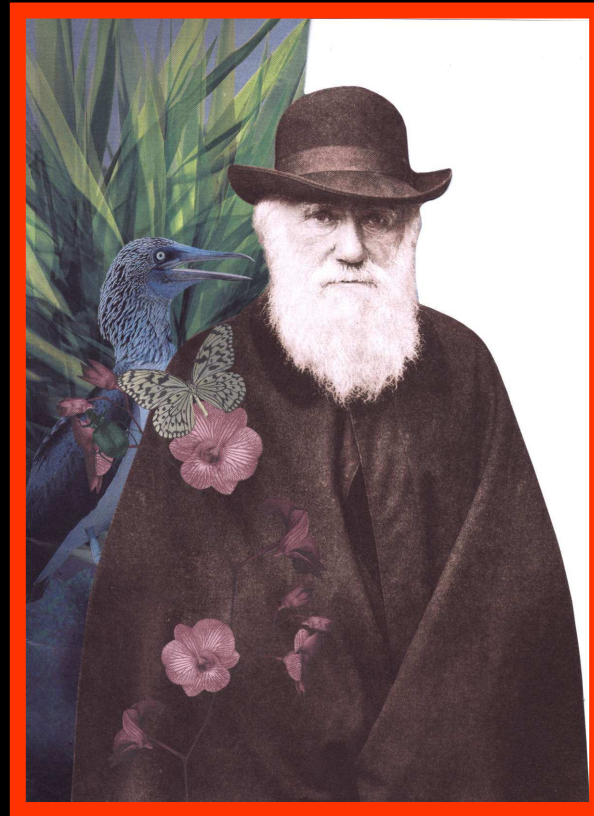


Attualità di Darwin



Charles Darwin The Complete Work of Charles Darwin Online

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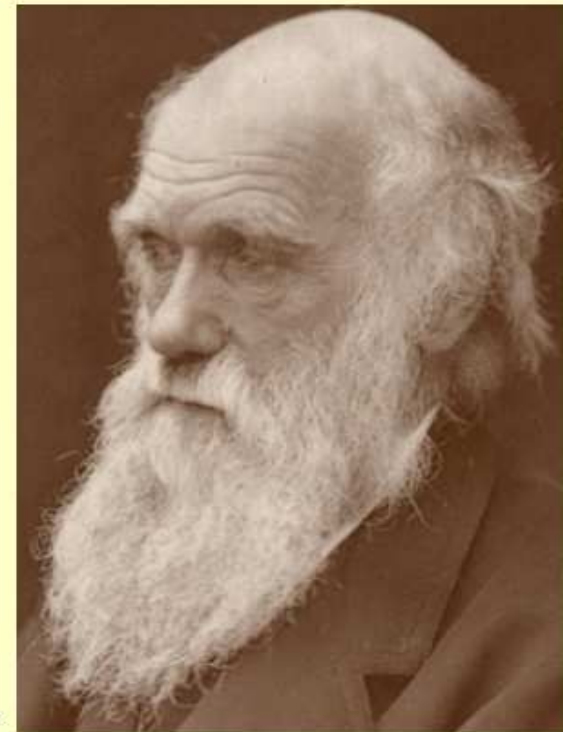
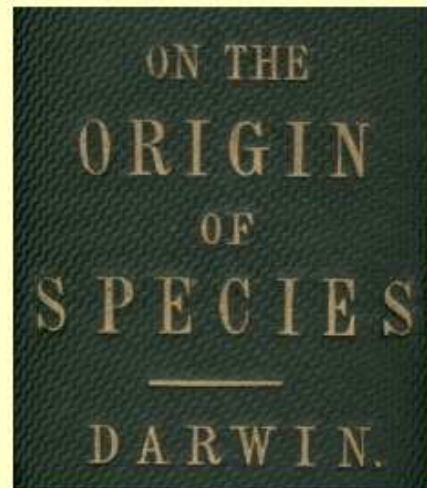
Only this site contains Darwin's complete publications, 20,000 private papers, the largest Darwin bibliography, manuscript catalogue and hundreds of supplementary works: specimens, biographies, obituaries, reviews, reference works and much more.

Almost all is online only here: all editions of *Origin of Species* (1st, 2d, 3d, 4th, 5th, 6th), *Descent of Man*, *Voyage of the Beagle*, *Zoology of the Beagle*, *Beagle diary*, *Beagle notebooks*, pocket Journal, evolution notebooks, *Autobiography* and much more.

Forthcoming: editions, translations, introductions, manuscripts and more.

1909: The first Darwin centenary [here](#).

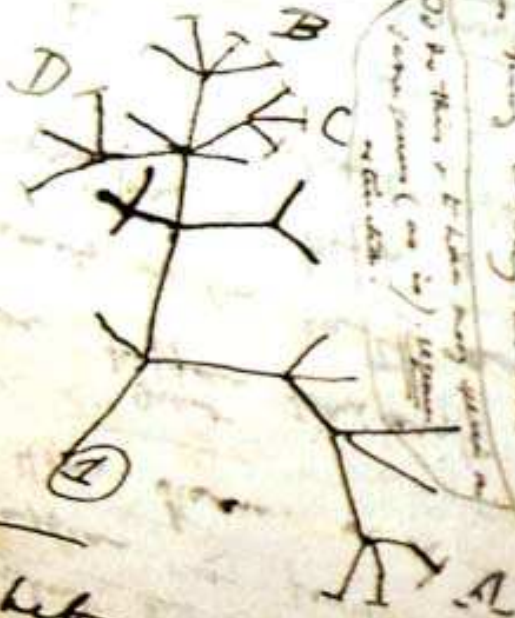
Listen to Darwin's *Beagle diary* [here](#).



<http://darwin-online.org.uk/>

This document has been accessed 1316328 times

I think



Can't must be the same
I don't think there should be
any thing living in there
Do the same & to the same species as
before (see p. 14)

Then between A & B. various
kinds of relation. C & B. The
first predation, B & D
rather greater distance
than for

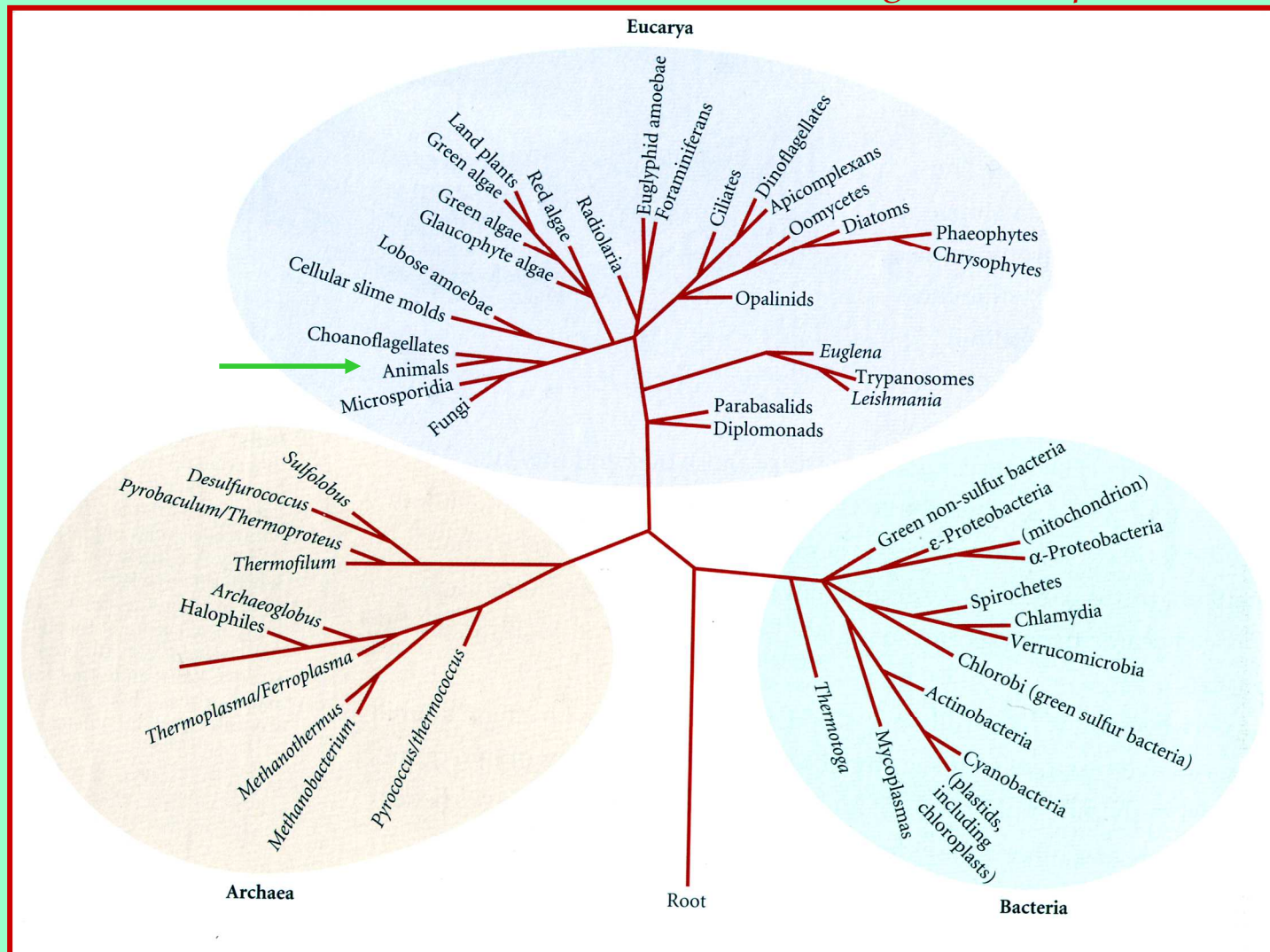
The tree of life



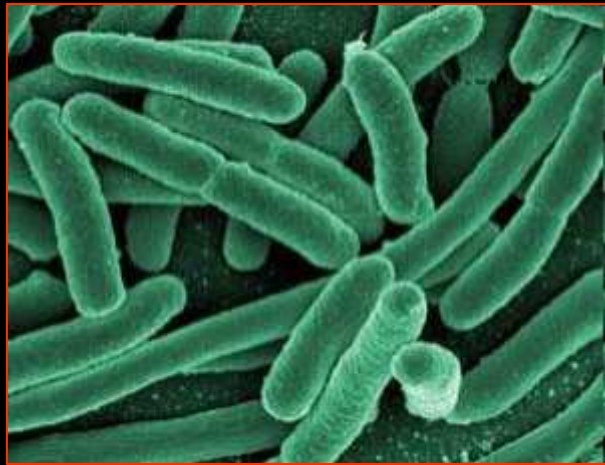
<http://tolweb.org/tree/>

C'è grandezza in questa visione della vita, con le sue numerose forze che vi sono state originariamente impresse in poche, o addirittura in una singola forma...

