in palaeoanthropology: demography was the main factor responsible for the disappearance of Neanderthals

Krist Vaesen^{1,2,*}, Gerrit L. Dusseldorp^{1,3} & Mark J. Brandt⁴

ARTICLE
DOI: 10.1038

A parsimonious neutral model suggests Neanderthal replacement was determined by migration and random species drift

Oren Kolodny¹ & Marcus W. Feldman¹

PALEOENVIRONMENT

A global environmental crisis 42,000 years ago

Alan Cooper^{1,2,*}, Chris S. M. Turney^{3,*}, Jonathan Palmer³, Alan Hogg⁴, Matt McGlone⁵, Janet Wilmshurst^{5,6}, Andrew M. Lorrey⁷, Timothy J. Heaton⁸, James M. Russell⁹, Ken McCracken¹⁰, Julien G. Anet¹¹, Eugene Rozanov^{12,13,14}, Marina Friedel¹², Ivo Suter¹⁵, Thomas Peter¹², Rainald Christen¹⁶, Eleonora Borsari¹⁷, Jane

Human Evolution Out of Africa: The Role of Refugia and Climate Change

J. R. Stewart¹ and C. B. Stringer²

Journal of Human Evolution

journal homepage: www.elsevier.com/locate/jhevol



An evolutionary medicine perspective on Neanderthal extinction

Alexis P. Sullivan^a, Marc de Manuel^c, Tomas Marques-Bonet^{c,d,e}, George H. Perry^{a,b,*}

