

January, 2002

Genetics 453

# Evolutionary Genetics

## History of Genetics in Evolution

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## The Great Chain of Being (1600's onward)

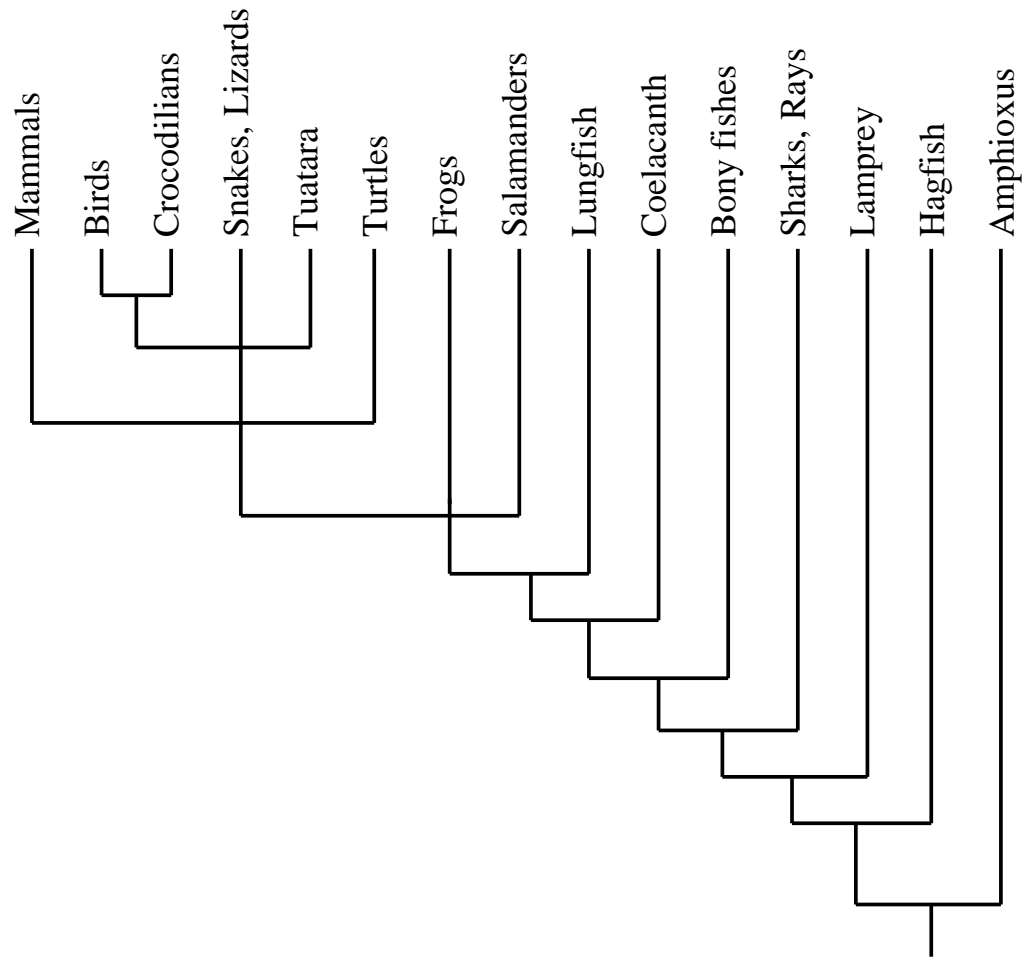
Deity  
Angels  
Man  
Mammals  
Birds  
Reptiles  
Amphibians  
Fish  
Insects  
Worms  
Protists

Issues: placement of birds, insects not obvious. A scale of complexity? Or what?

