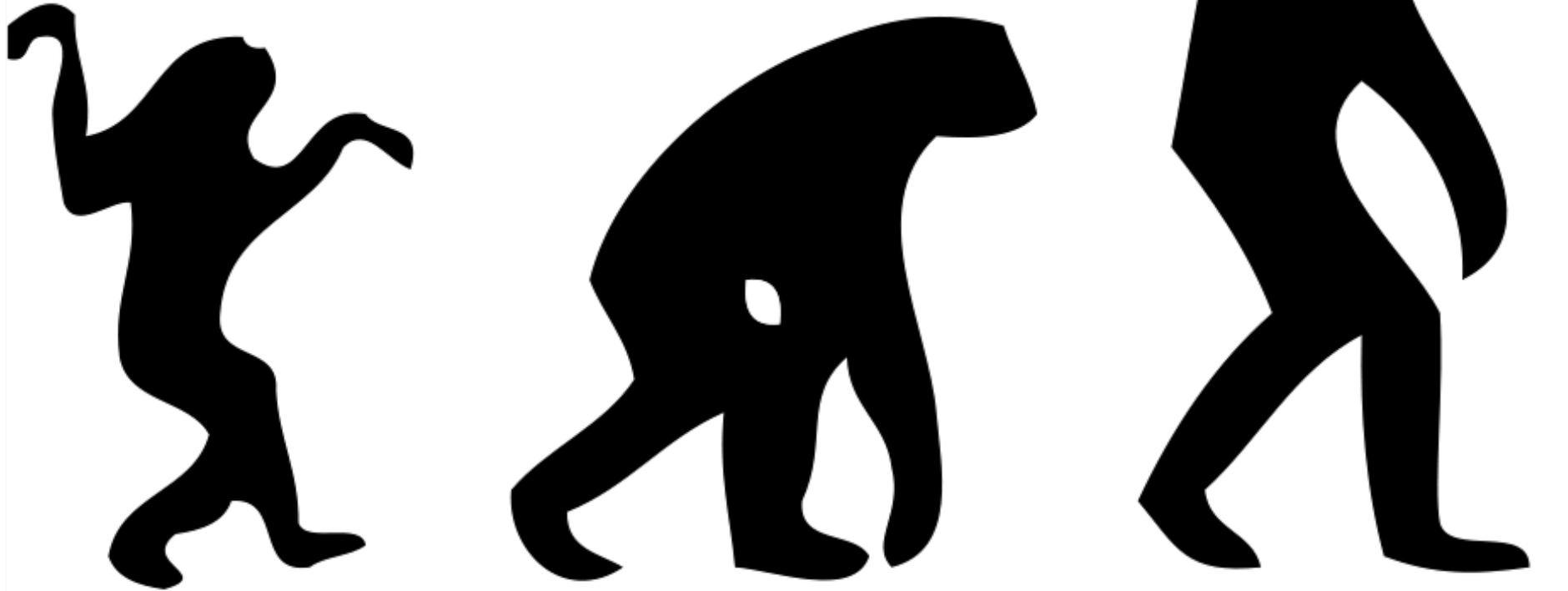


# Evolution – A History of Controversy

Richard Kissel, PhD

Yale Peabody Museum of Natural History







## **Rare skull sparks human evolution controversy**

**theguardian**

Skull of Homo erectus throws story of human evolution into disarray

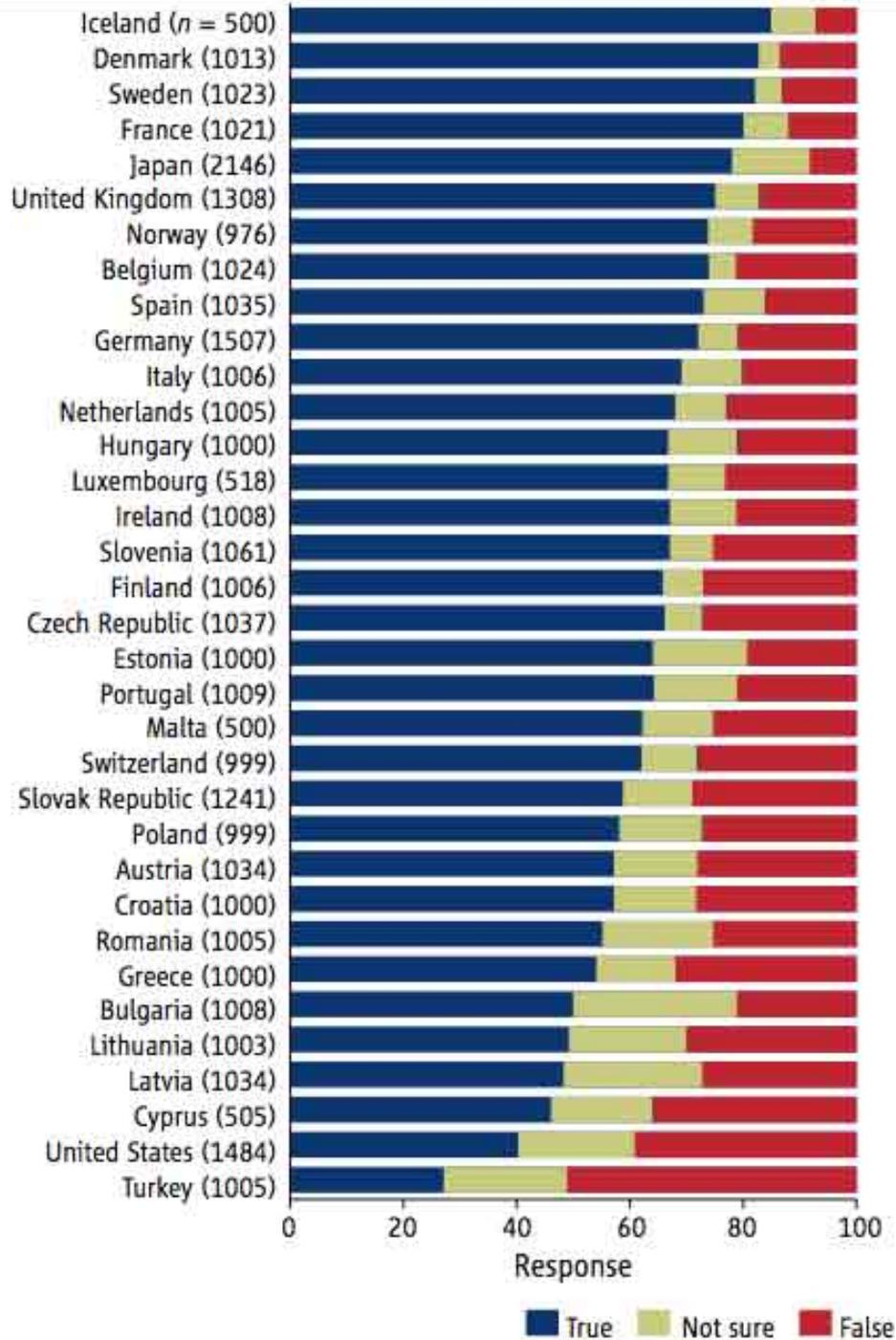
**Z6Mag**

**Hominid Skull Dated at 1.8 Million Years Old Raises Evolution Controversy**



**1.8-million-year-old skull shakes mankind's family tree**

"Human beings,  
as we know them,  
developed from  
earlier species of  
animals."



Miller et al.  
2006  
Science

# Evolution is...

- the accumulation of inherited changes in populations of organisms over the course of generations
- “descent with modification”



## In other words...

1. Do kids look like their parents?
2. Do individuals of a group look different?
3. Does every individual reproduce?



In *more* other words...

