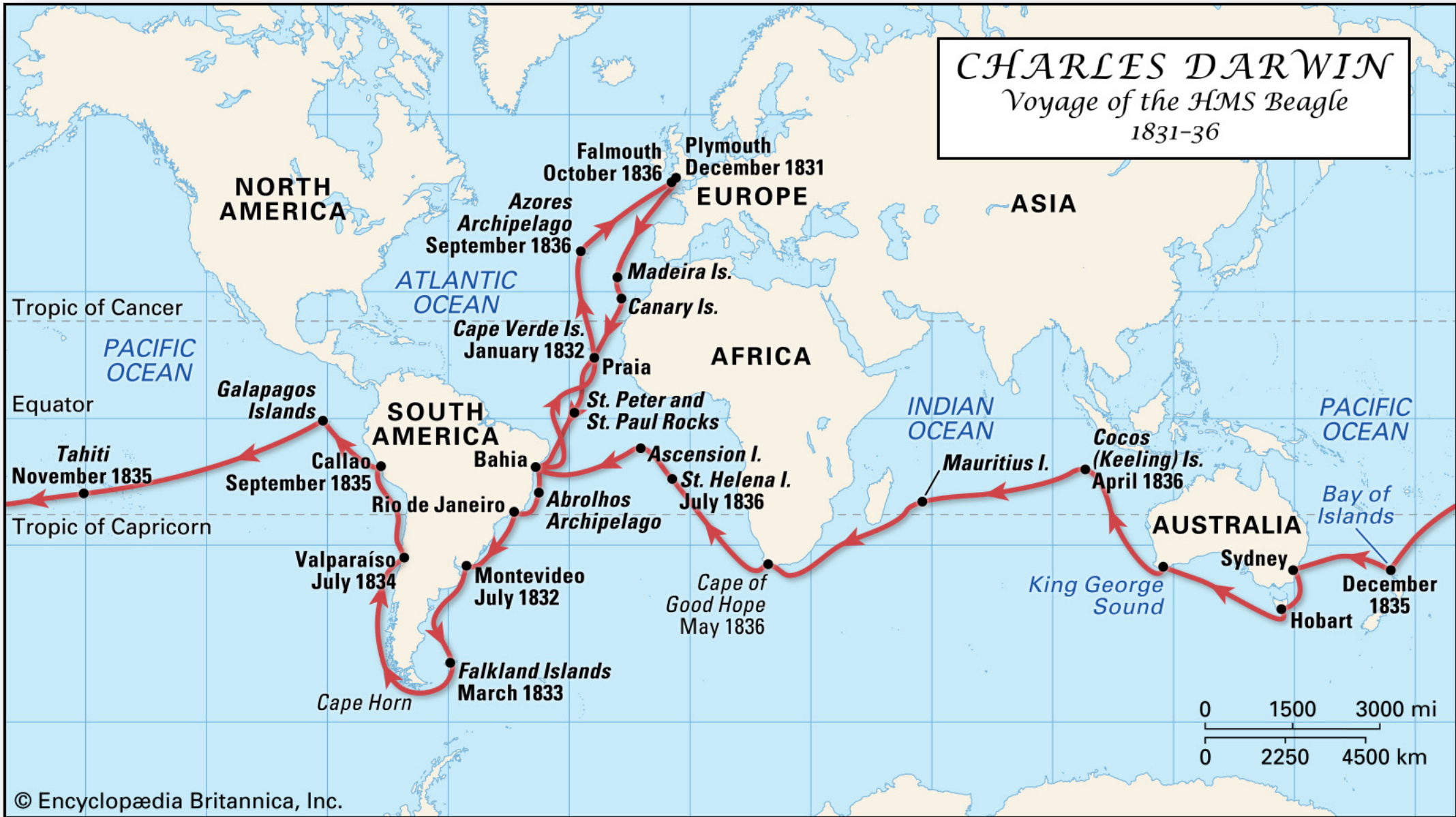


LICEO CLASSICO "GIOACCHINO DA FIORE" - RENDE (CS) - 20/21

Prof.ssa Fabiola Salerno



**CHARLES DARWIN**  
*Voyage of the HMS Beagle*  
1831-36



# CHARLES DARWIN

Journeys in South America  
February 1832–September 1835



**Plymouth, England**  
**December 27, 1831**

- After months of delays, the *Beagle* finally departs.  
"The misery I endured from sea-sickness is far beyond what I ever guessed at."

**Canary Islands**  
**January 1832**

- Darwin has dreamed of visiting Tenerife for a year, but a cholera quarantine forces the *Beagle* to pass without stopping.

**Cape Verde Islands**  
**January 1832**

- "It then first dawned on me that I might perhaps write a book on the geology of the various countries visited, and this made me thrill with delight."

**Salvador**  
**February 1832**

- Darwin explores Brazilian rain forests for the first time.  
"Here I first saw a tropical forest in all its sublime grandeur...I never experienced such intense delight."