Darwin *L'origine delle specie...* 1859, p. 490



Baldauf et al. In *Assembling the tree of life*, 2004



Evoluzione in laboratorio

NATURE | Vol 461 | 29 October 2009

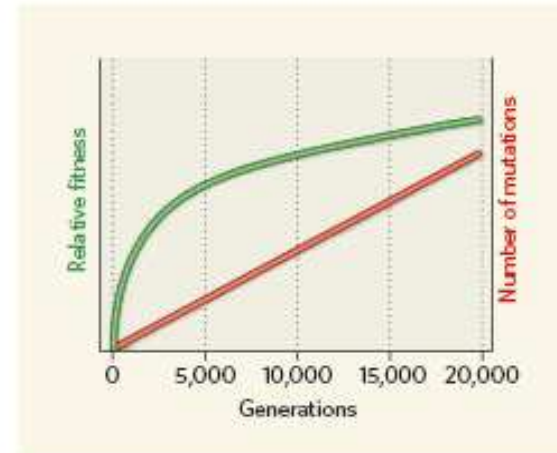


Figure 1 | Discordance in the coupling between genomic and adaptive evolution. In this summary of the tempo of genomic change (number of mutations) and organismal adaptation (fitness) over 20,000 generations of *Escherichia coli* evolution, the clock-like rate of genomic evolution revealed by Barrick and colleagues⁴ is difficult to understand given that the rate of fitness improvement decreases with time. In the absence of direct insight into genomic evolution, one would predict the rate of genomic evolution to have declined due to a reduction in the rate of appearance of new beneficial mutations, or a reduction in the average benefit of each mutation (or both).

Il successo del programma di ricerca

risultati

origine vita e organismi

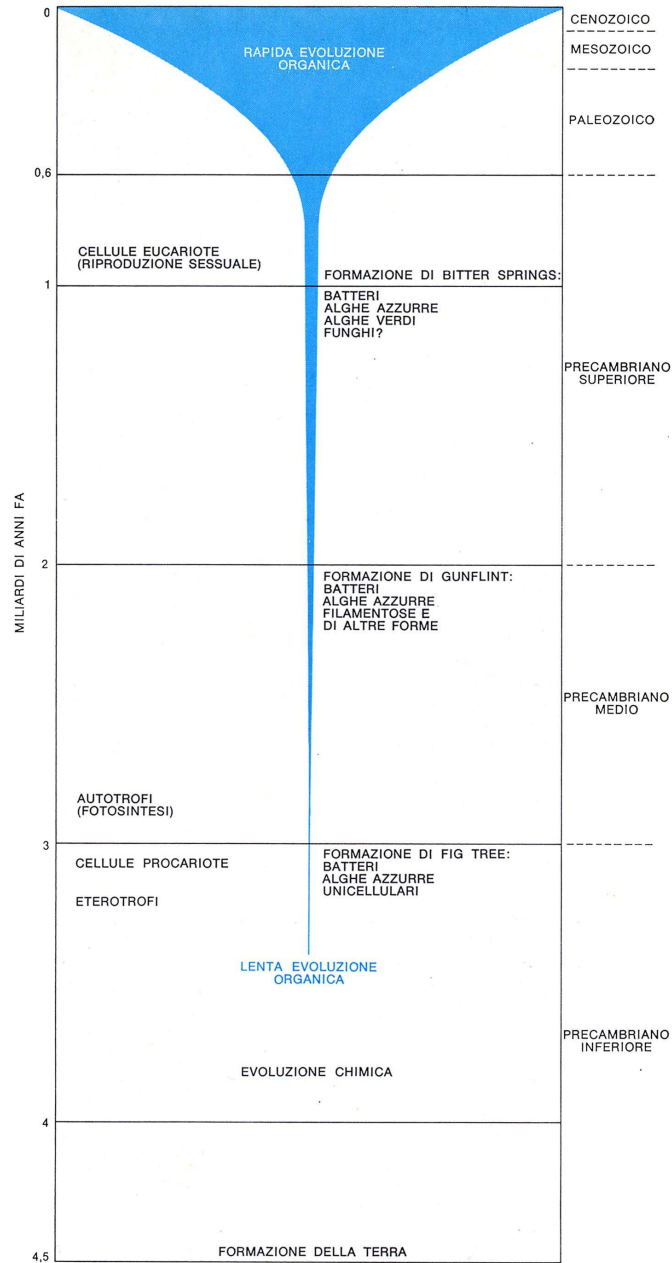
anelli mancanti/transizioni macroevolutive

evoluzione molecolare

il posto dell'uomo nella natura

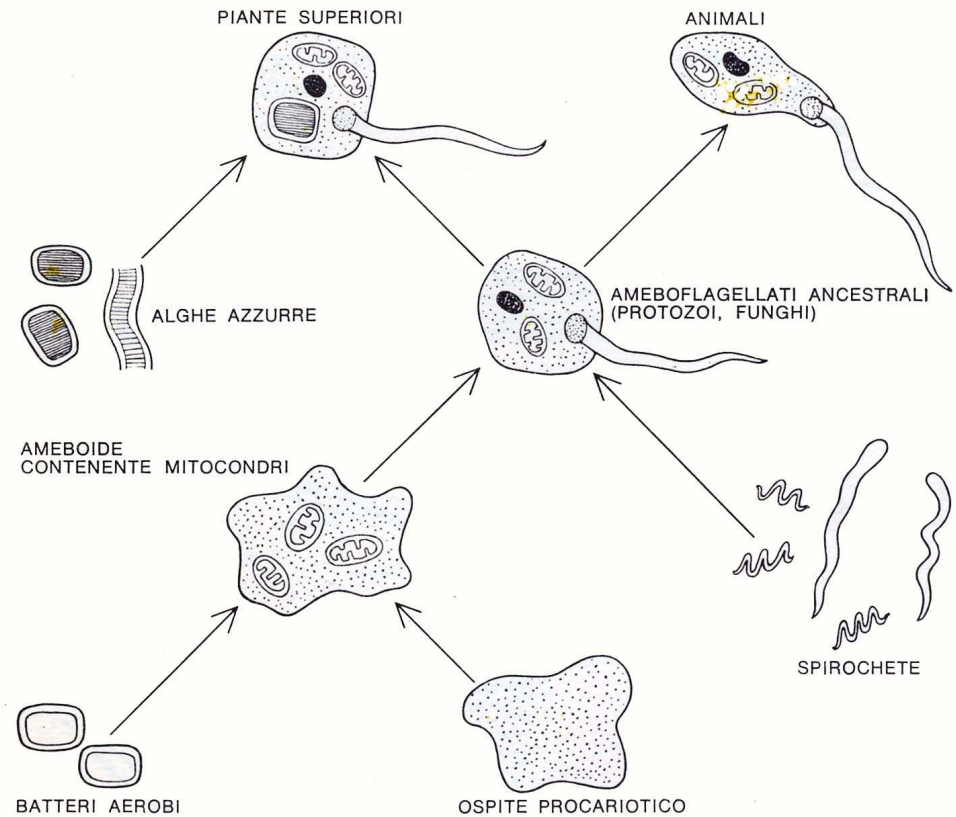
teoria

La storia della vita sulla Terra



In questo schema l'evoluzione organica viene presentata come una serie di successive conquiste biologiche. La Terra si formò 4,5 miliardi di anni fa e tutto il periodo che intercorre tra quell'epoca e l'era Paleozoica, iniziata 600 milioni di anni fa, va sotto il nome di Precambriano. L'incremento delle specie è indicato in colore. Quando si svilupparono i primi organismi eucarioti, forniti di nucleo e capaci di riprodursi sessualmente, alla fine del Precambriano, il numero di specie aumentò in maniera esplosiva.

Cellule e simbiosi



La teoria della simbiosi viene riassunta nelle tre fasi illustrate qui sopra. L'unione tra due membri del regno delle monere, un batterio aerobio evolutosi di recente (in basso a sinistra) e un ospite di dimensioni maggiori, probabilmente un batterio fermentante (in basso a destra), portò alla comparsa di un protista di tipo ameboide che riunì l'organismo ameboide a un batterio del gruppo delle spirochete (al centro a destra) e costituì un «ameboflagellato» ancestrale, che fu il diretto antenato dei due regni dei funghi e degli animali. Quando lo stesso ameboflagellato costituì un altro tipo di associazione, comparve il quinto regno, quello delle piante.

