Chapter 24 Animal Diversity II:Veterbrate

1. What Are the Key Features of Chordates(脊索动物)?
2. All chordates have four distinctive structures：

— A notochord( 脊索): a stiff flexible rod extending

the length of the body

— A dorsal, hollow nerve cord( 神经管): lies above

the digestive tract and expands anteriorly to form

the brain

— Pharyngeal gill slits( 咽鳃裂): located in the pharynx that may form respiratory organs or may appear as grooves

— A post-anal tail( 肛后尾): the chordate tail extends past the anus

1. In human, Only the dorsal nerve cord is retained in post embryonic human development,the notochord, gill slits, and tails lost.
2. Which Clades Make Up the Chordates?

The lancelets(文昌鱼类)

Chordates The tunicates(被囊类)

The craniates (有头类)

1. Lancelets(maintain all of the four features as adults)

2.Tunicates(The larvae exhibit all key chordate features but adults lose their tail and notochord)

3.craniates (include all chordates that have a skull that encloses a brain) hagfish 鳗鱼

Vertebrates（名词解释）

①hagfish: respire using gills;have a two-chambered Heart; and are ectothermic(变温动物的) (they rely on heat from the outside environment to regulate body temperature);have a rudimentary braincase(初步的脑壳) so is most closely related to the vertebrates.

②Several adaptations that allow vertebrates to successfully invade most habitats:

The presence of an internal skeleton

The evolution of jaw

The appearance of paired appendages

The increased size and complexing of the brain and sensory

Structures

1. What Are the Major Groups of Vertebrates?

– Lampreys(七鳃鳗)

– Cartilaginous fishes (软骨鱼)

– Ray-finned fishes (辐鳍鱼) the most diverse vertebrates

– Coelacanths(腔棘鱼)

– Lungfishes (肺鱼)

– Amphibians (两栖类)变态发育；大部分仍限于潮湿栖息地

– Reptiles (爬行类)——鸟类(Aves)

– Mammals (哺乳类)

1.Three notable adaptations that allowed the reptiles freedom from aquatic origins:①They have tough scaly skin that protects the body and resists water loss;②They have internal fertilization, where the male deposits sperm in the female’s body;③They have evolved a shelled amniotic egg( 羊膜卵),which encapsulates the embryo in a liquid-filled membrane, the amnion( 羊膜), which prevents the embryo from drying out on land.

1. Birds are a distinctive group of reptiles, they are distinguished from other reptiles by feathers, which are highly specialized reptilian body scales.Modern birds retain scales on their legs, which is evidence of the ancestry they share ancestor with other reptiles.The earliest known bird is called Archaeopteryx(始祖鸟).
2. Mammals are named for milk-producing mammary glands( 乳腺) that females use to nourish their young. They have sweat(汗), scent(气味), and sebaceous(泌脂) (oil-producing) glands, which are not found in other vertebrates.

Monotremes(单孔类)

mammals Marsupials (有袋类)

Placental mammals(有胎盘类)

①Monotremes are the only egg-laying mammals,includes only three species:鸭嘴兽，两种鼹鼠。

②In marsupials, embryos begin development in the

uterus(子宫) of the female and young are born at a very immature stage so post-birth development, in most, is completed in a protective pouch.

③The uterus of placental mammals contains a placenta( 胎盘) that functions in gas, nutrient, and waste exchange

between circulatory systems of mother and embryo.young are retained in the uterus for their entire embryonic.Bats are the only mammals with powered flight.