Unit 1 The Human Body 人体探秘

Objectives

1. To recognize the basic elements of the human body
2. To understand the relationship between cell, tissue, organ, and system
3. To become familiar with the names of 10 organ systems
4. To become familiar with the human framework
5. To become familiar with the vital organs and their functions

Focus

S: Human organs (P2)

L: The basic unit of the human body (P3)

L: Small intestine (P4)

S: Introducing a new book (P4)

R: Organ systems (P6)

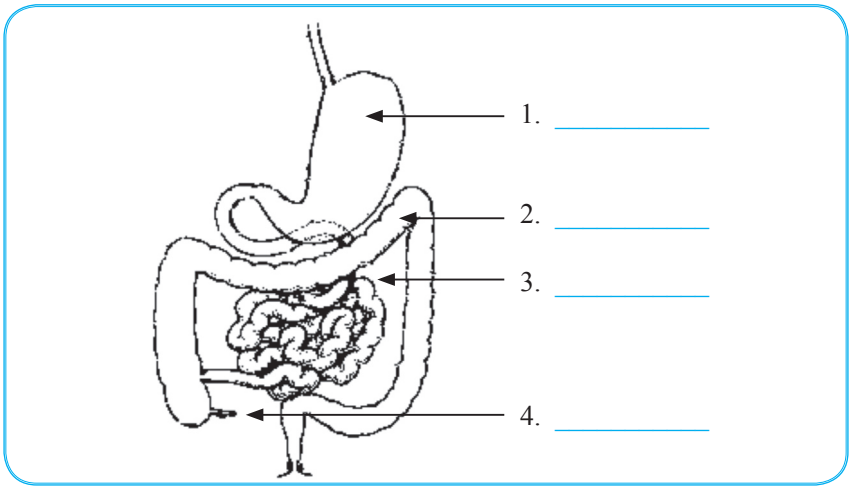
R: The human framework (P8)

W: Writing an introduction to the heart (P10)

1 Starter—Human Organs

A. Look at the picture of human organs and match them with the names.

appendix　stomach　small intestine　large intestine



B. Fill in the names of the organs given below according to the order.

larynx　lung　nose

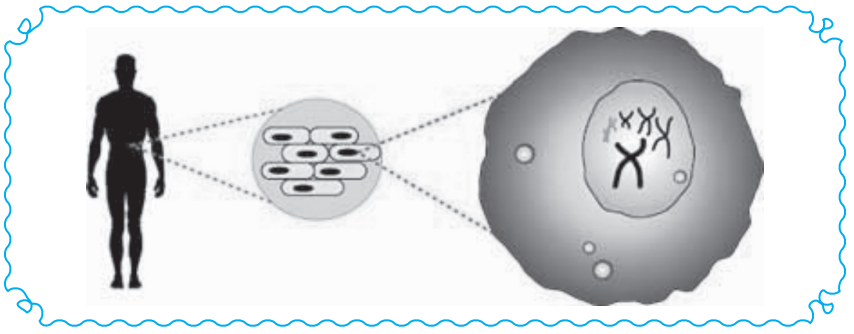
1. _____ → 2. pharynx (咽) → 3. _____ → 4. trachea (气管) →
5. _____

bladder　kidney

1. _____ → 2. ureter (输尿管) → 3. _____ → 4. _____

2 The Basic Unit of the Human Body

David has just come back after school and is talking to his mother.
Listen to the conversation and fill in the blanks.



Mother: How was your day, son?

David: Great, Mother! Today we had the first biology lesson.

Mother: A new lesson? What was the (1) _____?

David: The topic was "Cell"! It's the (2) _____ unit of our body.

Mother: Do you know how many cells there are in the human body?

David: (3) _____ trillion! It's so amazing!

Mother: That's really a big number!

David: Yes, it's hard to believe that there are so many cells in the human body! And some (4) _____ are composed of a single cell.

Mother: It's true! The word "cell" comes from Latin and its (5) _____ meaning is "a small room".

David: Oh, I see! Next (6) _____ we're going to see the cell (7) _____ under the microscope! I just can't wait!

3 Small Intestine

Listen to a short passage and complete the notes.

Small Intestine

Location: _____ and the large intestine

Length: about _____ (in adults)

Function: _____ into small compounds

4 Introducing a New Book

Mark is talking about a new book with Lucy. Work in pairs to complete the dialogue with the right sentences given below and role-play it.

A. That's true!

B. That's unbelievable!

C. How was your weekend?

D. Let me show you more.

E. It was my birthday present from Dad.

F. There must be lots of interesting things inside!

Hi, Mark. (1) _____

Mark: Hi, Lucy! I spent a nice day reading a new book. (2) _____ Here it is.

The Human Body Encyclopedia? (3) _____

Mark: (4) _____ You know it's amazing to find that everyone has 206 bones and 600 muscles. And do you know what the strongest muscle in our body is?