1. Do kids look like their parents?
2. Do individuals of a group look different?
3. Does every individual reproduce?

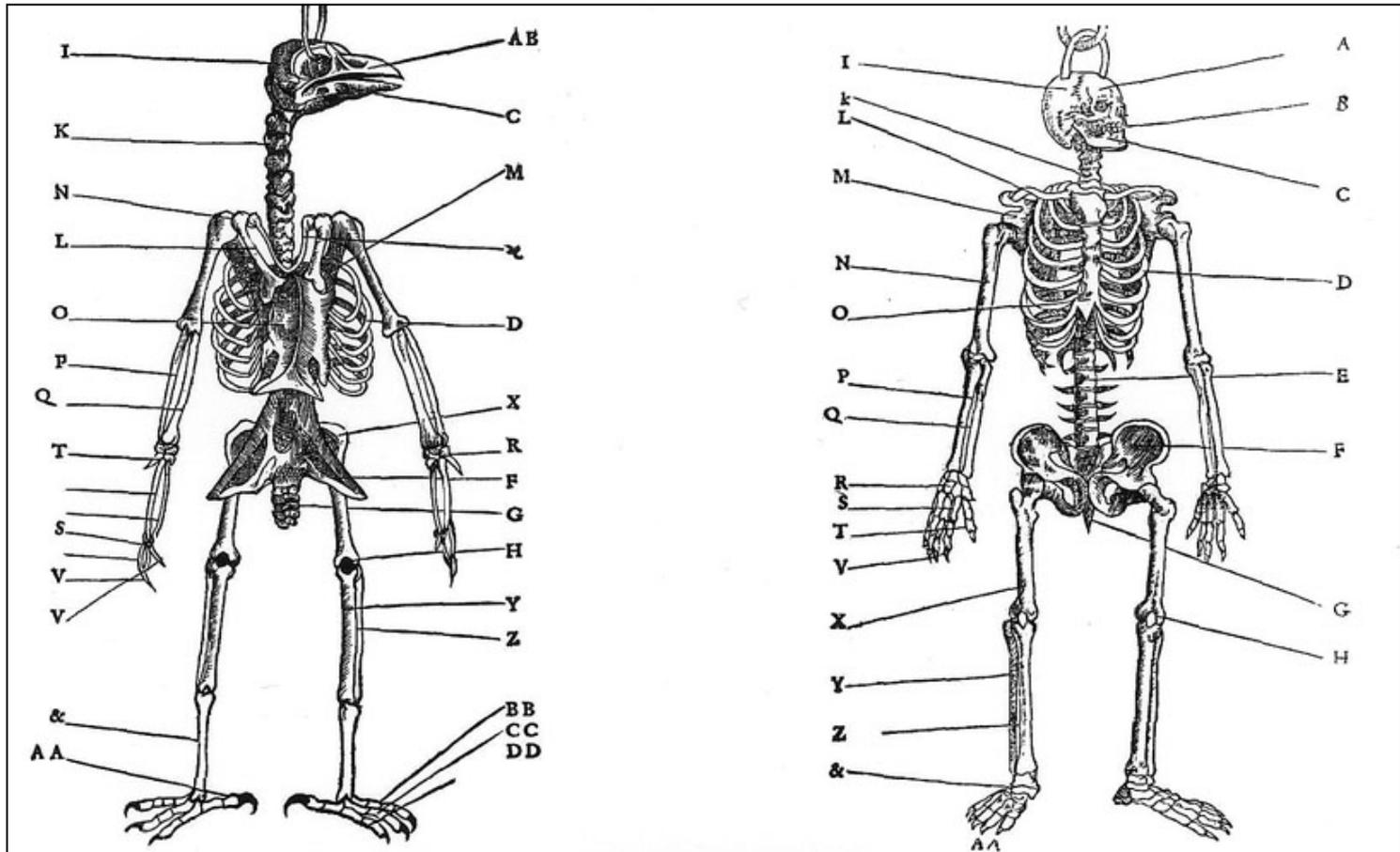
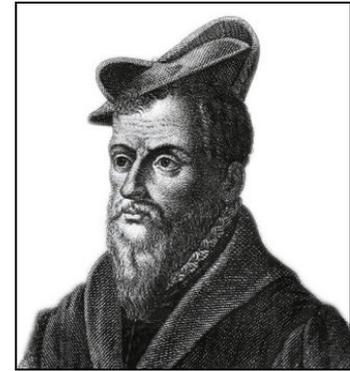
yes + yes + no = evolution



# Evolution – A History of Contributions

Pierre Belon (1517-1564)

Published first illustrations to clearly show the concept of homology



# Evolution – A History of Contributions



Carl von Linnæus (1707-1778)

In 1778, started the current, *hierarchical* system of naming organisms and higher taxa

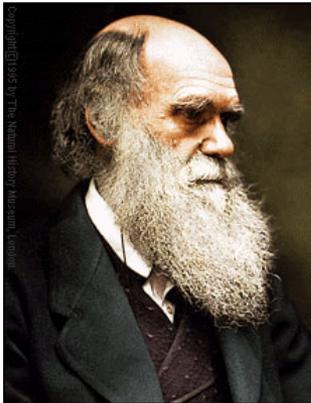
Jean-Baptiste Lamarck  
(1744-1829)

Proposed concept of heritable change;  
Published in 1801 an endorsement of the concept of evolution



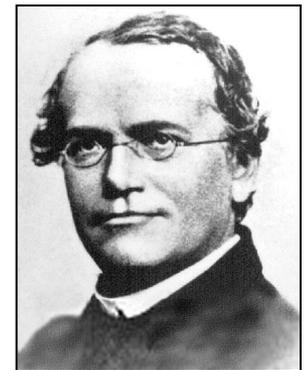
Charles Darwin (1809-1882)

Proposed in 1859 the concept of natural selection  
("slight variation, if useful, is preserved")



Gregor Mendel (1822-1884)

Added the mechanism of heredity to Darwin's theory in 1866



“There is a grandeur in this view of life...



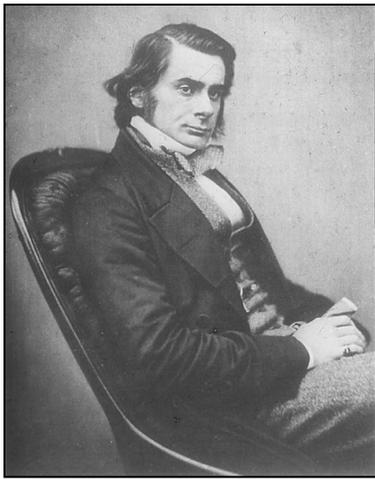
...from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.”

