

January, 2002

Genetics 453

Evolutionary Genetics

History of Genetics in Evolution

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The Great Chain of Being (1600's onward)

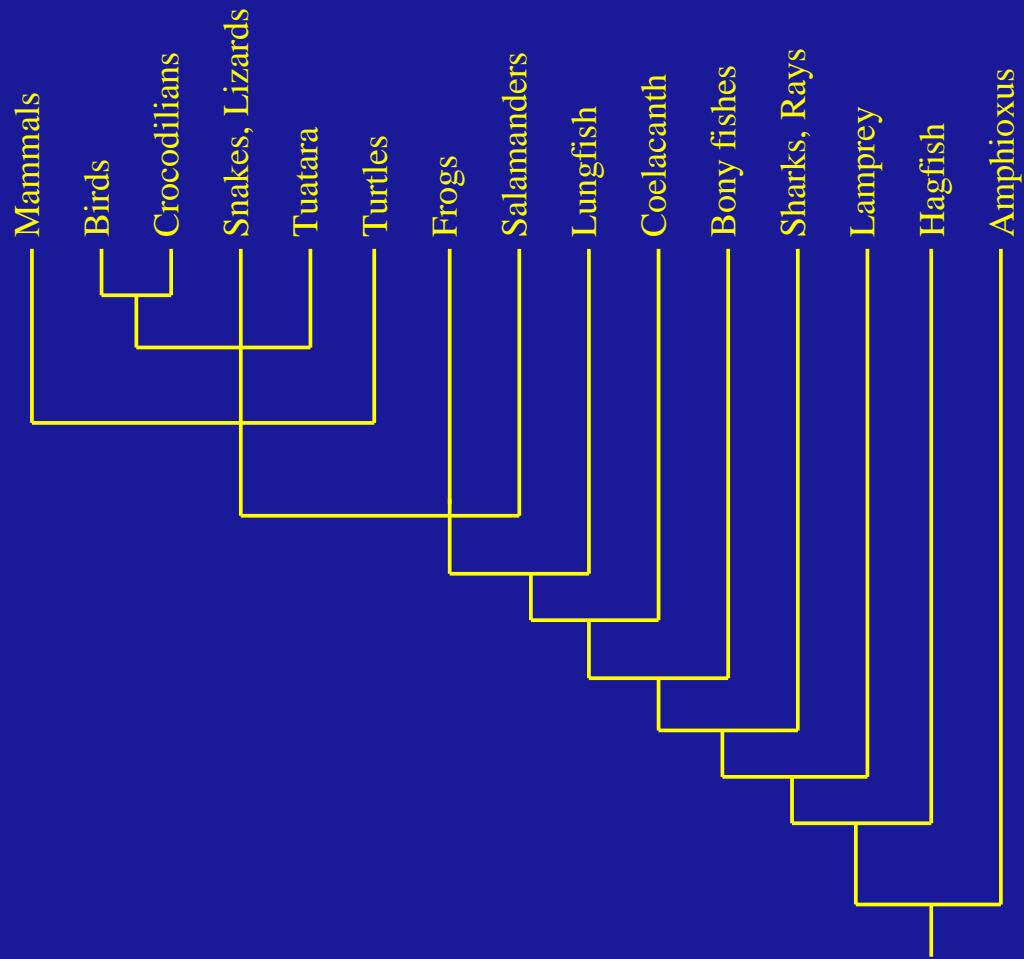
Deity
Angels
Man
Mammals
Birds
Reptiles
Amphibians
Fish
Insects
Worms
Protists