Origine degli eucarioti

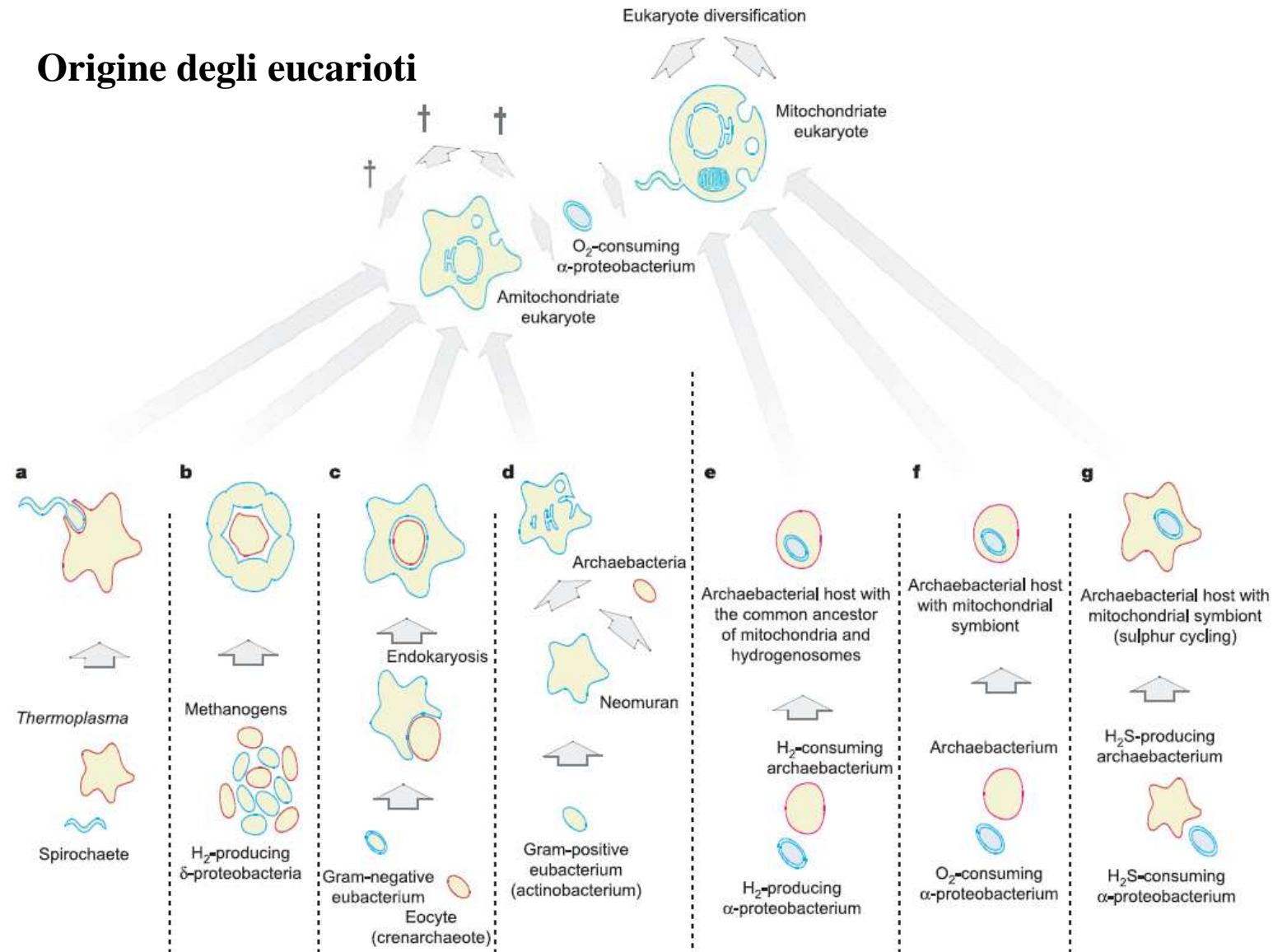
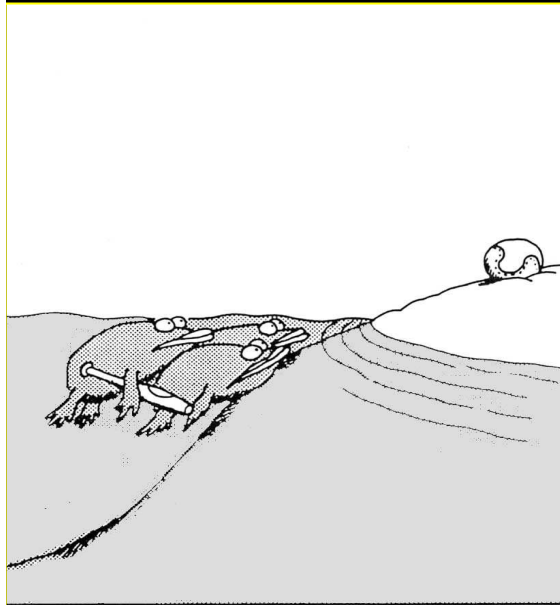


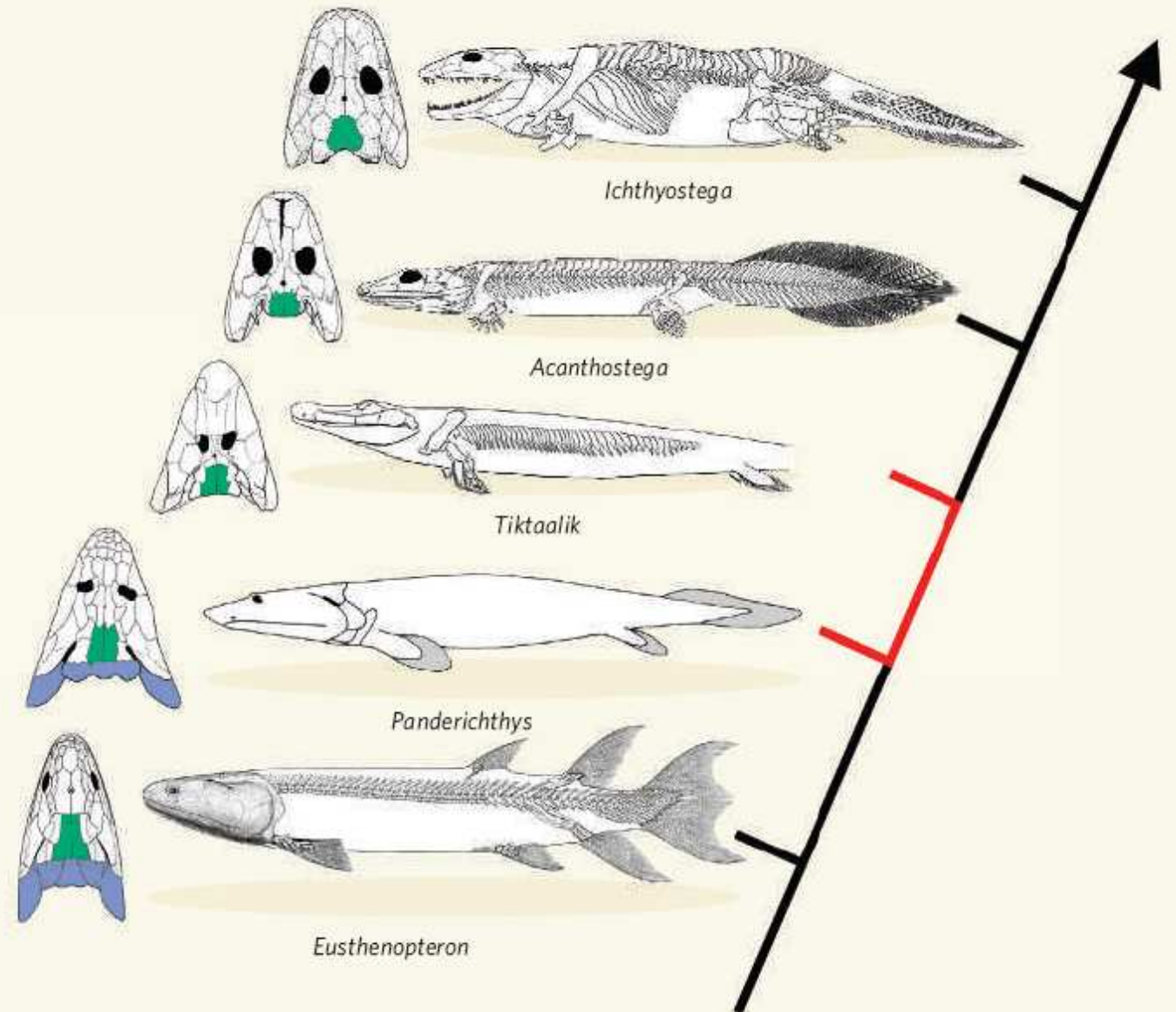
Figure 4 | Models for eukaryote origins that are, in principle, testable with genome data. **a–d**, Models that propose the origin of a nucleus-bearing but amitochondriate cell first, followed by the acquisition of mitochondria in a eukaryotic host. **e–g**, Models that propose the origin of mitochondria in a prokaryotic host, followed by the acquisition of eukaryotic-specific

features. Panels **a–g** are redrawn from refs 57 (**a**), 58 (**b**), 59 (**c**), 60 and 61 (**d**), 62 (**e**), 63 (**f**) and 64 (**g**). The relevant microbial players in each model are labelled. Archaeobacterial and eubacterial lipid membranes are indicated in red and blue, respectively.

Gli anelli mancanti: acqua - terra



Great moments in evolution





Gli anelli mancanti: terra-aria

O. Louis Mazzatenta
National Geographic Magazine



Feathers attached to Caudipteryx's forelimb.