- Charles Darwin (1859)

# Nothing in biology makes sense except in the light of evolution

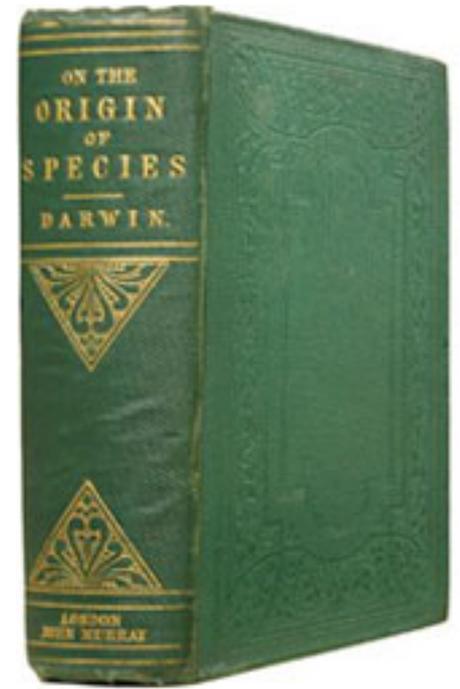
- Theodosius Dobzhansky (1900-1975)
- Geneticist & Evolutionary Biologist





Thomas Huxley (1825-1895)

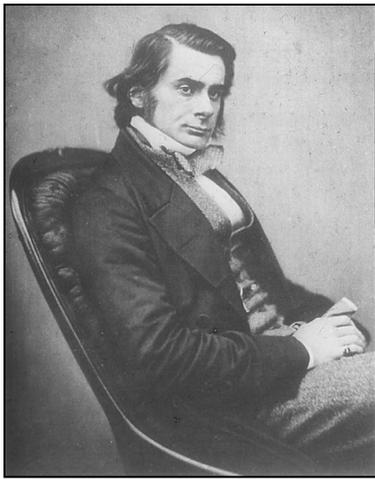
“Darwin’s Bulldog”



“I trust you will not allow yourself to be in any way disgusted or annoyed by the considerable abuse & misrepresentation which unless I greatly mistake is in store for you. . .

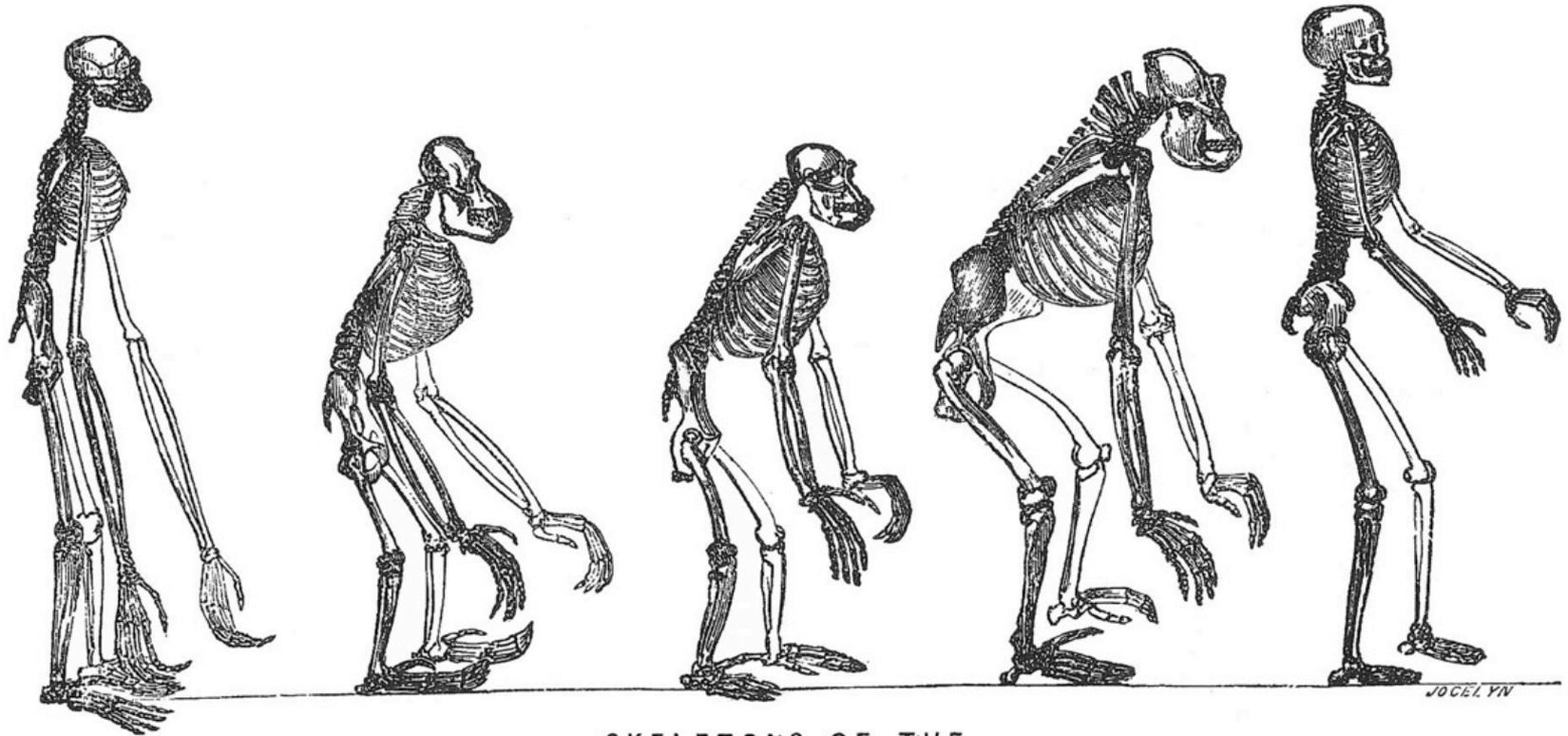
I am sharpening up my claws and beak in readiness”