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

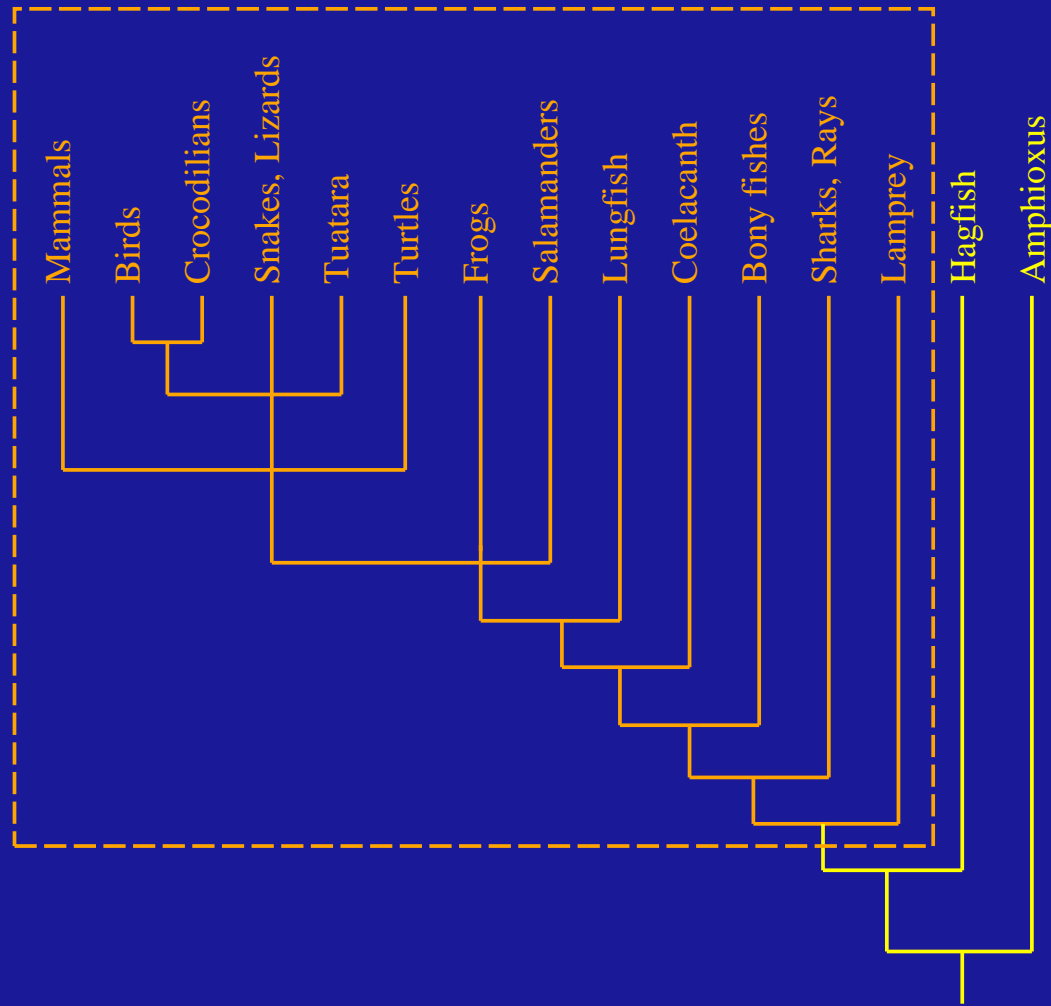


Karl Linné (Carolus Linnaeus) (1707-1778)

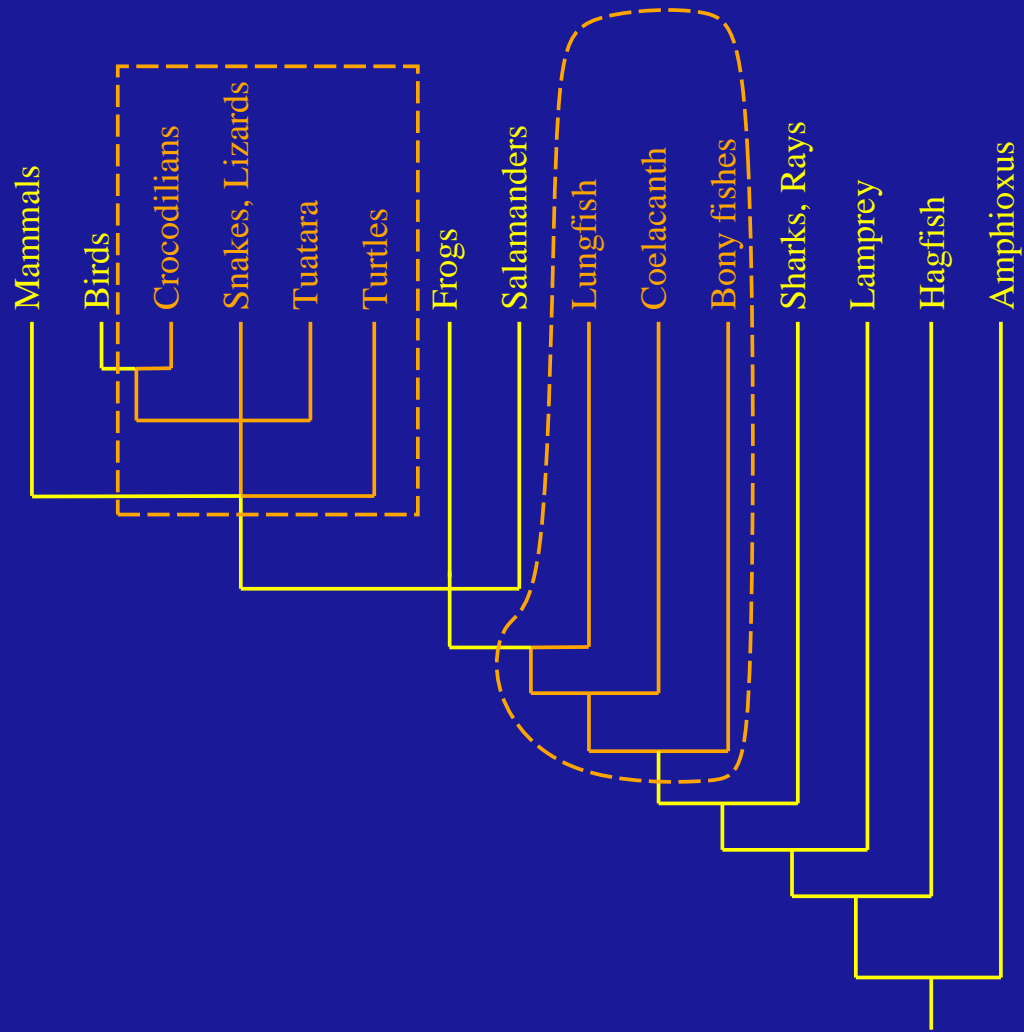
Monophyletic: having a common ancestor which is not the ancestor of any of the other species being discussed.