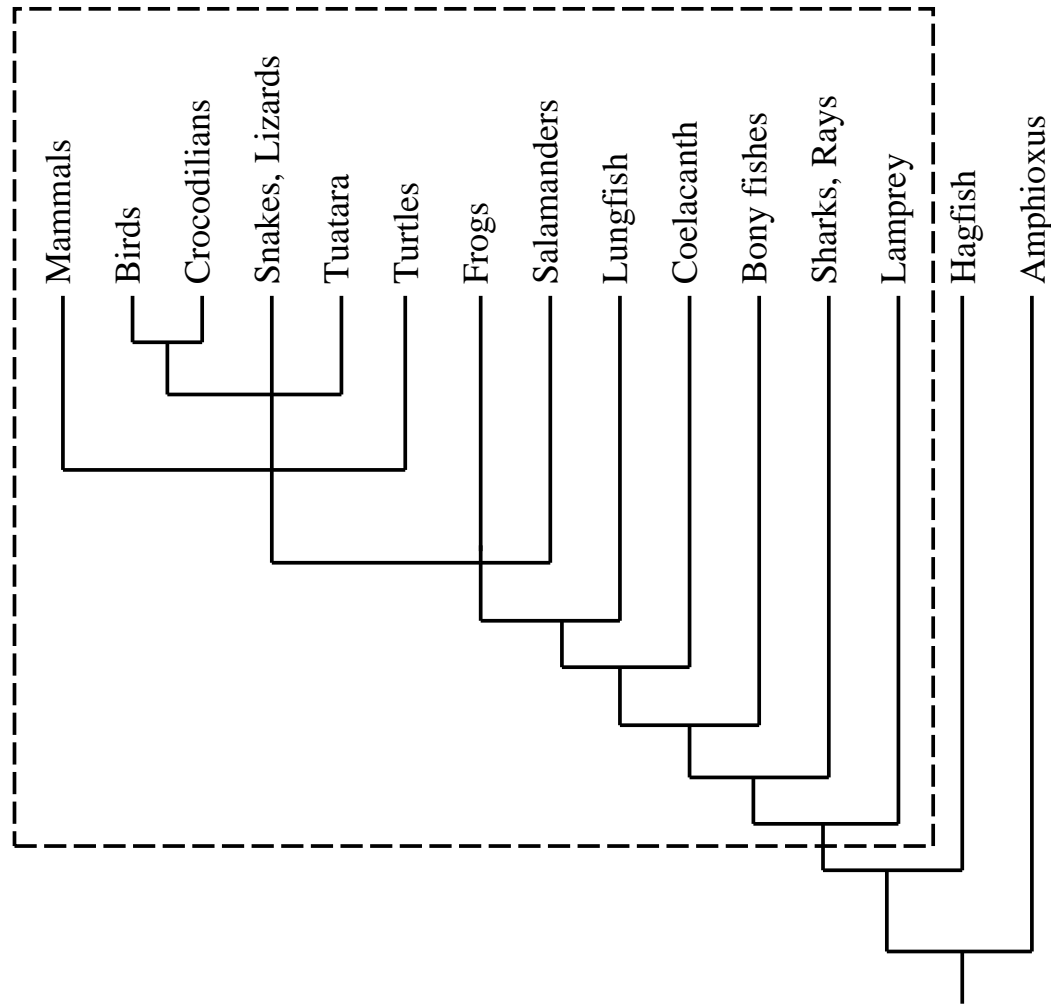


Karl Linné (Carolus Linnaeus) (1707-1778)