- Letter dated November 23 1859



Thomas Huxley

Man's Place in Nature (1863)



GIBBON.

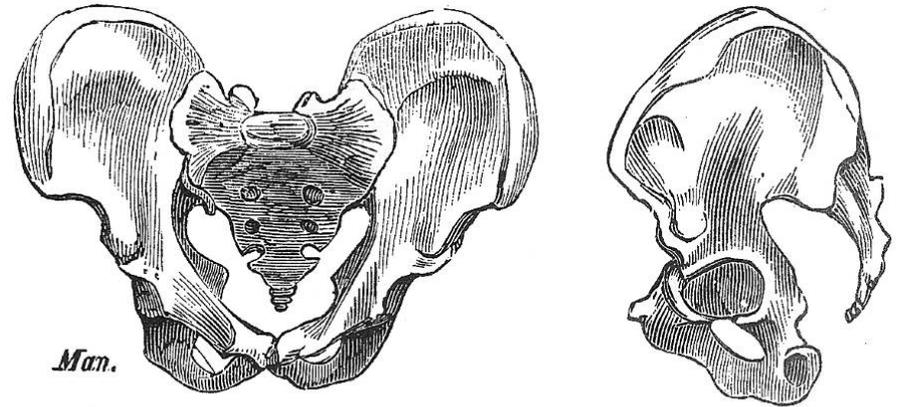
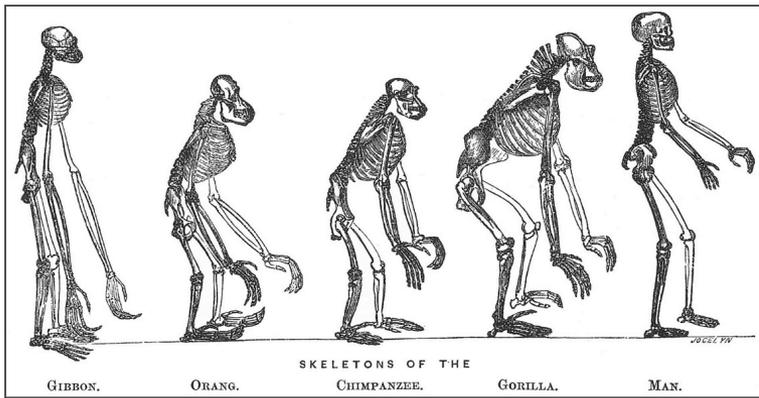
ORANG.

CHIMPANZEE.

GORILLA.

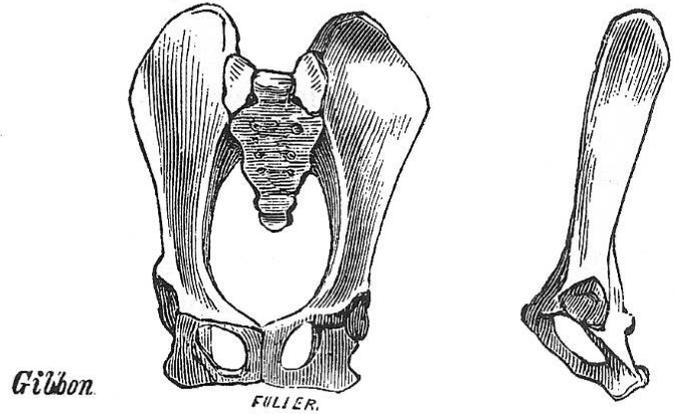
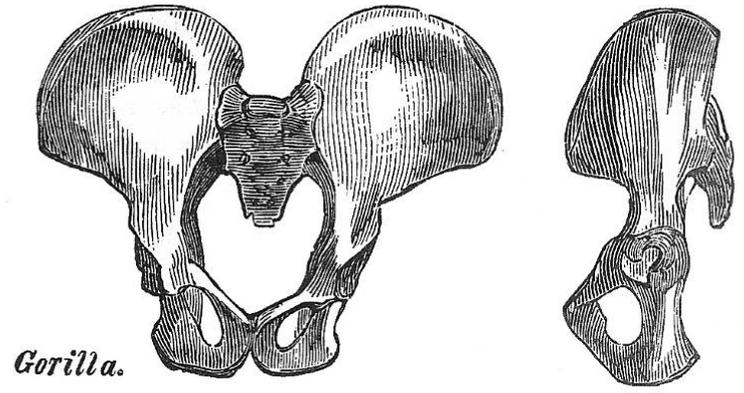
MAN.