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)

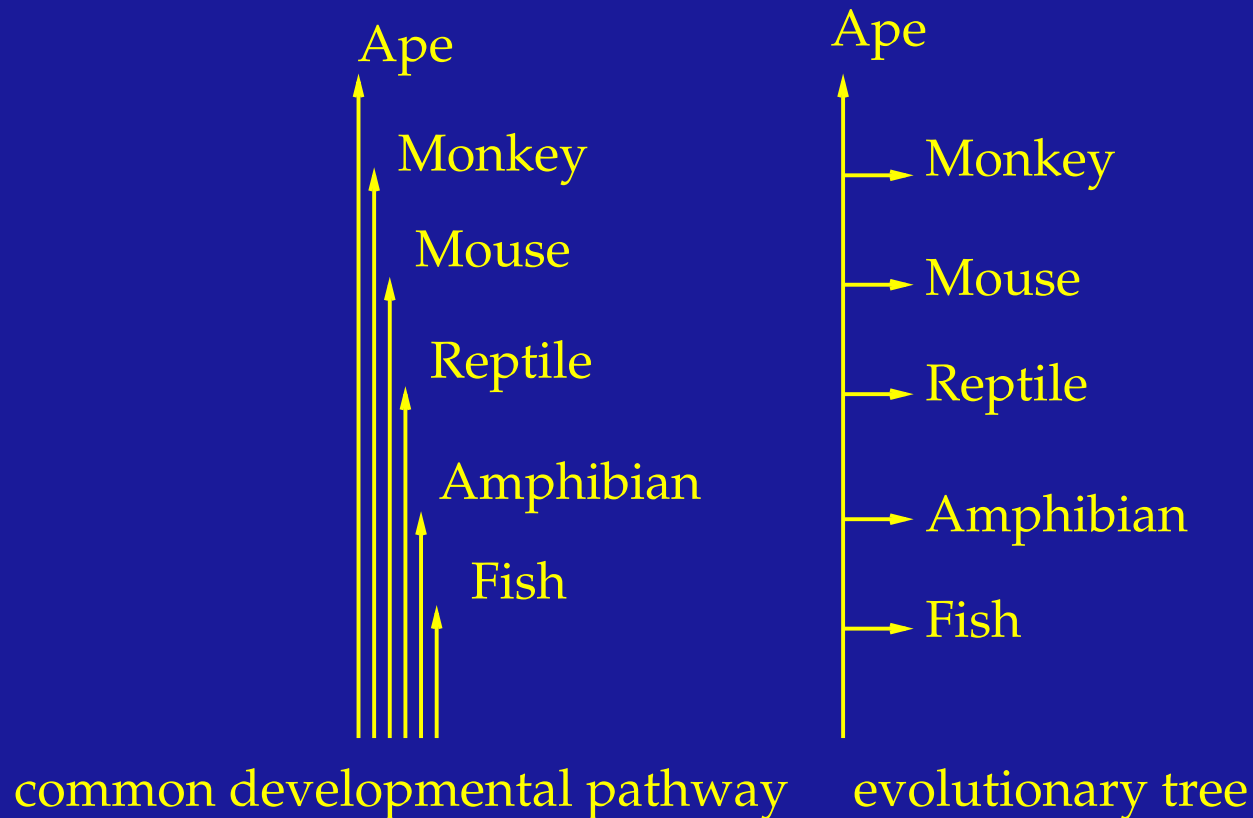


Georges Lèopole Chrétien
Frédéric Dagobert, Baron Cuvier
(1769-1832)