O. Louis Mazzatenta
National Geographic Magazine

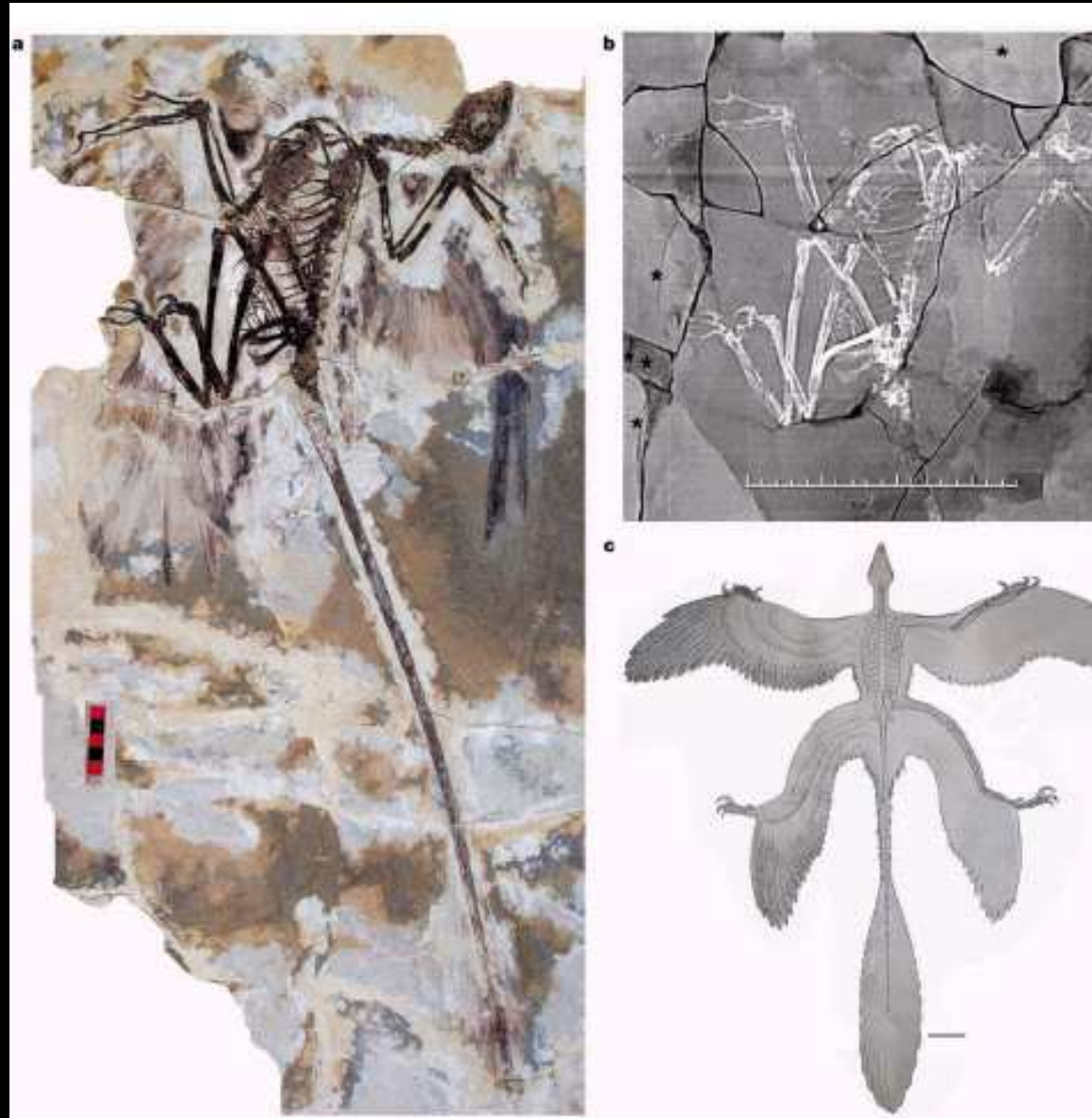


Model of dinosaur Caudipteryx zoui.