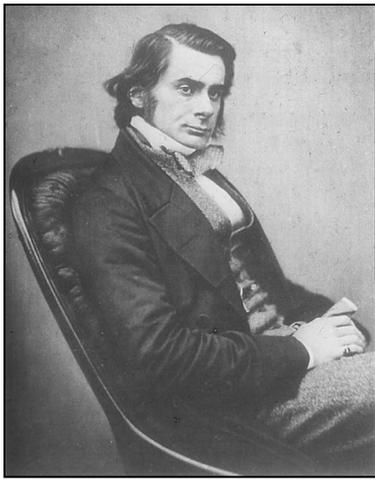
SKELETONS OF THE



Thomas Huxley

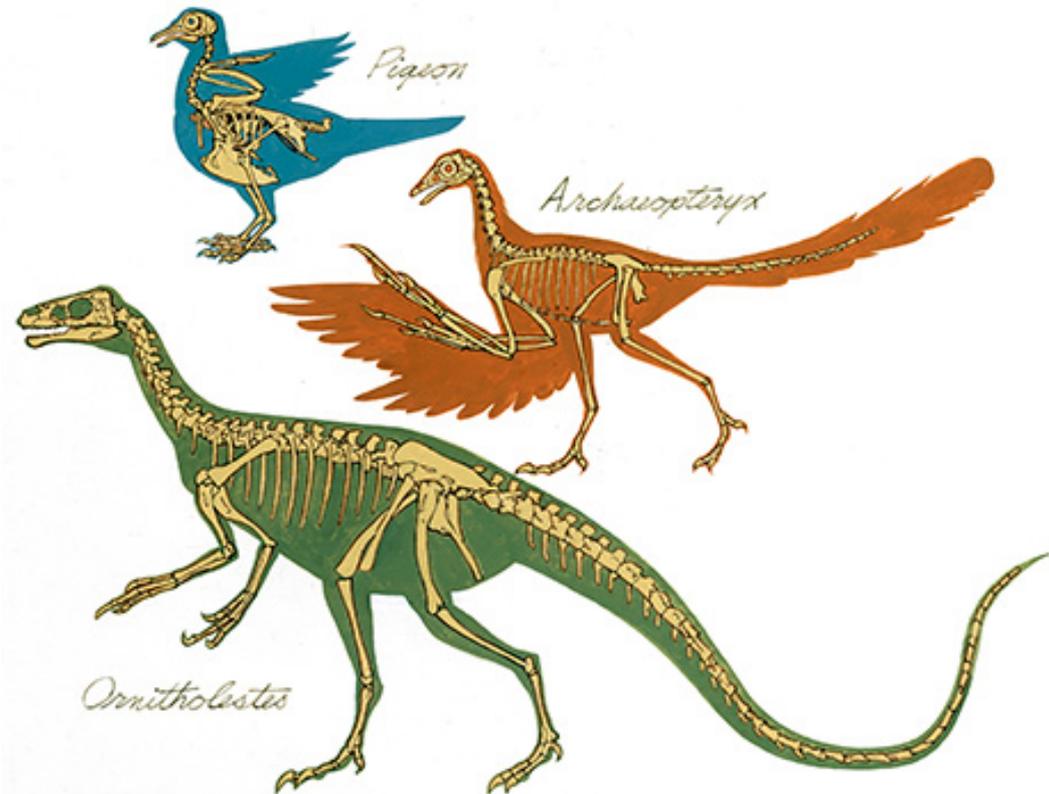
Man's Place in Nature (1863)





## Thomas Huxley

“The road from Reptiles to Birds is by way of Dinosauria” (1868)



## Oxford Evolution Debate (June 30 1860)

- Oxford University Museum
- Seven months after the publication of *Origin*
- Samuel Wilberforce (1805-1873)
  - English bishop
  - spoke against Darwin's ideas



*Was it through your grandmother or grandfather that you descended from the ape?*