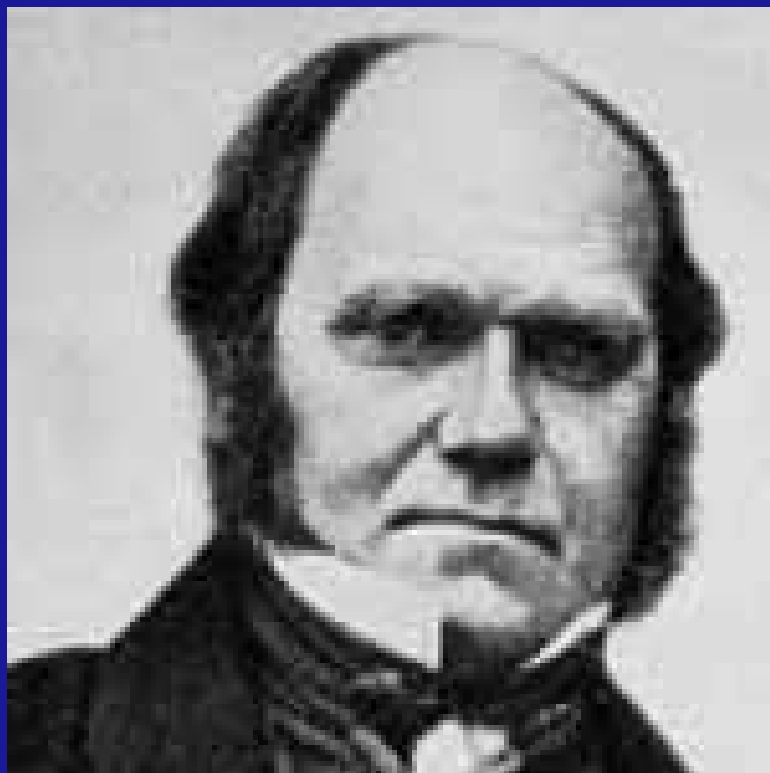


Johann Wolfgang von Goethe (1749-1832)

The *Naturphilosophen* and Evolutionary views



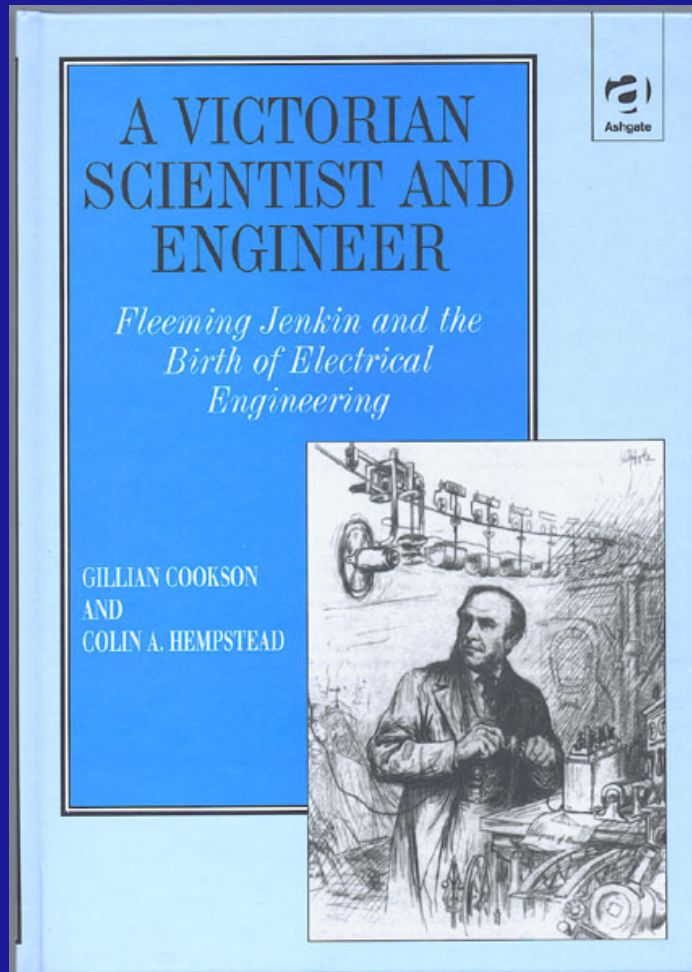
Note – The picture here is very much a
Great Chain of Being



