Biology 10

Ch 26.2, part 2 (Reptiles, Birds)

Evolution of Reptiles

- 310 mya
- Most likely evolved from _____
- Two driving forces for complete terrestrial way of life
  - competition was _____ for food/space in _____ environments
  - land environments were becoming drier.
- Evolved into three main groups
  - _____ (turtles, lizards, snakes, crocodiles, tutatara)
  - _____
  - _____

Adaptations for terrestrial life

- **amniotic egg**- eggs which protect the embryo with a membrane (**amnion**), and a protective shell
  - **yolk**: _____ for embryo
  - **amniotic fluid:** _____ the embryo from injury
  - **allantois**: _____, provides oxygen
  - **shell:** _____ and allows gas exchange through tiny pores

Adaptations for Terrestrial life (continued)

- _____ fertilization- eliminates the need for water
- _____ (scales protect from water loss)
- adaptations for movement (claws, suction cups on feet, scales on snakes)

Adaptations for terrestrial life

- Respiration _____ only
- Circulatory system- most reptiles still have 3 chambered heart, but keep blood with oxygen separate with a partial division
  - crocodilians have 4 chambered heart
- well developed excretory system to prevent water loss
- _____- rely on environment for heating/cooling

Classification of Reptiles

- Class Reptilia (6000 sp)
- 4 surviving orders
  - **Order Rhynchocephalia**
    - includes one surviving species- _____
    - spiny crest along its back
    - **parietal eye**- third eye on the top of its head, used for temperature regulation

Classification of Reptiles

- **Order Chelonia** (256 sp)
  - includes _____
  - ancient group, have not changed much
  - shell modified for various functions (protection, swimming)
  - limbs also modified for different environments

- **Order Crocodilia** (23 sp)
  - _____
  - another ancient order (200 my)
  - predatory, have many adaptations for their attack mode (stealth)
    - eyes, nostrils on top of their head valve to keep water out when feeding underwater

- **Order Squamata** (5640 sp)
  - includes _____
  - many varieties of lizards
  - some venomous, some change color,lose tail when attacked

Bird Evolution

- very very similar to reptiles
  - _____
  - scaly feet
  - vertebrates
  - very likely they are the closest animals to the dinosaurs!
- Bird ancestors were most likely a group of dinsosaurs called _____ (like velociraptors)
- *Archaeopteryx*, fossilized feathered dinosaur probably represents a side branch of feathered reptiles, not the bird ancestor
- Differences are all accountable to the ability to fly

Bird Adaptations for Flight

- Birds are designed specifically for flight
- _____allow wings to catch the air, and are excellent insulators (lightweight for flight)
  - **<u>down feathers</u>**: small fluffy feathers used for insulation
  - **<u>contour feathers</u>**: larger feathers used to cover the body and wings, streamlines the bird
  - birds use their beaks to spread oil on their feathers
    - keeps them waterproof
    - called _____
- Bones are _____, to reduce weight, and some fused to increase strength
- _____ to reduce air resistance

- _____ heart allows very efficient circulation, necessary for flying
- _____ shaped to cause an upward force called **lift**
- _____are also efficient, with extensions in between organs and even into the bones!
- _____, best among the vertebrates???
- Proportionately larger brains than reptiles and amphibians
  - debate as to birds intelligence…
- Birds are _____- "warm blooded", body temperature is kept constant regardless of environment
  - allows birds to occupy a wide variety of habitats
  - downside is that birds need to eat A LOT to maintain flight
- Some birds have lost ability to fly (penguins, ostrich, chicken, etc)

Migration

- many birds **migrate** or travel long distances
- Migration allows birds to take advantage of better feeding grounds, nesting grounds, etc…

Nesting

- Birds must keep their eggs warm during development
- Many build nests to allow one parent to incubate the eggs
- Various nesting behaviors
  - in some species, _____ share the job
  - in others, one or the other do the nesting
  - some birds lay their eggs in other birds' nests, so they don't have to take care of their young! (ex: cuckoo)

The Chicks

- some chicks hatch fully developed and ready to feed themselves (= _____)
  - ex: chickens, ducks, geese, shorebirds
  - some mammals are precocial as well (antelopes, horses, cows)
- Other chicks need lots of time to develop and cannot fend for themselves (_____)
  - ex: robins, wrens, jays
  - mammal examples include: humans, dogs, cats

Classification

- Class Aves (most common classification)
  - Some taxonomists actually include them with the reptiles (class Reptillia)
  - Several groups of birds, can be divided into the **ratites** (non-flyers, lack a keel), and **carinates** (flyers, possess a keel)
  - Several orders and classes of birds, divided by perching methods, feeding, behavior, habitats, etc.

Flightless Birds
Water Birds
Birds of Prey
Perching Birds

Biology 10

Ch 32 (Mammals)

Evolution

- Most likely evolved from _____- reptiles with certain mammalian features (quadriped, endothermic, specialized teeth)
- Approximately 200-250 mya (Mesozoic era)

Evolution

- Earliest mammals _____
- Reduced in numbers until dinosaurs went extinct (65 mya)
- Today, mammals are the dominant land vertebrates

Characteristics

- *_____
- *nurse young with _____ (ie: have _____)
- *_____
- *lower jaw made of _____- 4 types of teeth

Characteristics

- _____- maintain a constant body temp internally (warm blooded)
- 4 chambered heart- very efficient
- highly developed brain
- Most _____- young carried within female, born live

Classification

- Class Mammalia- (4000 sp)
- 19 orders of mammals

Order Monotremata (3 sp)

- only order to _____
- include _____

Order Marsupialia (250 sp)

- give birth to underdeveloped young, must further _____
- includes _____ et al.

Order Rodentia (2400 sp)

- includes _____ etc.
- incisor teeth grow throughout life span

Order Carnivora (250 sp)

- includes _____, et al
- usually carnivorous, some omnivorous

Order Chiroptera (900 sp)

- _____
- only mammals that can _____

Order Cetecea (90 sp)

- _____
- aquatic species, must breathe air

Order Artiodactyla (150 sp)

- even-toed hoofed mammals (_____)
- herbivores

Order Perissodactyla (15 sp)

- odd-toed hoofed mammals (_____)
- herbivores

Order Proboscidea (2 sp)

- includes _____ (Indian and African)
- largest land animal alive today

Order Lagomorpha (70 sp)

- includes _____
- similar to rodents, but have double incisors

Order Primates (200 sp)

- includes _____
- most developed brains in the animal kingdom