**Rio de Janeiro  
April 1832**

- On a 150-mile trek inland, Darwin is appalled by the cruel treatment of slaves.

**Punta Alta  
September 1832**

- "I have been wonderfully lucky with fossil bones. Some of the animals must have been of great dimensions: I am almost sure that many of them are quite new."

**Tierra del Fuego  
December 1832**

- Captain Robert FitzRoy repatriates three native people he had brought to England on a previous voyage; he attempts to start a Christian mission, which fails disastrously.

**Falkland Islands  
March 1833**

- Darwin collects distinctive island birds and fossils that offer a startling contrast to mainland species.

**Rio Negro**  
**August 1833**

- Darwin explores the Pampas with local gauchos.  
"There is high enjoyment in the independence of the Gaucho life - to be able at any moment to pull up your horse, and say, 'Here we will pass the night.' "

**Strait of Magellan**  
**June 1834**

- Two and a half years into the voyage, the *Beagle* at last reaches the Pacific Ocean.

**Chiloé**  
**January 1835**

- Darwin witnesses the eruption of Mount Osorno.

**Valdivia**  
**February 1835**

- Darwin experiences an earthquake in Valdivia and later visits the leveled town of Concepción. He notes that the coast rose several feet.

**Valparaiso**  
**March 1835**

- Darwin climbs the Andes and finds petrified trees similar to those at sea level. He becomes certain the mountains rose "slowly and by little starts," in a long series of earthquakes.

**Galápagos**  
**September-October 1835**

- Darwin finds plants, birds and tortoises with many variations unique to the Galápagos Islands, but that seem mysteriously related to mainland species.

**Sydney**  
**January 1836**

- Marveling at marsupials, Darwin wonders why there is a whole different set of mammals in Australia.

**Cocos Islands**  
**(aka Keeling Islands)**  
**April 1836**

- Darwin studies coral atolls to test his theory of reef formation. "I am glad we have visited these islands; such formations surely rank high amongst the wonderful objects of this world."



**Mauritius  
April-May 1836**

- "It's a complete & very beautiful picture. But, there is no country which has now any attractions for us, without it is seen right astern, & the more distant & indistinct the better. We are all utterly home sick."

**Cape of Good Hope  
May-June 1836**

- Darwin visits the English scientist John Herschel, who like Darwin was curious about the origin of new species, which he called the "mystery of mysteries."

**Bahia  
August 1836**

- Both homesick and seasick, Darwin is dismayed when the *Beagle* makes an unscheduled detour to South America for additional longitude measurements. "This zig-zag manner of proceeding is very grievous...I loathe, I abhor the sea, & all ships which sail on it."

**Falmouth, England  
October 2, 1836**

- "I reached home late last night. My head is quite confused with so much delight."

# A VERY LONG BOOK

It is written in a four-letter alphabet, the nucleotides, the units which, attached to each other in very long strands, form DNA, our inheritance or genome.

It is made up of as many **chapters** as **chromosomes** are, in the characteristic number of each species: 1 in bacteria, 23 in man...

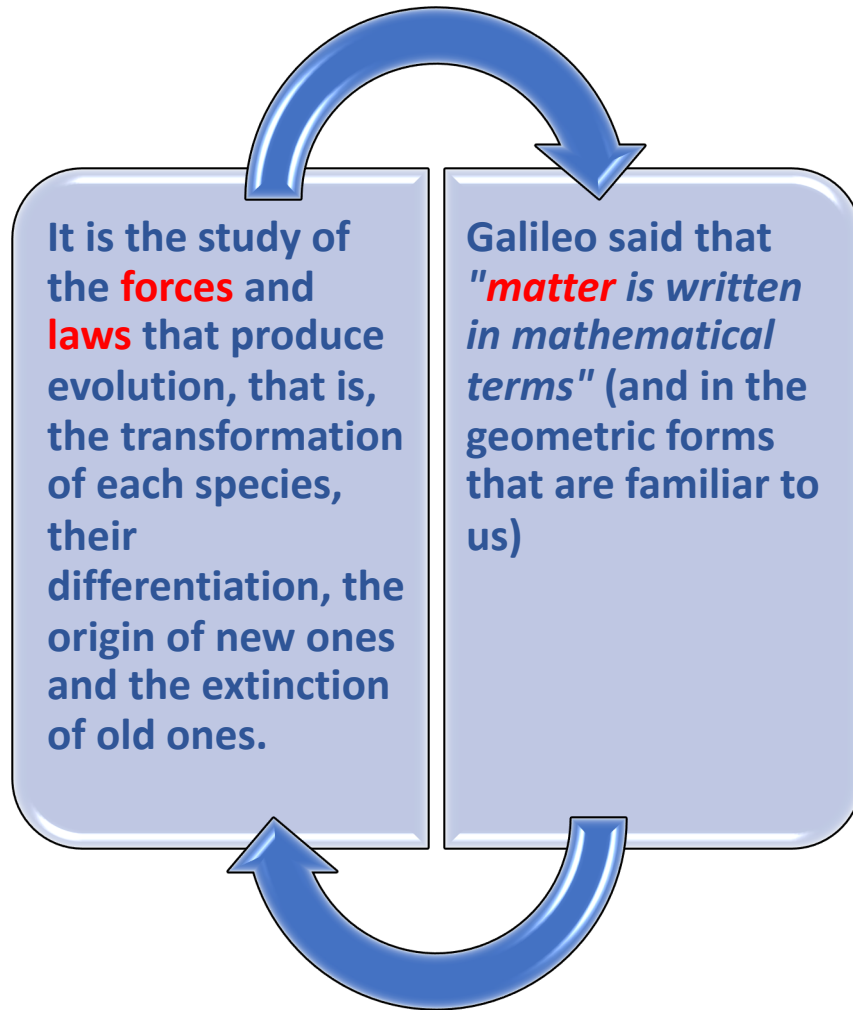
Each chapter is made up of **sections**, the **genes**. They are as many as proteins are: each gene contains the instructions for making a specific protein, each with a special shape and function.