Charles Darwin (1809-1882)



Alfred Russel Wallace (1823-1913) in 1869

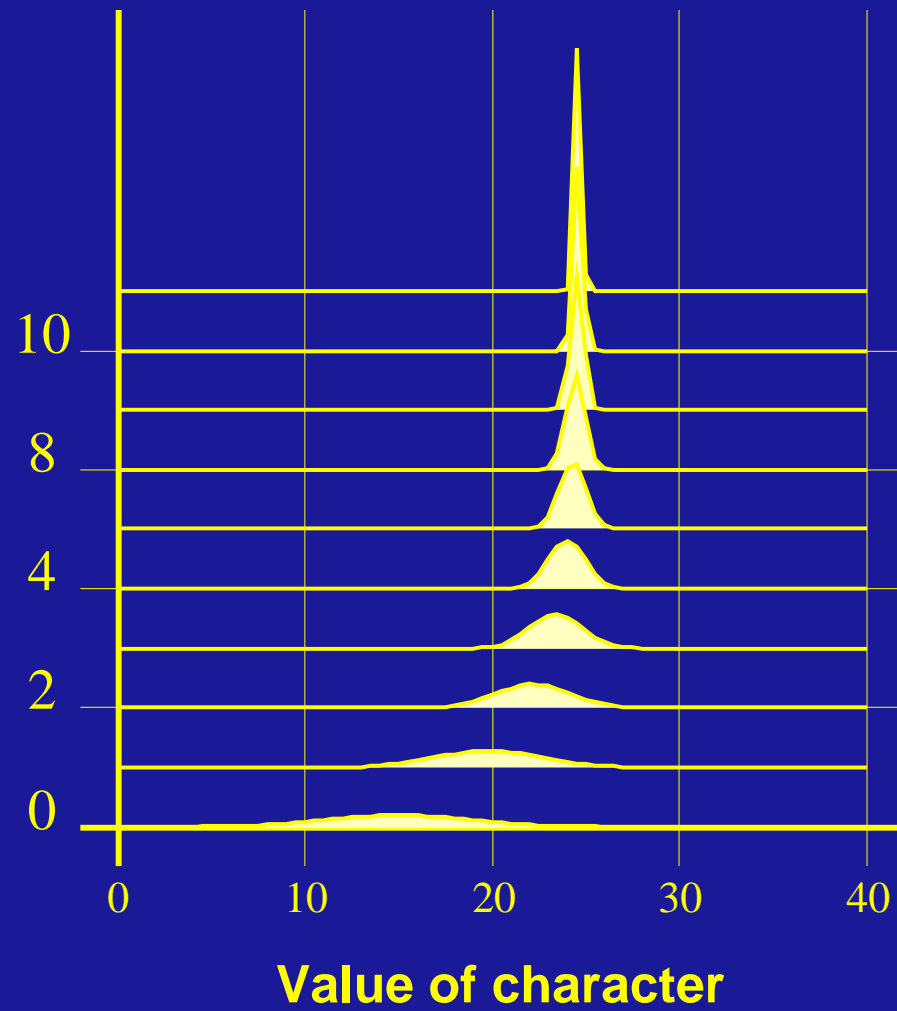


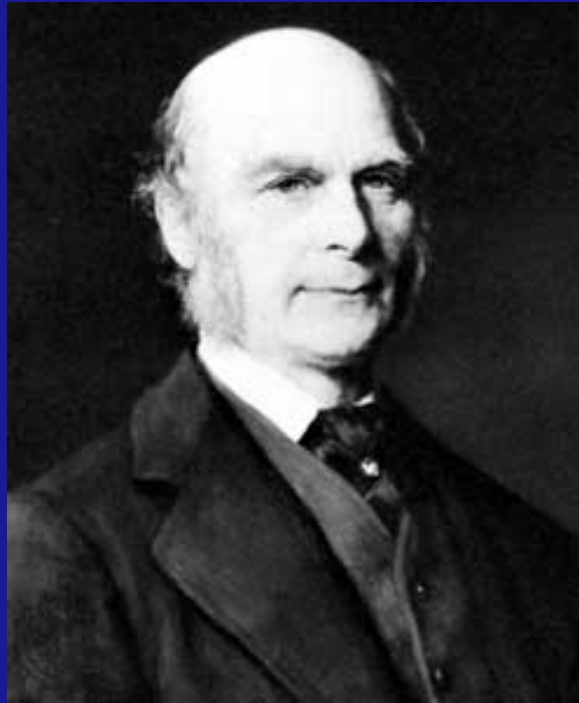
Fleeming Jenkin (1833-1885)