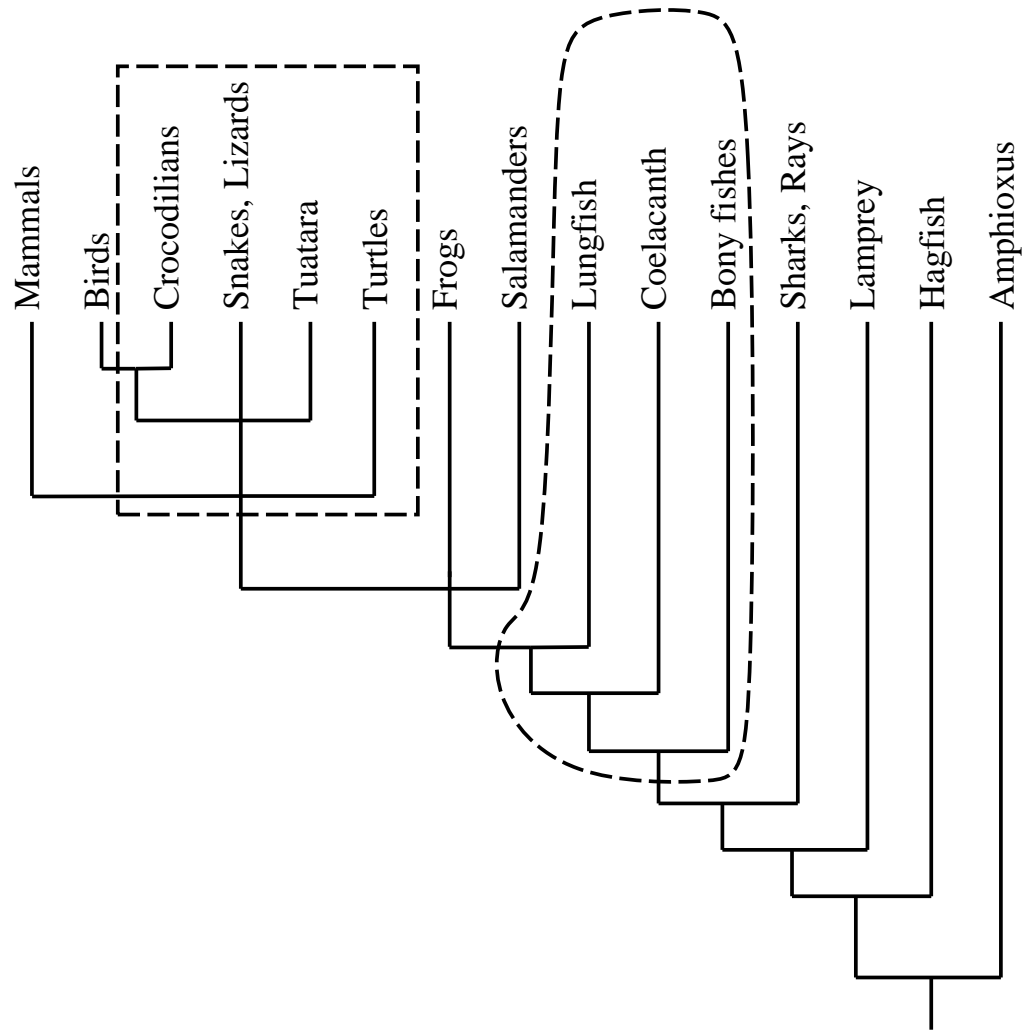
Monophyletic: having a common ancestor which is not the ancestor of any of the other species being discussed.



A phylogeny of the living Craniata



A monophyletic group – the vertebrates



Two paraphyletic groups: the reptiles and the fishes



George-Louis Leclerc, Comte de Buffon (1707-1788)





Jean Baptiste Pierre Antoine de Monet, Chevalier de Lamarck (1744-1829)

# Lamarck's mechanism for evolution

In *Philosophie Zoologique*, 1809.

- Organisms' characters are altered by the effects of use and disuse.
- These changes are passed on to descendants by inheritance of acquired characters.

Note that Lamarck did not originate “Lamarckian inheritance”: it was something everyone believed in at that time.



Statue of Lamarck in the Jardin des Plantes, Paris



Etienne Geoffroy St. Hilaire  
(1772-1844)



Georges Lèopole Chrétien  
Frédéric Dagobert, Baron Cuvier  
(1769-1832)