Four-winged dinosaurs from China

Xing Xu* *et al.*

Nature 23 gennaio 2003

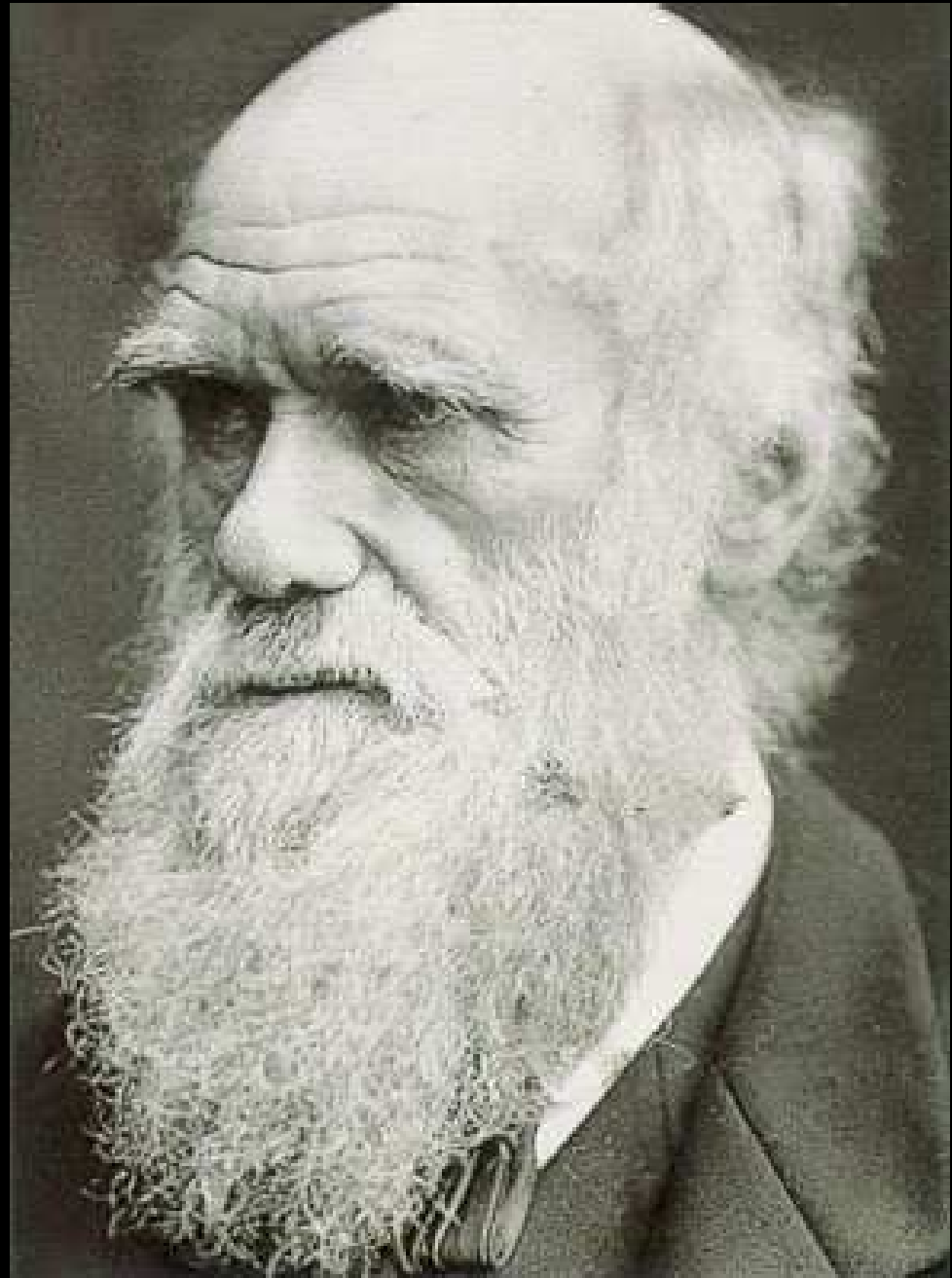


Molecular
Genetics/Genomics

Heritable Variation

Environment

Natural Selection



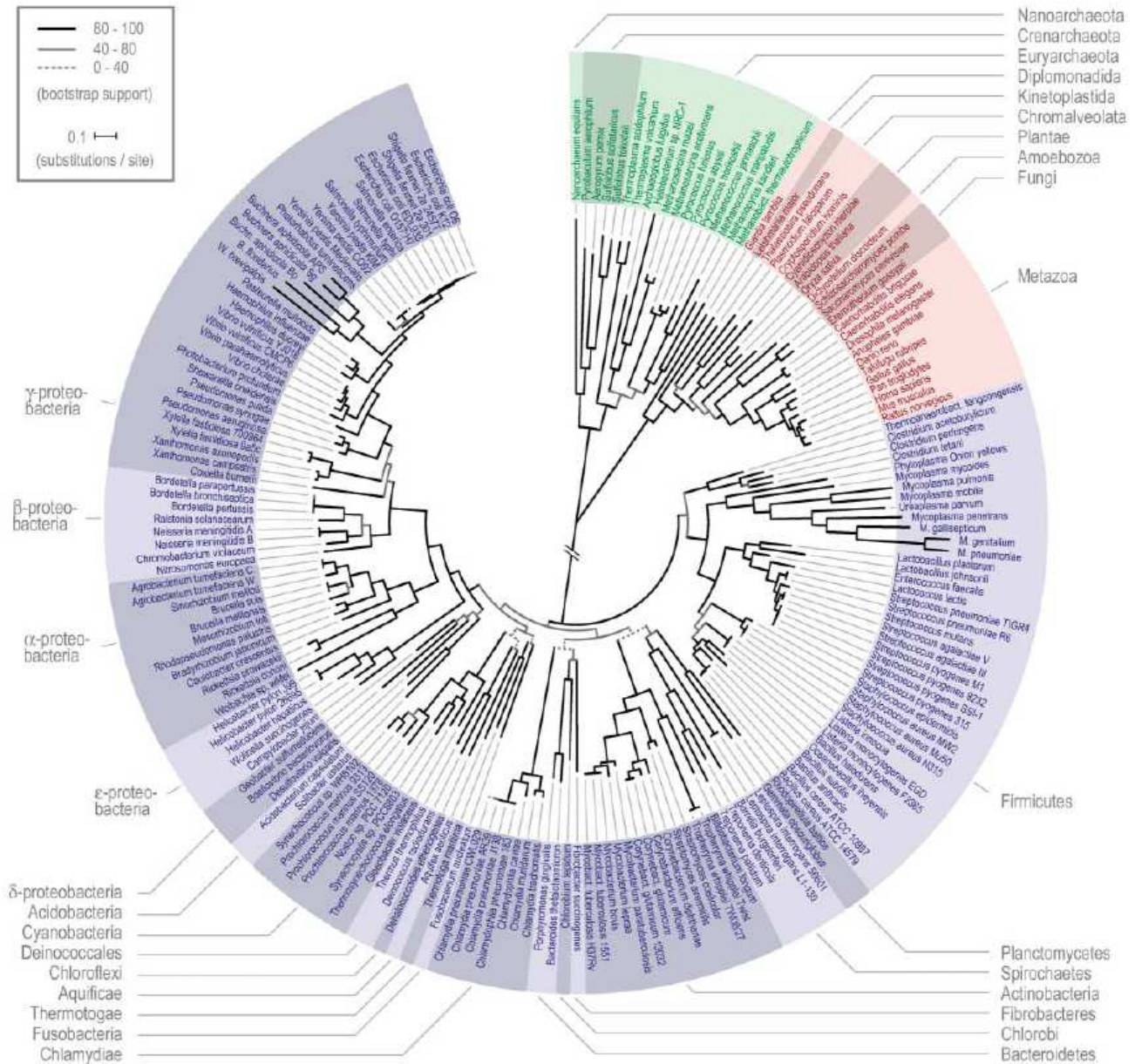


Fig. 2. Global phylogeny of fully sequenced organisms. The phylogenetic tree has its basis in a cleaned and concatenated alignment of 31 universal protein families and covers 191 species whose genomes have been fully sequenced (14). Green section, Archaea; red, Eukaryota;

blue, Bacteria. Labels and color shadings indicate various frequently used subdivisions. The branch separating Eukaryota and Archaea from Bacteria in this unrooted tree has been shortened for display purposes.



GENI e sviluppo occhio





**Museo di Anatomia umana
Università di Torino**



Thomas Henry Huxley
1825-1895

Evidence as to Man's Place in Nature **London, 1863**



GIBBON.

ORANG.

Skeletons of the
CHIMPANZEE.

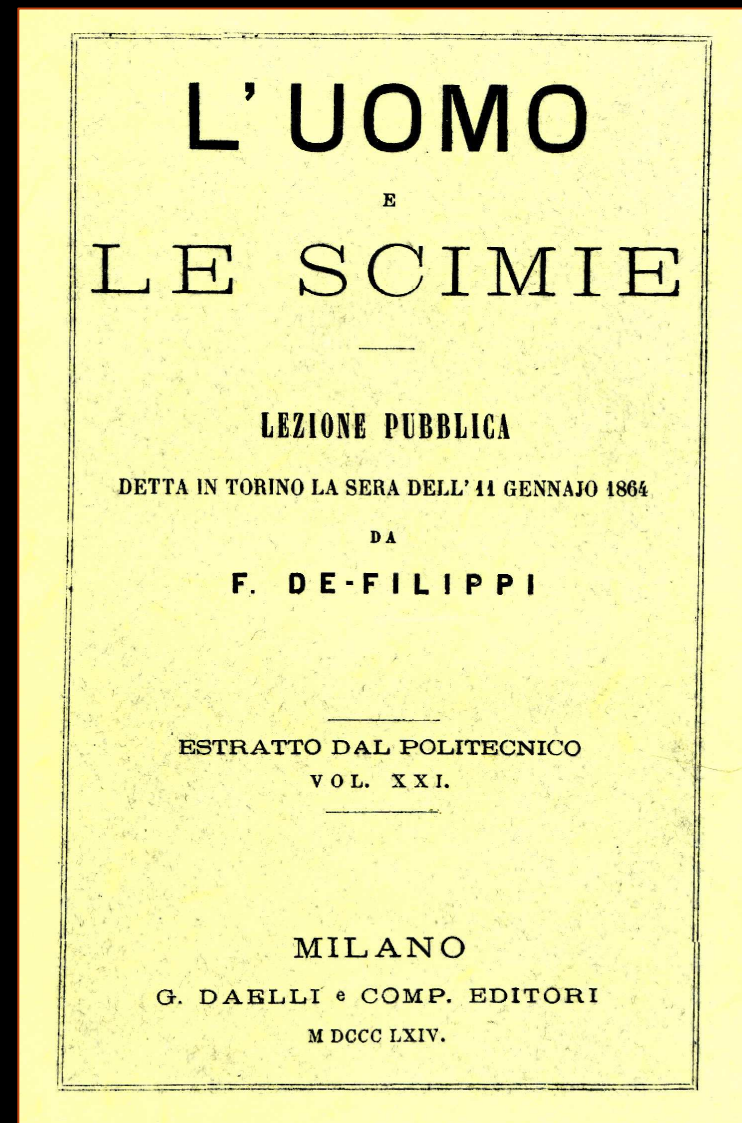
GORILLA.

MAN.

*Photographically reduced from Diagrams of the natural size (except that of the Gibbon, which was twice as large as nature),
drawn by Mr. Waterhouse Hawkins from specimens in the Museum of the Royal College of Surgeons.*



Filippo De Filippi
(1814-1867)



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Press Room



Evolution on the Front Line

AAAS has played a prominent role in responding to efforts in Kansas, Pennsylvania and elsewhere to weaken or compromise the teaching of evolution in public school science classrooms. Here are some background materials on the controversy and links to AAAS resources on evolution.

Science: Before "Lucy," There Was "Ardi"

Special Issue Illuminates Evolution Over Past 4.4 Million Years

In a [landmark issue of Science](#), an international team of scientists for the first time thoroughly described *Ardipithecus ramidus*, a hominid species that lived 4.4 million years ago in what is now Ethiopia.

This research, published 2 October 2009, was covered in 11 research papers, supported by a *Science* news story, an editorial, and extensive multimedia materials. AAAS, which publishes *Science*, also assembled a [deep package](#) of additional resources to aid reporters and others worldwide. And a press release on *Ardipithecus ramidus* has been translated into six languages: [Amharic](#), [Arabic](#), [Chinese](#), [Japanese](#), [French](#), and [Spanish](#).

The research offers the first comprehensive, peer-reviewed description of the *Ardipithecus* fossils, which include a partial skeleton of a female, nicknamed "Ardi." The research was the subject of simultaneous news conferences on 1 October in the Ethiopian capital of Addis Ababa, and at AAAS/*Science* headquarters in Washington, D.C., with major international news media quickly conveying the story.



[Read a special issue](#) of *Science* in which all 11 landmark articles, an editorial, a news story, and multimedia materials are free and available without subscription.





Nature, 1 September 2005

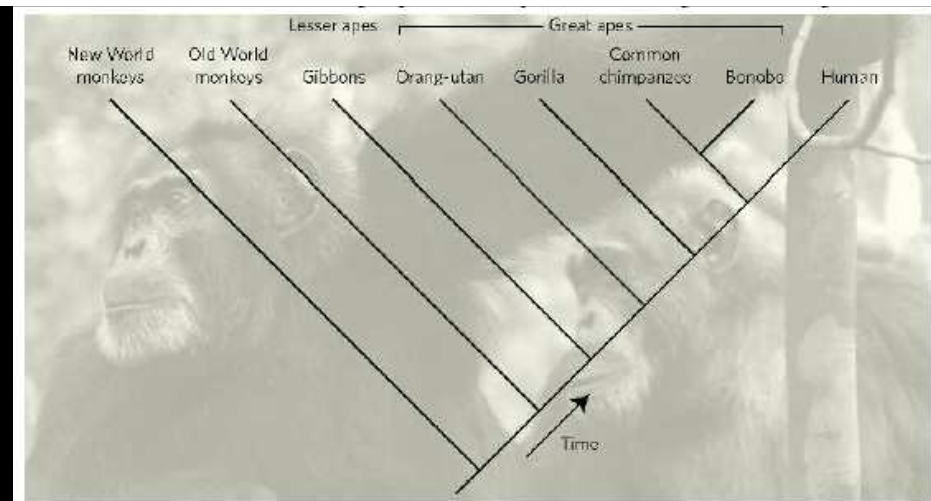


Figure 1 | Evolutionary relationships among the higher primates. Divergence of the chimpanzee and human lineages occurred about 6 million years ago; the times of lineage divergence are not to scale.

©2005 Nature Publishing Group

“possible hybridization in human-chimp lineage”
 Patterson et al., *Nature* June 26, 2006.

