

Introduction to Biology. Lecture 2

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1 Questions and answers

- Comments to introductory test

2 Age and time. Basic principles

- Geological time
- Some basic principles



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Interesting in being a note taker?

- Disability Services is looking for a note taker in this class. The individual will be paid for taking notes.
- Interested students who will have **consistent attendance** and take complete and legible notes should contact:
- **Melanie Moore**, Student Health and Development Center:
Lower level Lura Manor (must enter through South Door facing University Ave) or call 858-**4233**



Questions and answers

Comments to introductory test



Question 1

- 1 Why deciduous plants take off their leaves?
- A To prevent freezing
 - B To prevent drying**
 - C To get rid of poisonous chemicals



Question 2

2 Where does human digestion process start?

- A In the mouth**
- B In the intestines
- C In the stomach

Amylase and lipase



Question 3

3 Which birds do NOT live in Minot on winter?

- A Crows
- B **Hummingbirds**
- C Sparrows



Question 4

4 Home country of watermelon:

- A Central America
- B Canada
- C **South Africa**



Question 5

5 Why do insectivorous plants eat insects?

- A To obtain the lacking mineral resources
- B To get an addition to their common “menu”
- C To get rid of herbivores



Question 6

6 Which insects have no queen?

- A Bumblebees
- B Ants
- C **Cockroaches**



Bumblebees



Question 7

7 Oak tree is pollinated by:

- A Wind
- B Bees
- C Flies



Oak flowers



Question 8

8 Spider has:

- A 6 legs
- B **8 legs**
- C 4 legs



Question 9

9 Apple flower has:

- A **5 petals**
- B 4 petals
- C 3 petals



Question 10

10 Frightened man has:

- A **Bigger pupils**
- B Smaller pupils
- C Normal pupils



Question 11

11 Polar bears are not eating penguins because:

- A Penguins run very fast
- B **They cannot meet**
- C Penguins are poisonous for bears



Question 12

12 How many toes are on each of cat's hind legs?

- A 5
- B 4
- C 3



Question 13

13 Pineapple is a:

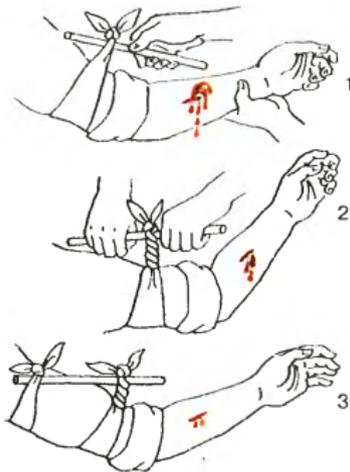
- A Tree
- B Shrub
- C **Herb**



Question 14

14 If somebody has an artery cut on the arm or leg, it is recommended:

- A Put a tight bandage below the cut
- B Put a tight bandage above the cut**
- C Do nothing



Question 15

- 15 Which of the following is the most precise statement?
- A We are breathing to support our life
 - B We are breathing to obtain the energy from food**
 - C We are breathing to have enough strength for food consuming



Question 16

16 Which tree is better to plant in Minot house backyard:

- A Sycamore
- B **Ash**
- C Yew



Question 17

17 Moles eat:

- A **Worms**
- B Roots
- C Frogs



Question 18

18 Which fish gives birth to the fully developed offspring?

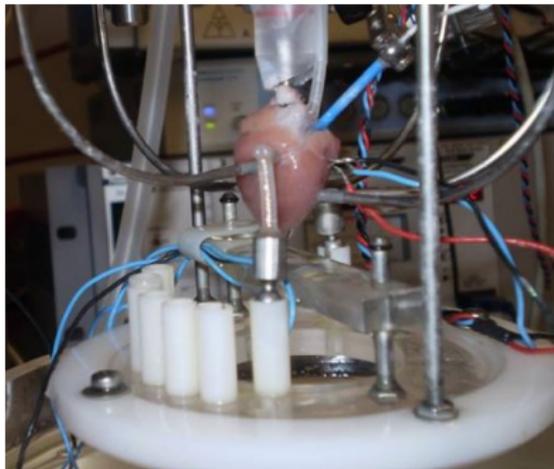
- A Sturgeon
- B Shark**
- C Flounder



Question 19

19 Which human organ lives longer?

- A Heart
- B Lungs
- C Brains



Question 20

20 Which plant normally has a longer root?

- A Spruce
- B **Chokecherry**
- C Blueberry



Fallen spruce tree

Age and time. Basic principles

Geological time



First attempts to calculate age of Earth (1830–1850)

- Helmholtz calculated that if Sun is shrinking to obtain the energy, then the age of Earth should not exceed 18 My (millions of years, 18,000,000 years)
- Lyell calculated that if the **speed of sedimentation was the same in the past**, then age of Earth should be approximately 200 My