Fountain on corner of  
Rue Linné and Rue Cuvier

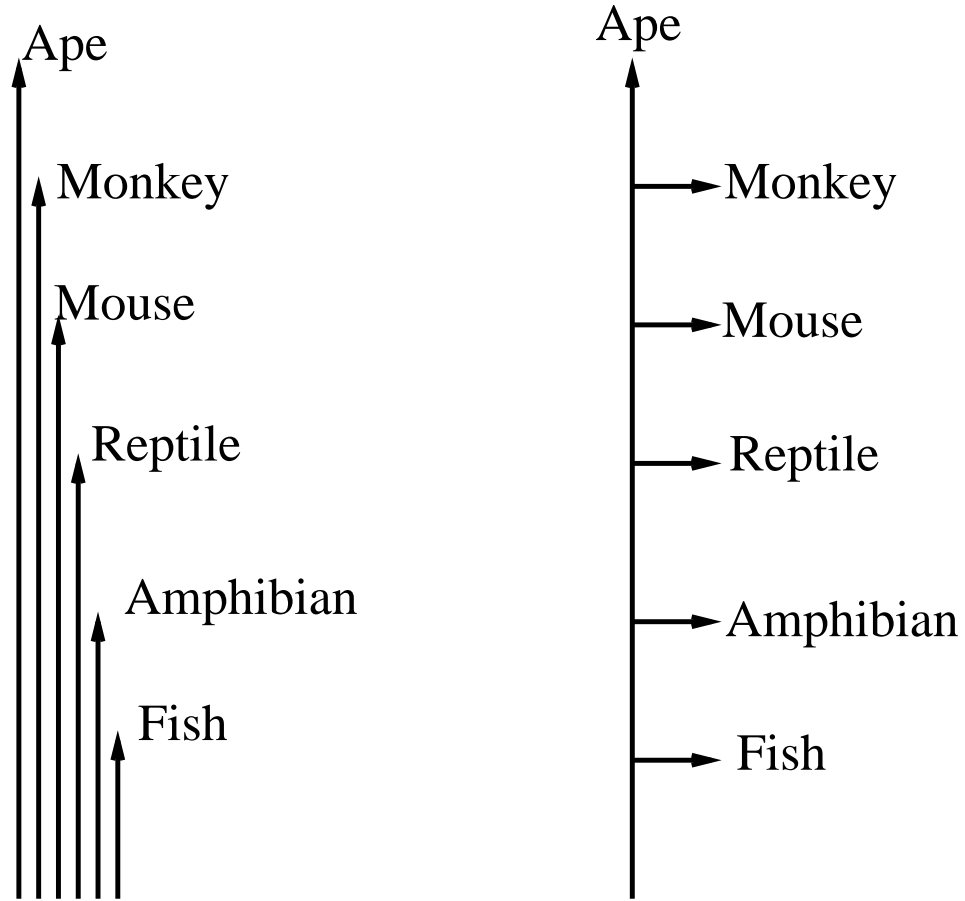


Rue Lamarck / Rue Darwin



Johann Wolfgang von Goethe (1749-1832)

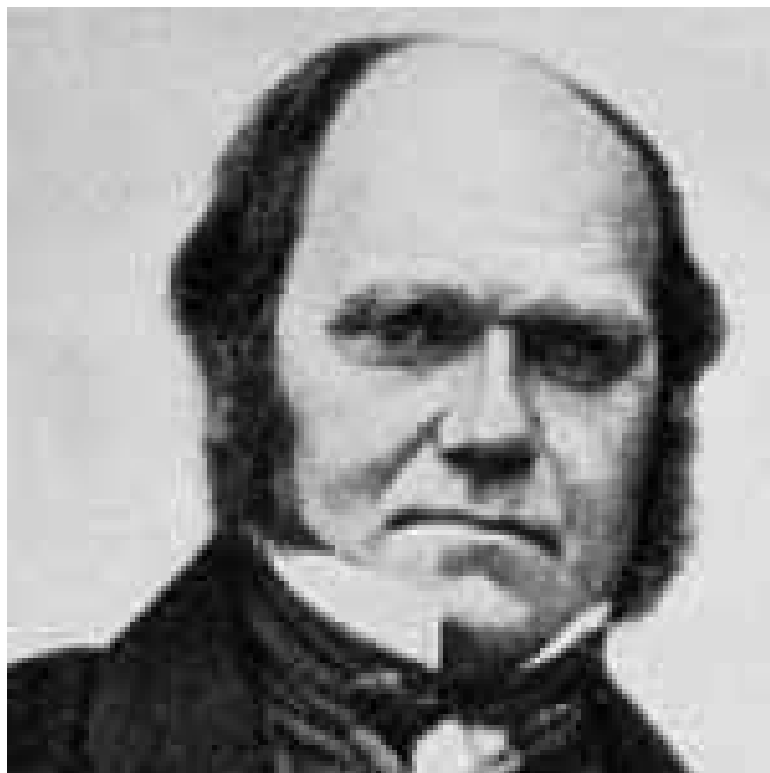
The *Naturphilosophen* and Evolutionary views