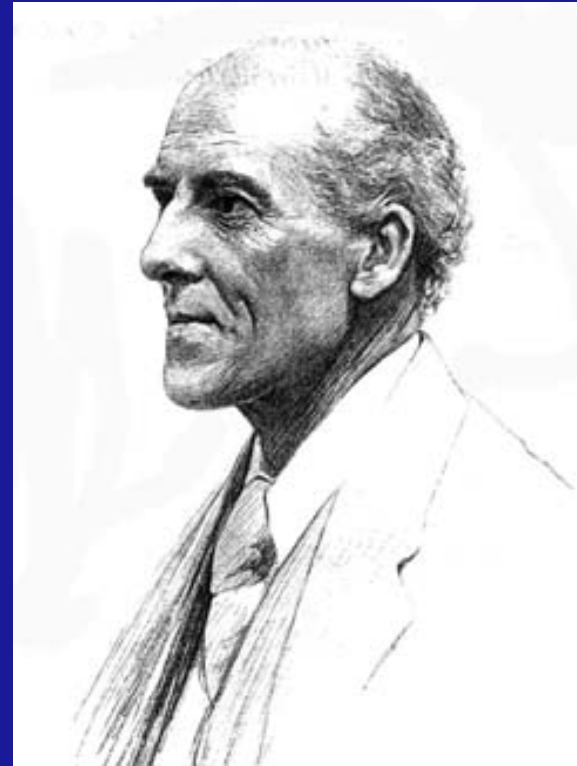
Fleeming Jenkin Building
University of Edinburgh

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)

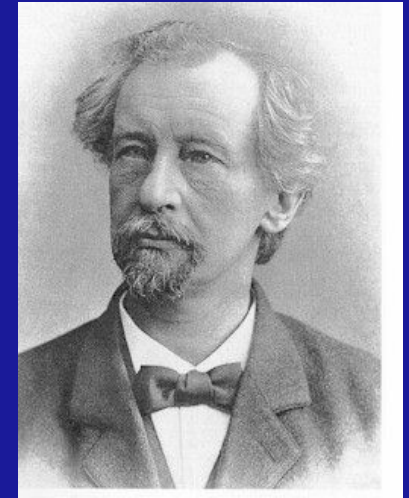
Rediscoverers of Mendel



Carl Correns



Erich von Tschermak-Seysenegg



Hugo De Vries

Founders of theoretical population genetics



R. A. Fisher



J. B. S. Haldane



Sewall Wright

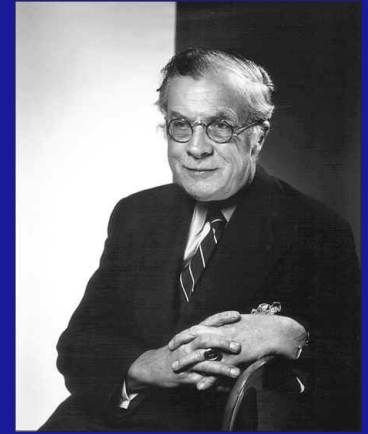
Popularizers of the Neodarwinian Synthesis



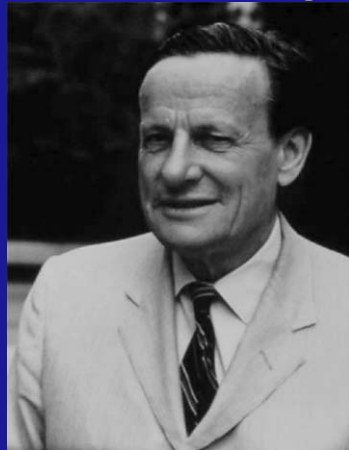
Ernst Mayr



George Gaylord Simpson



Sir Julian Huxley



G. Ledyard Stebbins



Theodosius Dobzhansky

This freeware-friendly presentation prepared with

- PDFLaTeX (mathematical typesetting and PDF preparation)
- Ldraw (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)