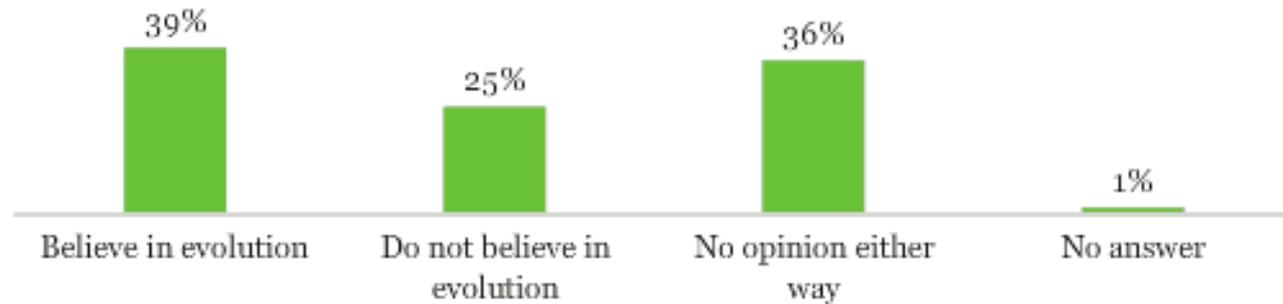


*I would rather be the offspring of two apes than a man afraid to face the truth.*

<b>2005 Aug 5-7 (sorted by "definitely true")</b>	<b>Definitely true</b>	<b>Probably true</b>	<b>Probably false</b>	<b>Definitely false</b>	<b>Not familiar with</b>	<b>No opinion</b>
	%	%	%	%	%	%
Creationism	29	29	18	8	11	5
Evolution	20	35	14	20	8	3
Intelligent design	8	23	22	10	28	9

<b>Comparison of Beliefs About Evolution and Creationism</b>	<b>"Probably" true/false</b>
Both probably true	29 %
Evolution probably true, creationism not	21
Creationism probably true, evolution not	26
Both probably false	4
No opinion about one or both	20

*Do you, personally, believe in the theory of evolution, do you not believe in evolution, or don't you have an opinion either way?*