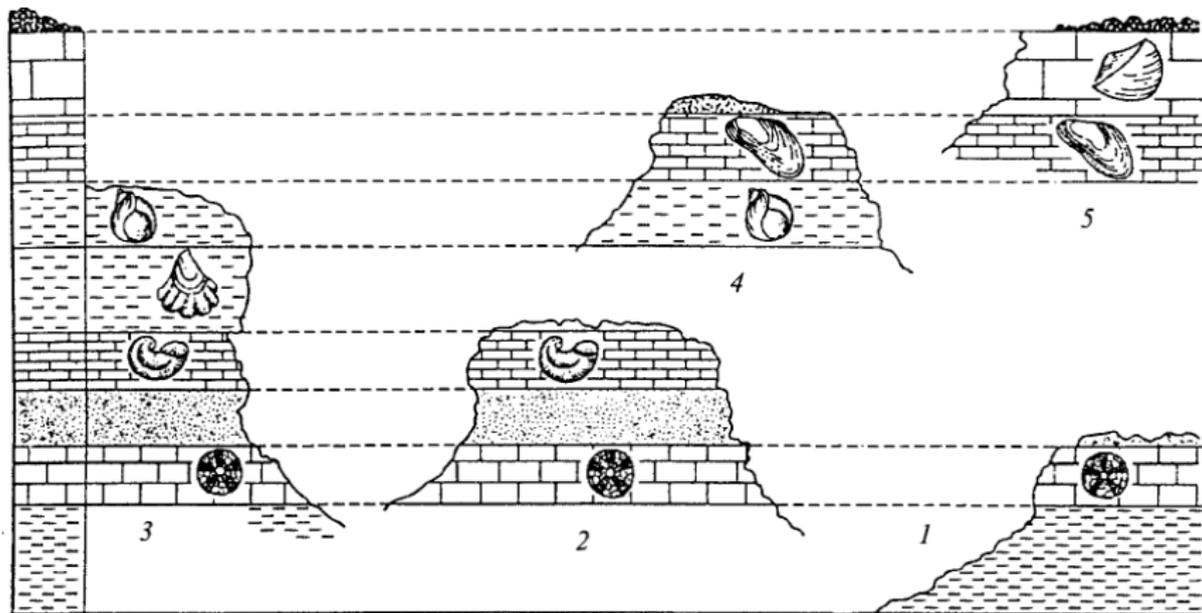


Stratigraphy

- Upper layers are younger than lower
- Two layers contained similar species of fossils have the same time of origin



How stratigraphy works

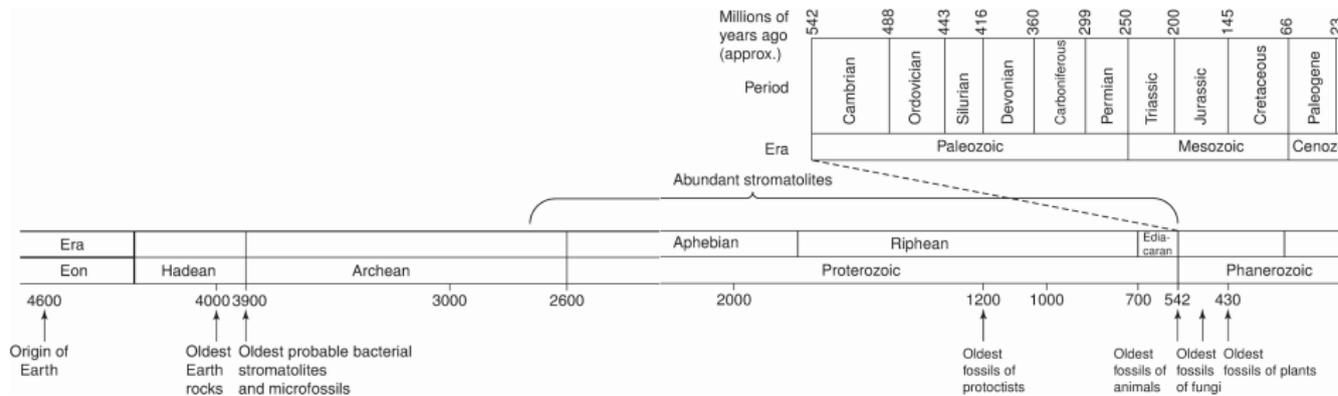


Use of radioactivity

- In 1896, Becquerel discovered **radioactivity**. It was found that some atoms are constantly breaking into smaller ones, sometimes with very slow speed
- Consequently, it is possible to calculate the age of mineral from the concentration of radioactive elements



Geological scale



Age and time. Basic principles

Some basic principles



Principle of actuality

- Charles Lyell (1830)
- “The present is the key to the past”



Occam's razor

- Father William of Ockham (ca. 1300)
- “Plurality must never be posited without necessity”



Science as falsification

- Karl Popper (1963)
- “If something cannot be proved wrong, then it is meaningless”



Summary

- Geological time is calculated on the basis of both relative (stratigraphy) and absolute (radioactivity) methods
- Science is based on the principles of actuality, falsification, Occam's razor, and hypothesis testing



For Further Reading



[Biology. Wikipedia.](http://en.wikipedia.org/wiki/Biology)

<http://en.wikipedia.org/wiki/Biology>



[History of Life. Wikipedia.](http://en.wikipedia.org/wiki/History_of_Life)

http://en.wikipedia.org/wiki/History_of_Life