TRE IPOTESI PRINCIPALI

1) COMPETIZIONE

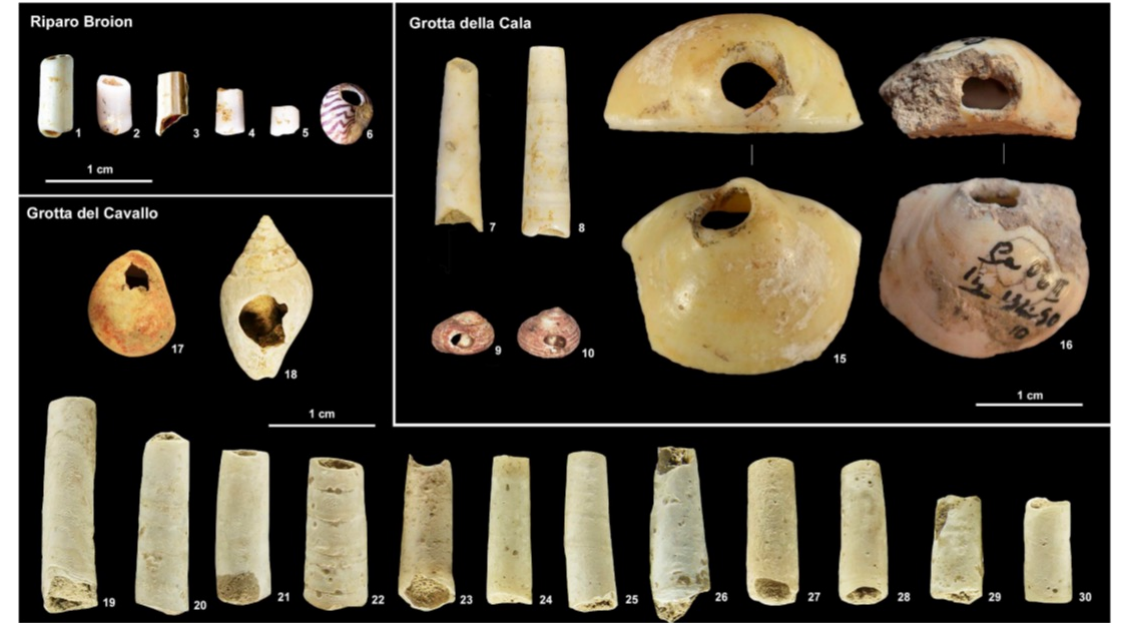
2) FATTORI DEMOGRAFICI

3) FATTORI AMBIENTALI

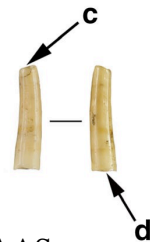
SAPIENS IN EUROPA: NUOVE TECNOLOGIE E SIMBOLISMO



Sano et al. 2019. Nat Eco Evol

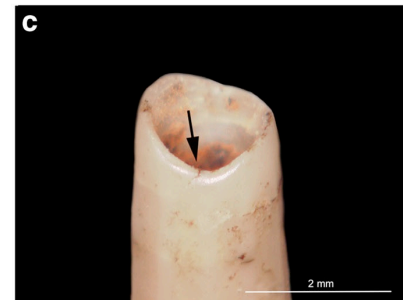
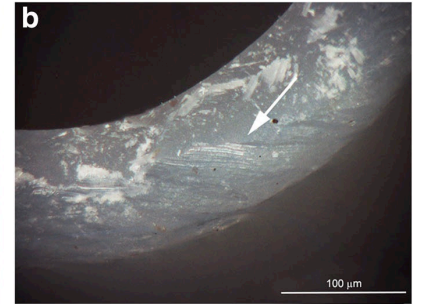
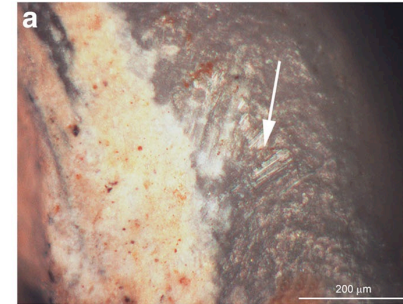


a



c

d



Arrighi et al. 2020A, QI; Arrighi et al, 2020b JAAS

**ERC Synergy Grant LAST NEANDERTHALS, 2024-2030
(call 2022)**

**The physical, cultural, and bio-genetic landscape of the
last Neanderthals**



Stefano Benazzi, Omry Barzilai, Francesco Berna

GRAZIE DELL'ATTENZIONE

Un particolare ringraziamento a:

Antonino Vazzana – Università di Bologna

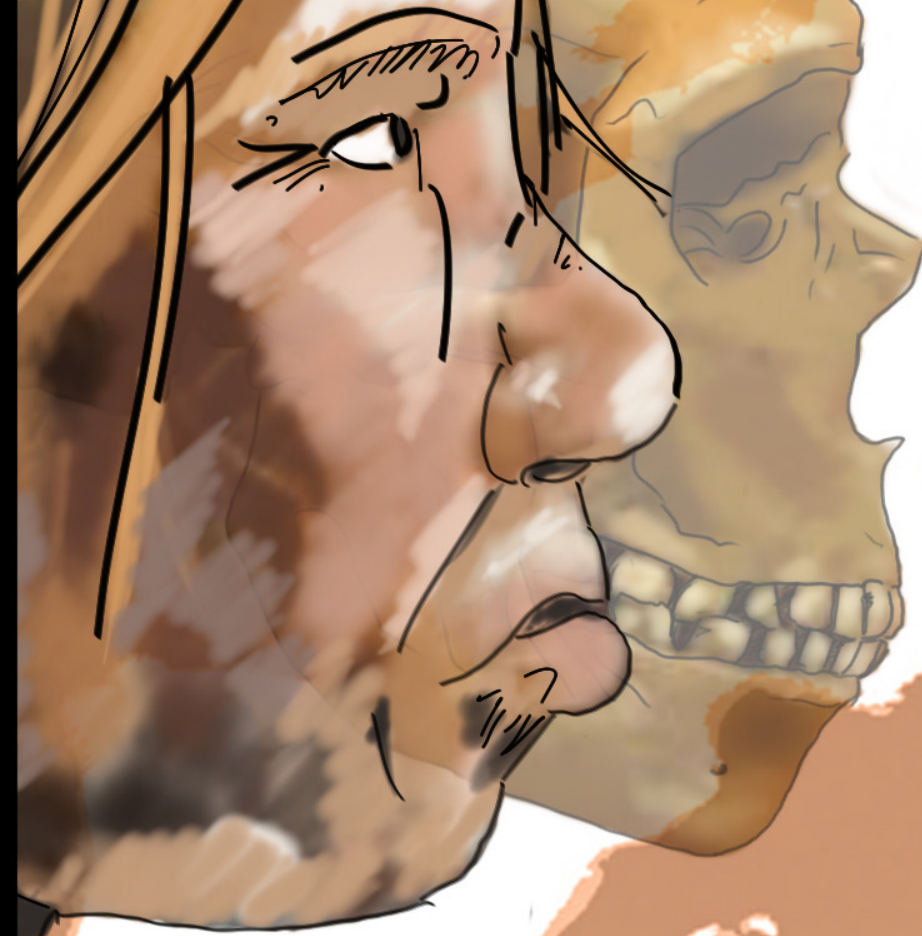
Gregorio Oxilia – Università di Bologna

Matteo Romandini – Università di Bologna

Simona Arrighi – Università di Bologna

Vincenzo Spagnolo – Università di Siena

UR Preistoria e Antropologia – Università di Siena



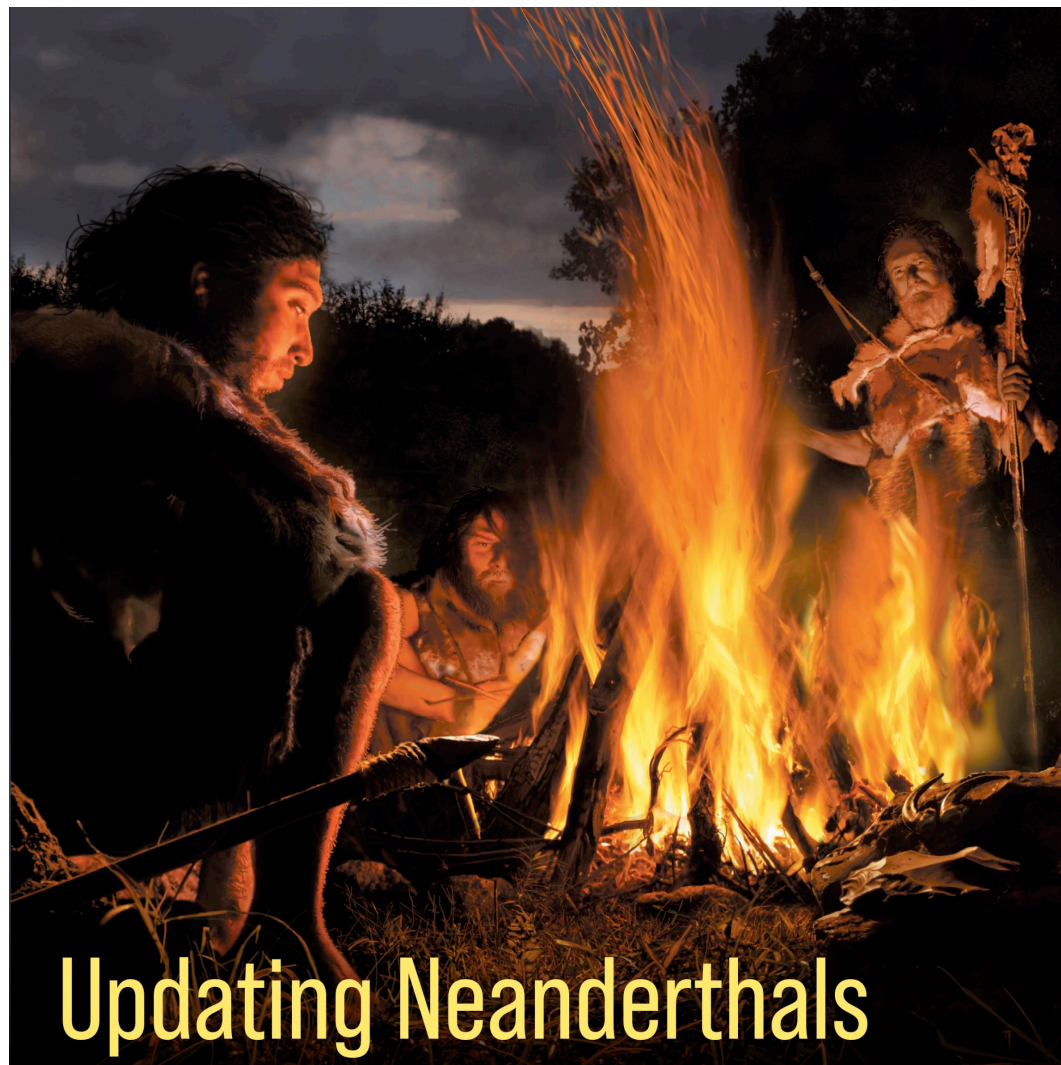
Colleen W. Kelley



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT
OF CULTURAL HERITAGE

Bones Lab.
Osteoarchaeology and Paleoanthropology



Updating Neanderthals

Understanding Behavioural Complexity in the Late Middle Palaeolithic

Edited by

Francesca Romagnoli, Florent Rivals
and Stefano Benazzi



GIORGIO MANZI L'ULTIMO NEANDERTHAL RACCONTA

Storie prima della storia

il Mulino