These instructions depend on the order in which the nucleotides are within the chromosome, on average one thousand nucleotides per gene, and there are tens of thousands of genes in our genome. Together the DNA determines the shape and function of the body of every living organism and its parts.

The production of a DNA copy involves a certain frequency of "copy errors", of which the simplest and most common are the transcription error of a single nucleotide in a single point of a particular chromosome: in practice, the substitution of one of the four types of nucleotides with one of the other three

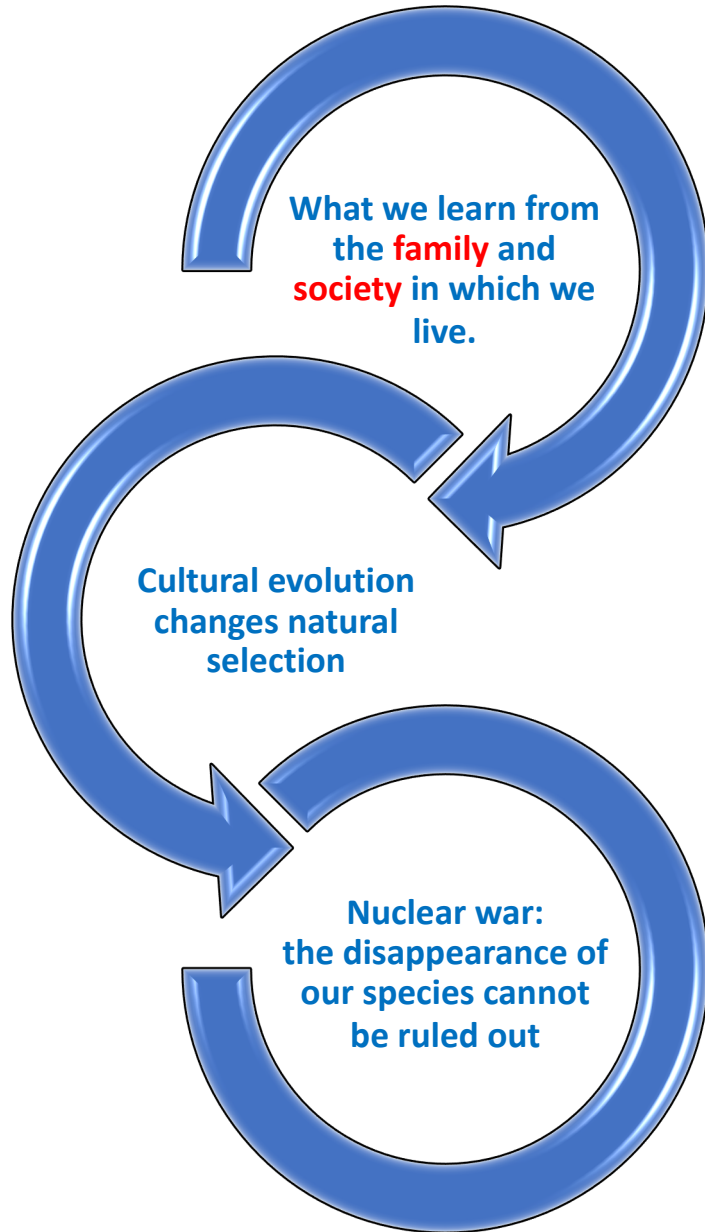
## CHEMICAL EVOLUTION

# BIOLOGICAL EVOLUTION



**Genetic drift:** it depends on the genetic frequencies of a population, perhaps fragmented into small populations

**Migration** between different populations



# CULTURAL EVOLUTION

From the speech by Luigi Luca Cavalli Sforza at the Conference "*The world after Darwin*", Accademia dei Lincei, Roma 2009