common developmental pathway

evolutionary tree

Note – The picture here is very much a Great Chain of Being

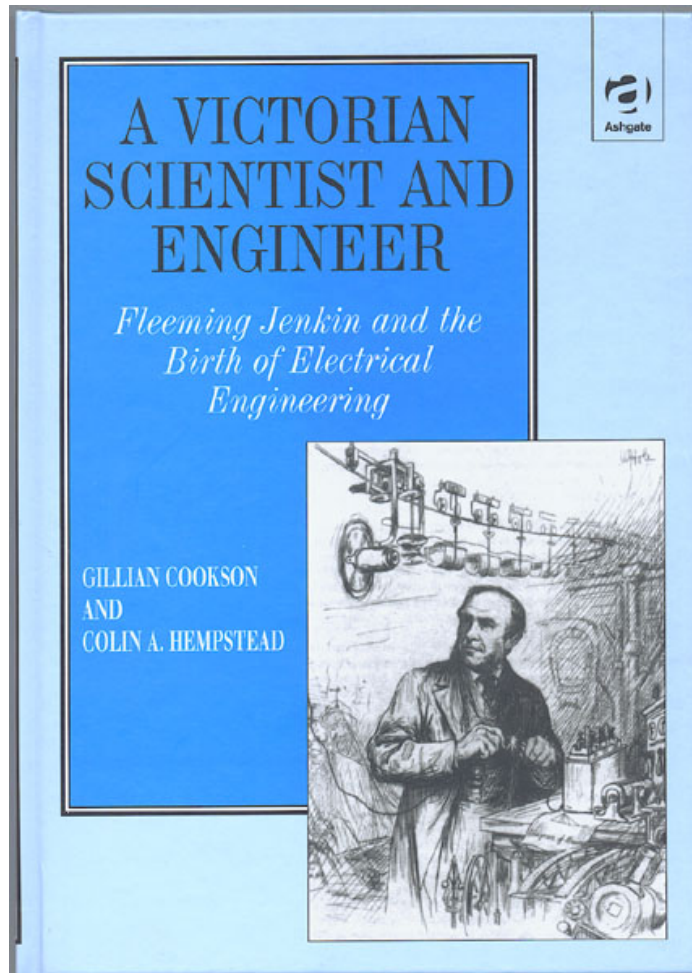


Charles Darwin (1809-1882)