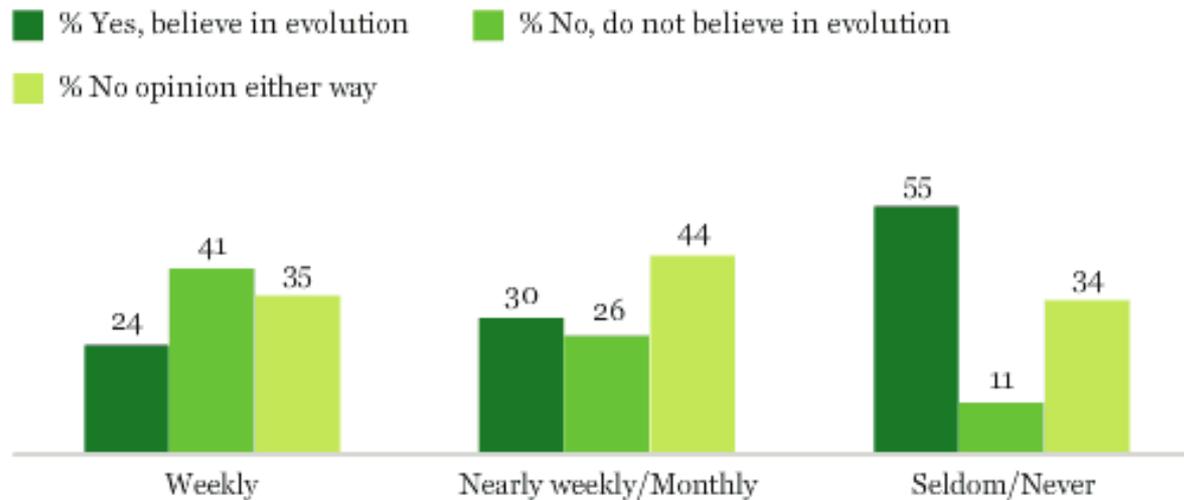


Feb. 6-7, 2009

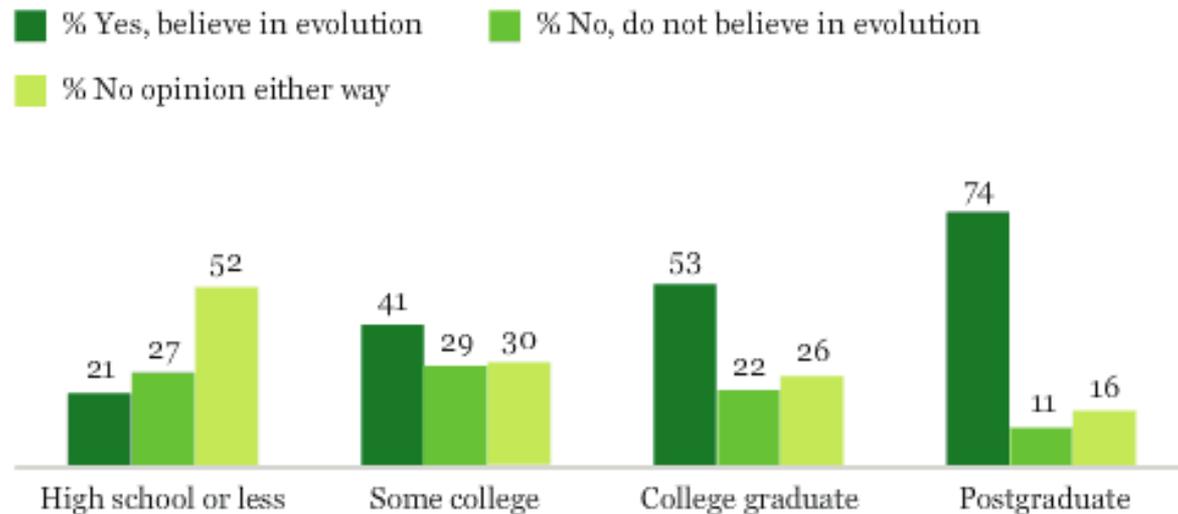
GALLUP POLL

Gallup ® – February 11 2009

### *Belief in Theory of Evolution, by Church Attendance*



### *Belief in Evolution, by Education Level*



By education

	<b>Humans evolved, God guided process</b>	<b>Humans evolved, God had no part in process</b>	<b>God created humans in present form within last 10,000 years</b>
	%	%	%
Postgraduate	42	29	25
College graduate	35	14	46
Some college	36	13	47
High school or less	25	11	52

May 3-6, 2012

GALLUP®

Gallup® – June 1 2012

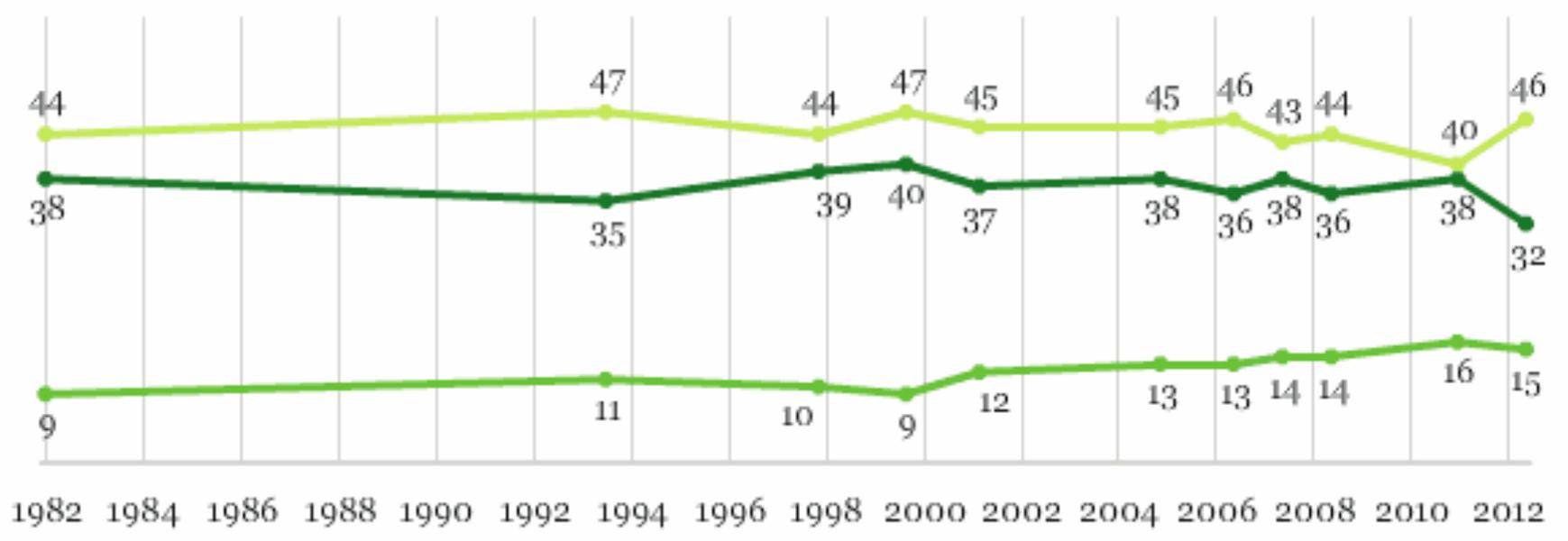
By church attendance

	<b>Humans evolved, God guided process</b>	<b>Humans evolved, God had no part in process</b>	<b>God created humans in present form within last 10,000 years</b>
	%	%	%
Attend church weekly	25	3	67
Attend church almost every week/monthly	31	10	55
Attend church seldom/never	38	26	25

By political party ID

	<b>Humans evolved, God guided process</b>	<b>Humans evolved, God had no part in process</b>	<b>God created humans in present form within last 10,000 years</b>
	%	%	%
Republican	31	5	58
Independent	34	19	39
Democrat	32	19	41

■ % Humans evolved, with God guiding      ■ % Humans evolved, but God had no part in process  
■ % God created humans in present form



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