Homo (Pan) troglodytes
Homo (Pan) paniscus
Homo (Homo) sapiens

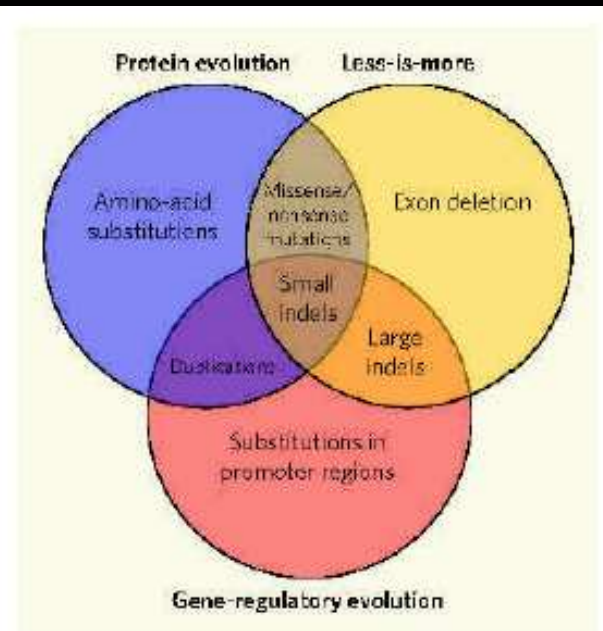


Figure 2 | Hypotheses to explain the genetic underpinnings of human-specific traits. Each of the three hypotheses — protein evolution, ‘less-is-more’, and gene-regulatory evolution — is depicted by a circle, with note of the mechanisms or processes that could underlie the evolutionary change. A missense mutation causes an amino-acid change; a nonsense mutation causes a sense codon to change into a stop codon, resulting in premature termination of DNA transcription. Indels are insertions/deletions of DNA segments; exons are coding sequences; promoter regions regulate gene activity in various ways.

Differenze Uomo/Scimpanzè

1,23 % per sostituzioni nucleotidiche

2,7-3 % in generale

Cosa ci fa umani???? Indizi:

-Proteine espresse (FOXP2, GLUD2, ASPM, Microcephalin...)

-Geni regolatori

-HAR (human accelerated regions)

-Less-is-more (53 proteine P“perse”)

-Velocità di trascrizione

(Promotori plurimi – es.: PDYN-; dosaggio geni; ...)



Dramatic increase in brain size and complexity during human evolution...

The foreground shows brain images of human, macaque monkey, rat, and mouse (from top to bottom), as well as the phylogenetic relationship among these four taxa. The background shows DNA sequences. Brain complexity has increased dramatically in primates relative to rodents, and the increase is particularly pronounced in the lineage leading to humans. At the molecular level, genes involved in nervous system function also show accelerated rates of evolution in primates, especially in the lineage leading to humans. Thus, the dramatic phenotypic evolution of the brain in the origin of *Homo sapiens* is correlated with salient molecular evolution.

Cell, December 29, 2004.

(a)

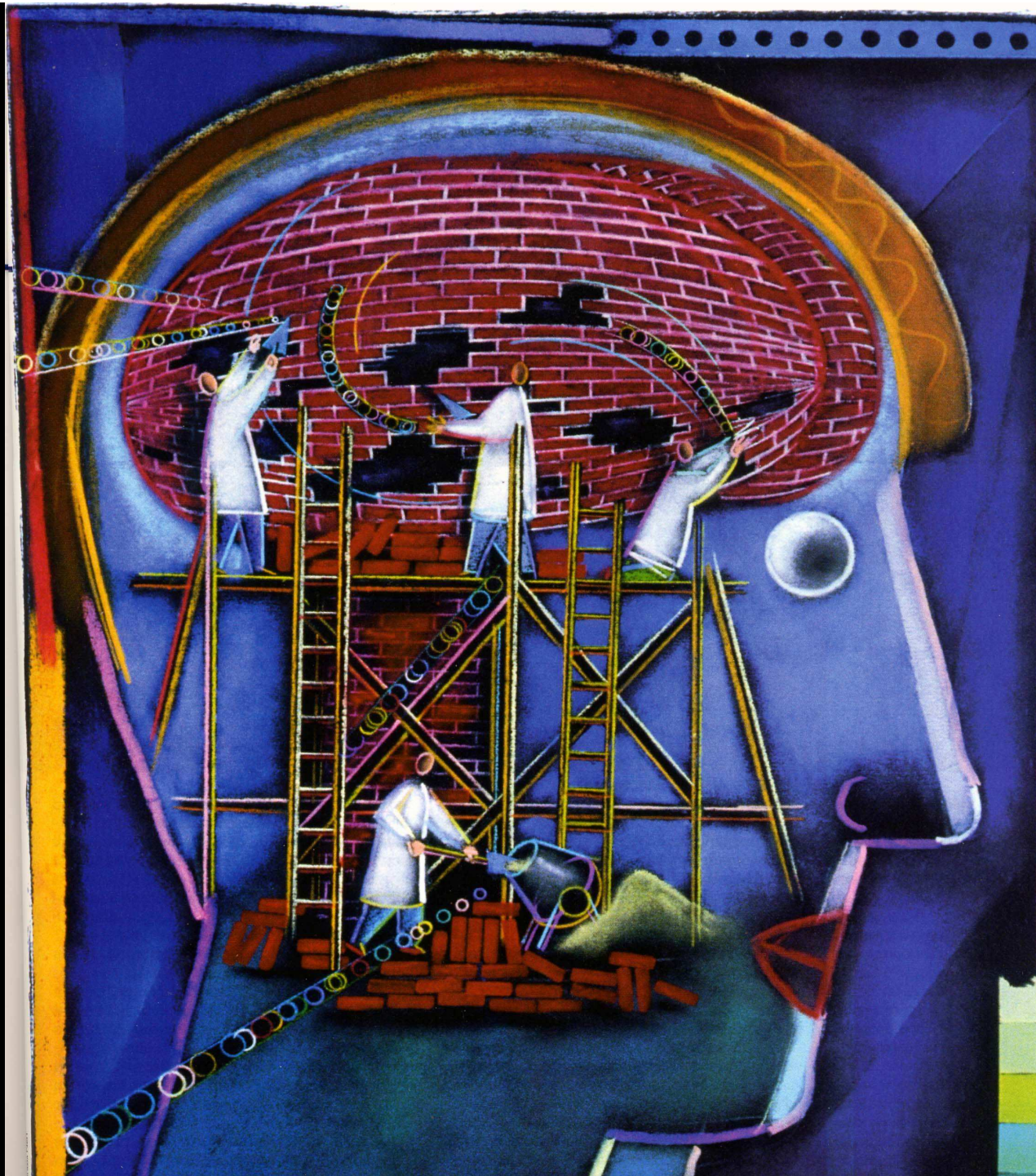


(b)



2cm

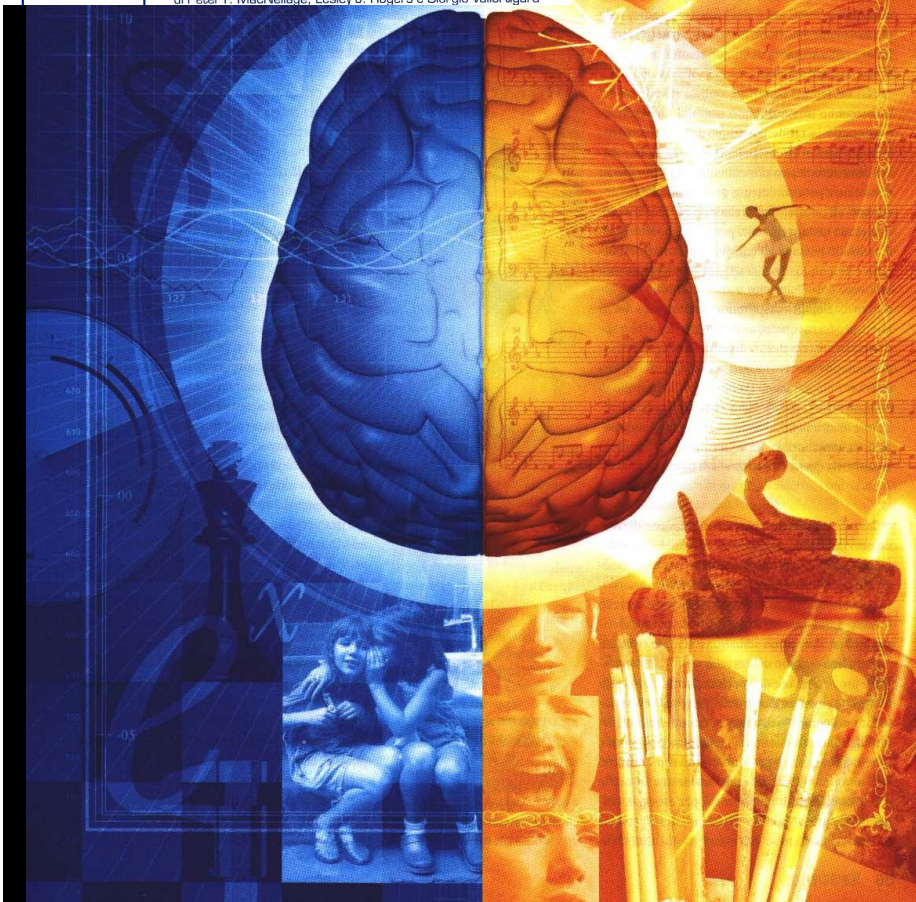
Mente e cervello



L'evoluzione del cervello asimmetrico

La divisione del lavoro nei due emisferi cerebrali, che si pensava esclusiva dell'uomo e che controlla tra l'altro l'uso della parola, risale ad almeno mezzo miliardo di anni fa, quando hanno avuto origine i primi vertebrati

di Peter F. MacNeilage, Lesley J. Rogers e Giorgio Vallortigara



Capuchin Monkeys Display Affiliation Toward Humans Who Imitate Them

Annika Paukner,^{1*} Stephen J. Suomi,¹ Elisabetta Visalberghi,² Pier F. Ferrari^{1,3}

During social interactions, humans often unconsciously and unintentionally imitate the behaviors of others, which increases rapport, liking, and empathy between interaction partners. This effect is thought to be an evolutionary adaptation that facilitates group living and may be shared with other primate species. Here we show that capuchin monkeys, a highly social primate species, prefer human imitators over non-imitators in a variety of ways: The monkeys look longer at imitators, spend more time in proximity to imitators, and choose to interact more frequently with imitators in a token exchange task. These results demonstrate that imitation can promote affiliation in nonhuman primates. Behavior matching that leads to prosocial behaviors toward others may have been one of the mechanisms at the basis of altruistic behavioral tendencies in capuchins and in other primates, including humans.