Alfred Russel Wallace (1823-1913) in 1869

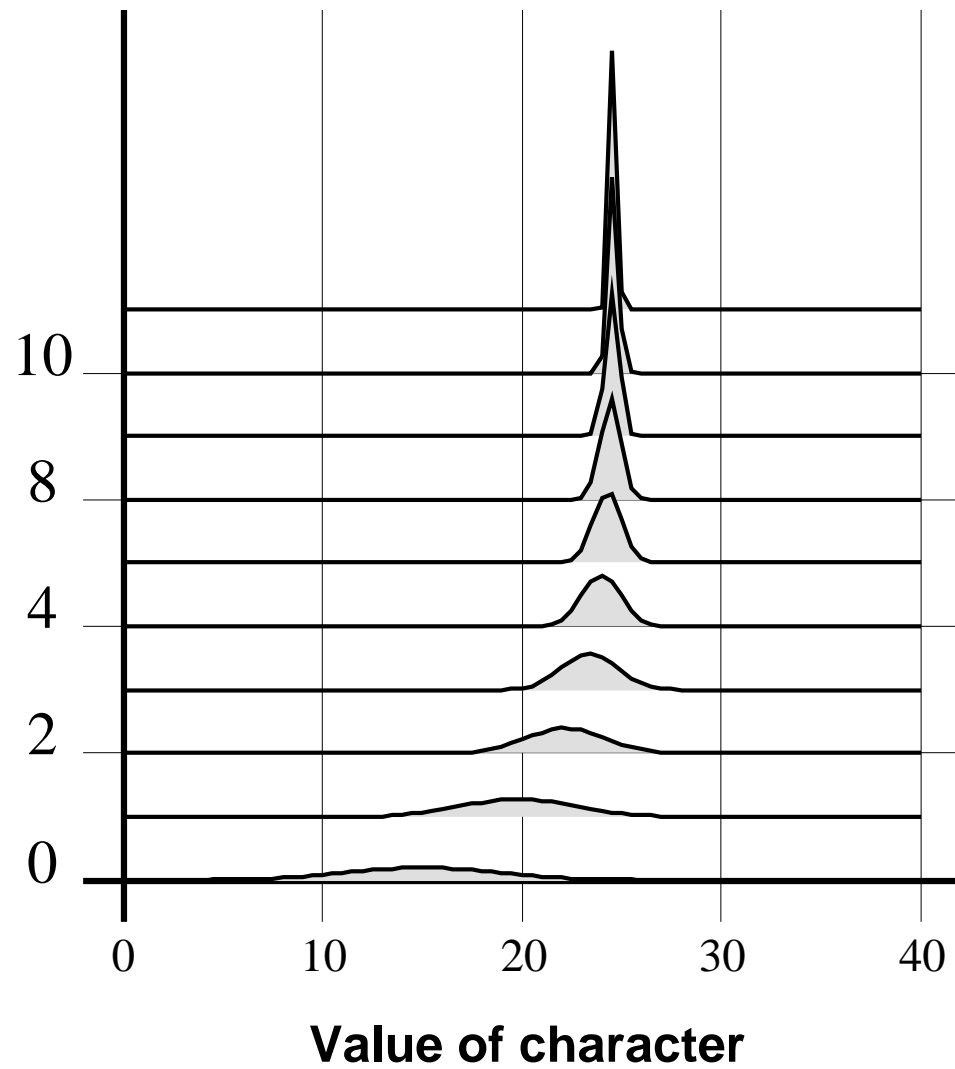


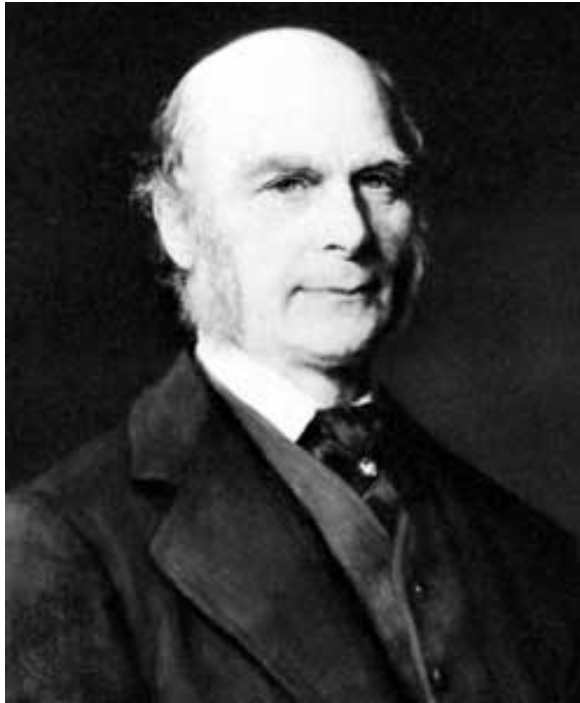
Fleeming Jenkin (1833-1885)



Fleeming Jenkin Building  
University of Edinburgh

**Result of natural selection in the  
presence of blending inheritance**





Francis Galton (1822-1911)



Karl Pearson 1857-1936)



Gregor Mendel (1822-1884)



The faculty at Mendel's monastery school  
(Mendel is top center-right with flower)

## Rediscoverers of Mendel



Carl Correns



Erich von Tschermak-Seysenegg



Hugo De Vries

## Founders of theoretical population genetics



R. A. Fisher



J. B. S. Haldane



Sewall Wright



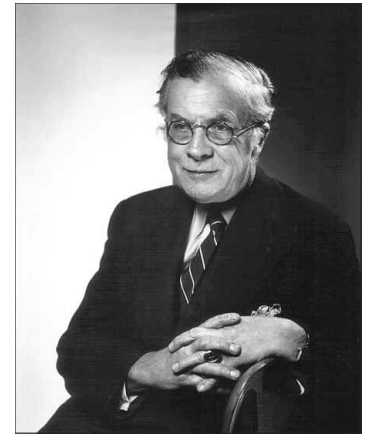
## Popularizers of the Neodarwinian Synthesis



Ernst Mayr



George Gaylord Simpson



Sir Julian Huxley



G. Ledyard Stebbins



Theodosius Dobzhansky

This freeware-friendly presentation prepared with

- PDFLaTeX (mathematical typesetting and PDF preparation)
- Idraw (drawing program to modify plots and draw figures)
- Adobe Acrobat Reader (to display the PDF in full-screen mode)
- Linux (operating system)

(except that we had to use Microsoft Windows to project this as the X server I have in Linux is not too great)