14 AUGUST 2009 VOL 325 SCIENCE

REVIEWS

Primate archaeology

Michael Haslam¹, Adriana Hernandez-Aguilar¹, Victoria Ling¹, Susana Carvalho¹, Ignacio de la Torre², April DeStefano³, Andrew Du³, Bruce Hardy⁴, Jack Harris³, Linda Marchant⁵, Tetsuro Matsuzawa⁶, William McGrew¹, Julio Mercader⁷, Rafael Mora⁸, Michael Petraglia¹, Hélène Roche⁹, Elisabetta Visalberghi¹⁰ & Rebecca Warren⁴

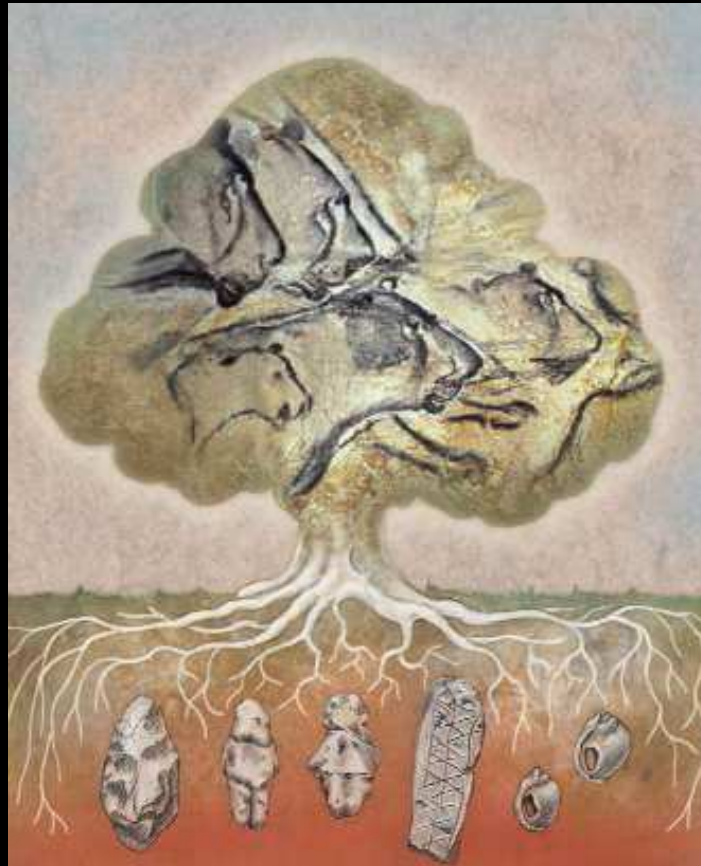
All modern humans use tools to overcome limitations of our anatomy and to make difficult tasks easier. However, if tool use is such an advantage, we may ask why it is not evolved to the same degree in other species. To answer this question, we need to bring a long-term perspective to the material record of other members of our own order, the Primates.



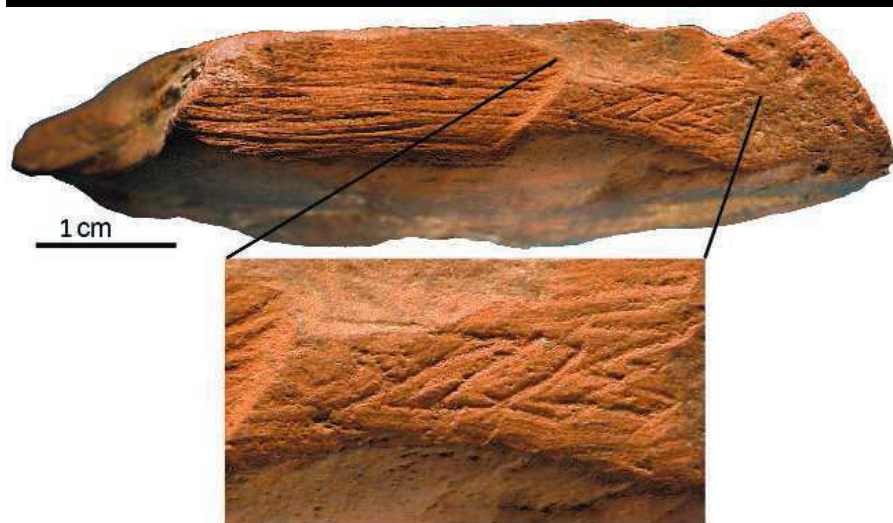
Figure 2 | Primate stone-tool use. **a**, Three ~1.7–1.6-Myr-old Oldowan pounding tools from Okuvai Gorge, Tanzania. Provenance (left to right): FLK North level 1–2; FLK North level 5; FLK North sandy conglomerate. Scale bars, 1 cm. **b**, Chimpanzee cracking nuts with a stone hammer and

anvil (Bossou, Guinea). The full social complexity of this activity cannot be reconstructed from the archaeological record alone. **c**, Adult male capuchin cracking nuts using a stone hammer and wood anvil (Boa Vista, Brazil). Note erect body position and relatively large (1.44-kg) hammer.

On the Origin of Art and Symbolism



Ocra incisa (77.000 a.C.)



Grotta di Chauvet FR (30.000 a.C.)



Fatto 1: Potenziale crescita esponenziale delle popolazioni.

Fatto 2: Le popolazioni sono stabili.

Fatto 3: Le risorse sono limitate.



Deduzione 1: Lotta per l'esistenza.

Fatto 4: Diversità del singolo individuo.

Fatto 5: Ereditarietà di una parte della variazione individuale.

Fatto 6: La variazione non è direzionata.

Deduzione 2: Sopravvivenza differenziale (selezione naturale).

Deduzione 3: Successo riproduttivo differenziale per molte generazioni: la popolazione EVOLVE.

(* Ernst Mayr)

Accumulo di lenti cambiamenti su tutta la popolazione: CONTINUITA'

Evolutionary Research Program

A DARWINIAN EXTENDED CORE

(E. Mayr)



MUTATION
(sources of variation)

NATURAL SELECTION
(selective processes)

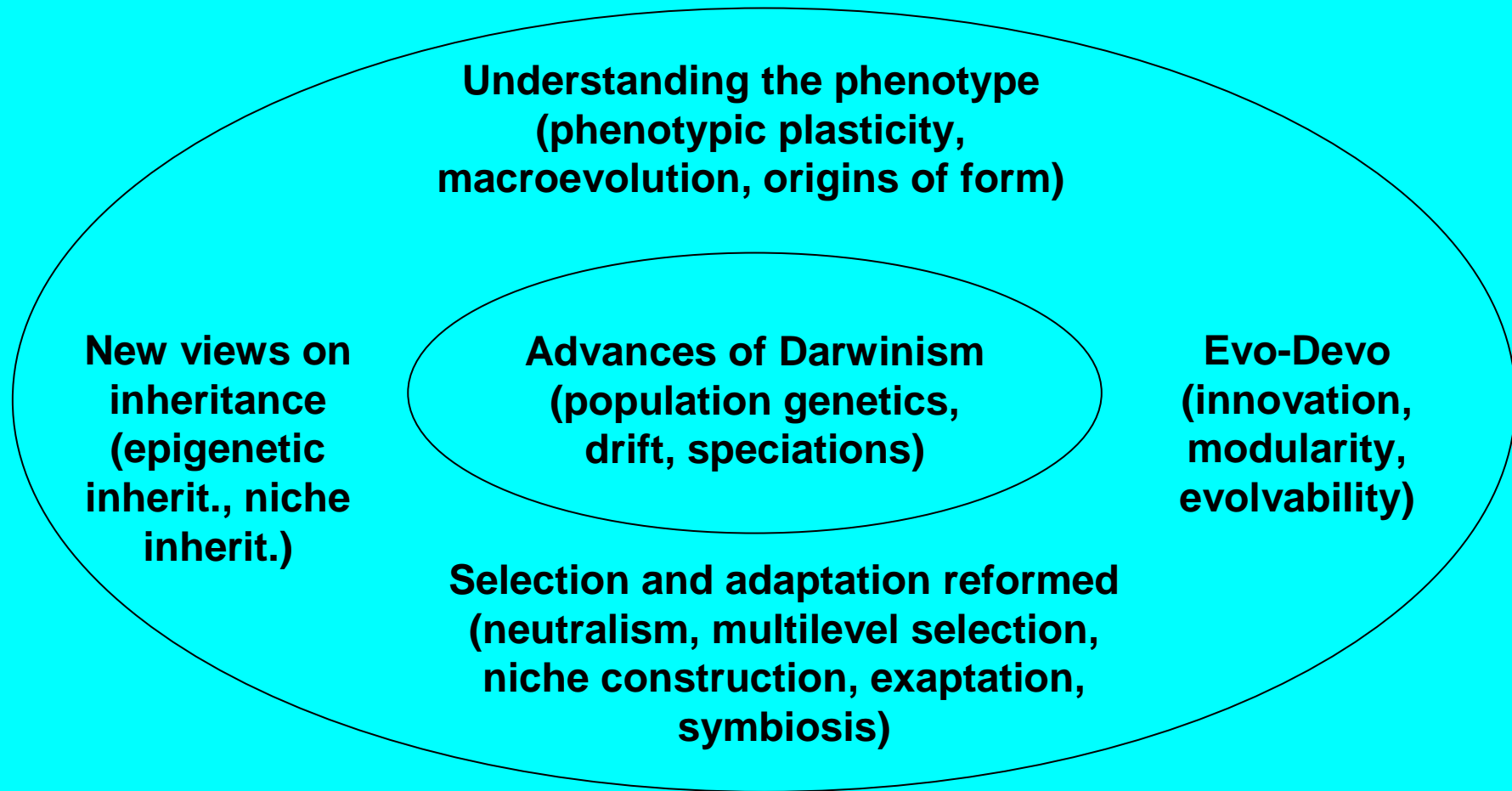
GENETIC DRIFT
(neutralistic processes)

MACROEVOLUTION
(migrations, adaptive
radiations, mass
extinctions...)

EXTENDED DARWINIAN SYNTHESIS

(more empirical contents and predictions of “new facts”)

(T. Pievani)



The evolving **structure** of Darwinian **Research Program**

Dunque...

1 – QUANTE “TEORIE DELL’EVOLUZIONE” ESISTONO OGGI? Una sola, intesa come un vasto e articolato programma di ricerca scientifico in aggiornamento

2 – CHE COSA INTENDIAMO PER “DARWINISMO”? Il programma di ricerca evoluzionistico oggi è molto più ampio di quello darwiniano originario, ma la sua estensione fa spesso affidamento su “istruttorie” teoriche già predisposte da Darwin

3 – CHE COSA SOPRAVVIVE OGGI DEL “DARWINISMO”? Il nucleo centrale del programma di ricerca evoluzionistico attuale è darwiniano

Da Telmo Pievani

901
703

7 January 1880
Jan 4. 1880

DOWN,
BECKENHAM, KENT.
RAILWAY STATION.
ORPINGTON C.E.R.

Sir,

I beg leave to acknowledge
the receipt of your letter of
Dec 29th in which you are so
good as to inform me that
the Royale Academy of Sciences
of Turin has awarded me
the great Bressa prize. I hope
that you will express to your
Academy how deeply I feel

this honour, which I believe
to be the greatest which can
be conferred on any scientific
man. The remembrance of this
award will stimulate me to
do whatever little more I can
do in Science during the few
years of my life

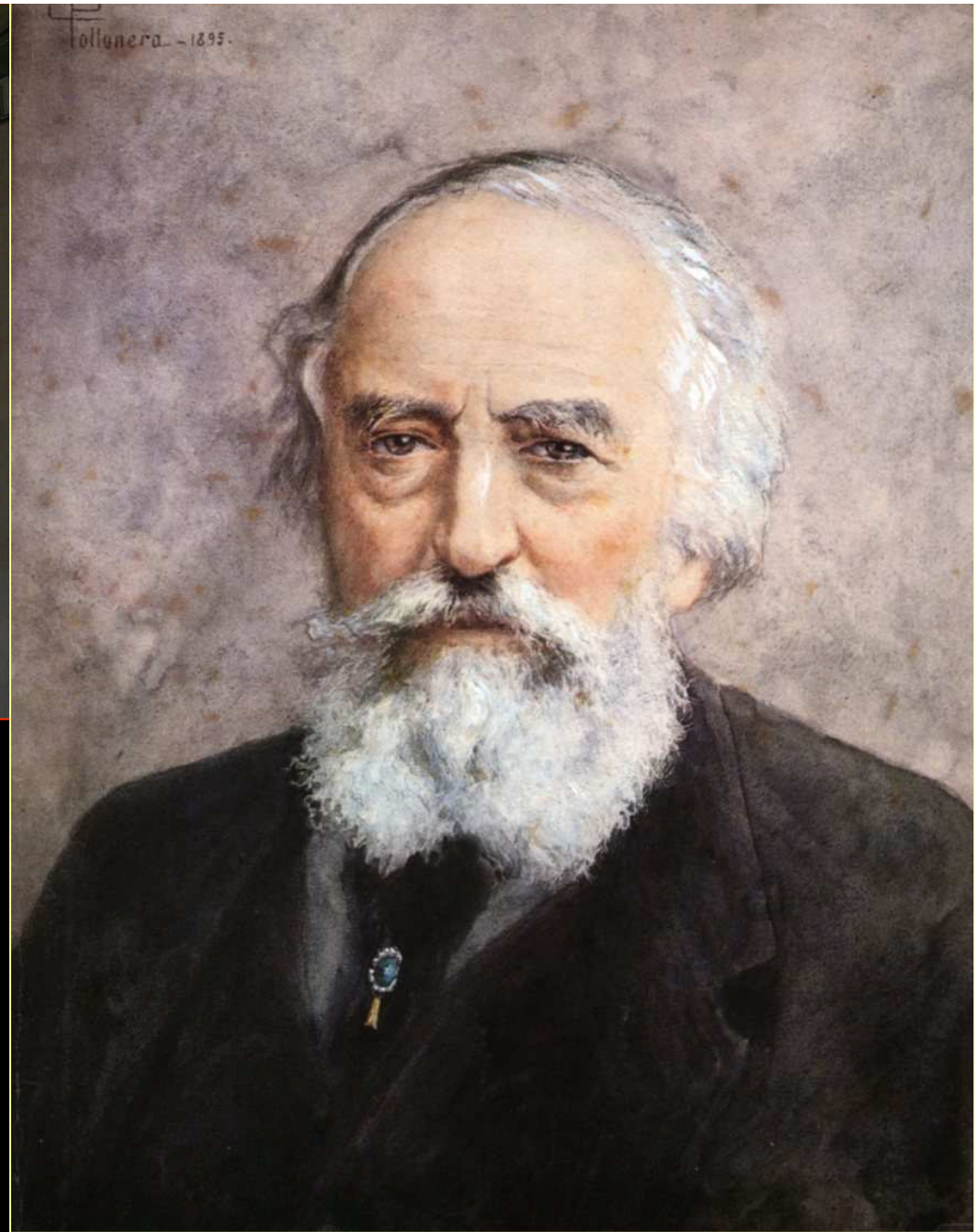
I have the honour to remain,
Sir,
Your obedient & obliged servant
Charles Darwin

Charles Darwin

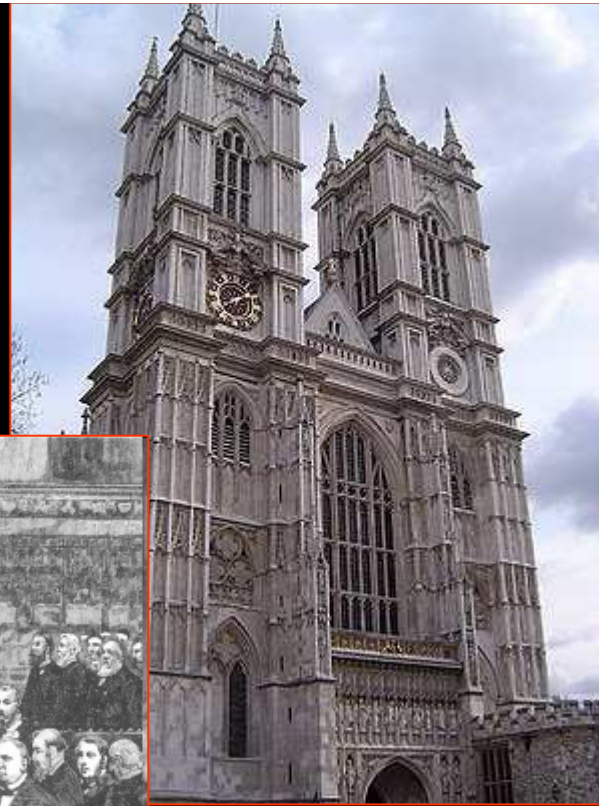
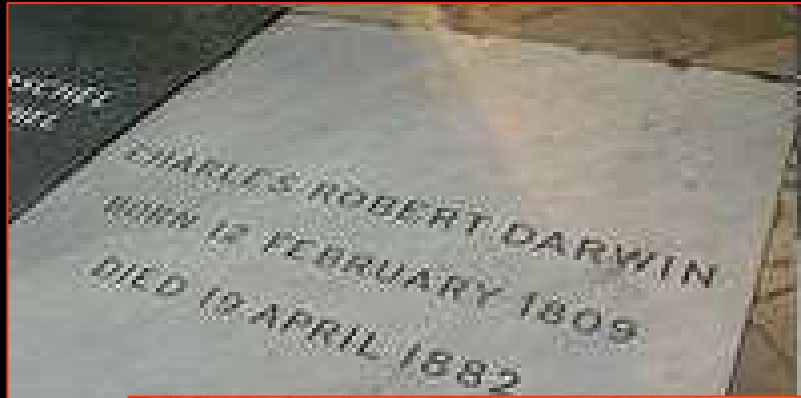
Lucent
in Bank
signed by
1000 lrs.



**Discorso di assegnazione a Darwin
del premio Cesare Alessandro Bressa
1880**



Michele Lessona (1823-1894)



Happy is the man that findeth wisdom,
and the man that getteth understanding....
Her ways are ways of pleasantness,
and all her paths are peace,"

It teaches us that the meaning of our lives cannot be read passively from the works of nature, but that we must struggle, think, and construct the meaning of ourselves.

Darwin maintained deep humility before the difficulty of such a task. He understood the limits of science.

S.J Gould 1982

BOOKS ET AL.

EVOLUTION

Darwin Is Dead—Long Live Evolution

Vassiliki Betty Smocovitis

Stephen Jay Gould and the *Politics of Evolution* arrives just in time. Just when it looked like the “ultra-Darwinists” were winning the “year of Darwin” with their interminable love-fests, triumphalist narratives, and self-serving revisionist histories; when we were starting to think that Darwin was the only evolutionist to have lived in the past 150 years; and when we might conclude that nearly the entire evolutionary community had drunk the Kool-Aid of antiquarian Darwinism, David Prindle’s book appears to give us pause. It reminds us of the late paleontologist, the heady days of late 20th-century evolutionary science, and all the politi-

Stephen Jay Gould