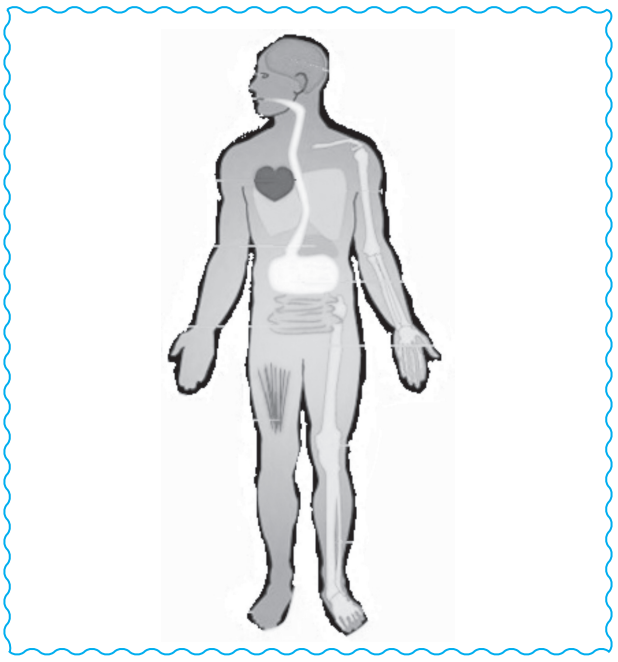
The muscles in the legs and arms?

Mark: No. It's the tongue!

The tongue? (5) _____

Mark: There are so many unbelievable facts inside! (6) _____

5 Organ Systems



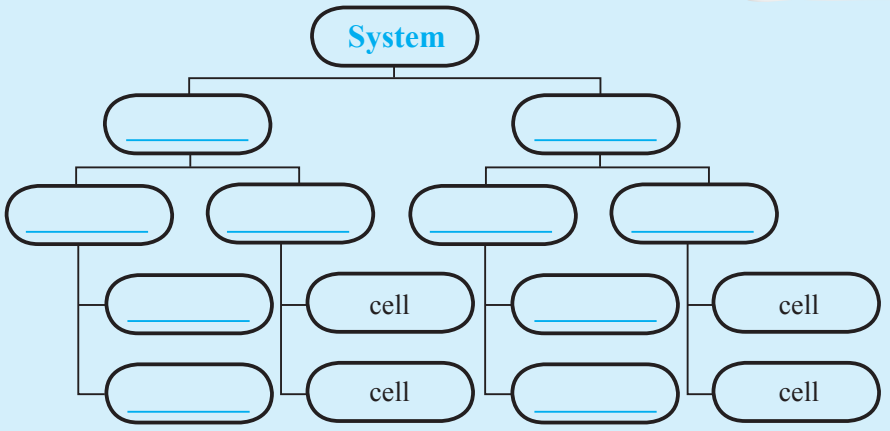
Read the following passage and do the exercises.

As we all know, the cell is the basic unit of our human body. Large numbers of cells make up certain kinds of tissues which combine and form organs. Certain types of organs further combine and form a system, namely the organ system.

Generally speaking, there are 10 organ systems in the human body. They are the circulatory system, respiratory system, digestive system, urinary system, nervous system, endocrine system, reproductive system, immune system, skeletal system, and muscular system.

Some organ systems are quite familiar to us and we can feel their activities. Take the respiratory system, for example. We breathe day and night. On the other hand, some organ systems, such as the endocrine system, are a bit strange to us. We cannot feel the endocrine glands working in our body.

A. Complete the following graph according to the passage.



B. Match the ten organ systems with their Chinese names.

( ) 1. circulatory system	a. 生殖系统
( ) 2. respiratory system	b. 泌尿系统
( ) 3. digestive system	c. 消化系统
( ) 4. urinary system	d. 骨骼系统
( ) 5. nervous system	e. 内分泌系统
( ) 6. endocrine system	f. 循环系统
( ) 7. reproductive system	g. 呼吸系统
( ) 8. immune system	h. 肌肉系统
( ) 9. skeletal system	i. 免疫系统
( ) 10. muscular system	j. 神经系统

6 The Human Framework

Read the following passage and do the exercises.

Why do we humans grow into the shape we do? Why do we stand rather than creep like animals? What enables us to move our heads, hands, and legs, and all the other parts of the body?

The answer is the skeleton, the human framework. The skeleton is all the bones in our body put together. With it, all of our blood and tissues are formed into the shape we have. With it, all of our muscles are well arranged to have the whole body move together. Besides, the framework contains the vital organs inside so as to protect them from injury.

The skeleton is made up of several important elements including bones, cartilage, tendons, and ligaments. Bones are the key element of the skeleton. A newborn baby may have as many as 350 bones. However, when he grows up his body has only 206 bones, as some bones join together.

Our arms and legs carry out most of our body movements, and thus have the largest number of bones, most of which are long bones. The femur, the bone hidden inside the thigh, is the longest bone in the human body. The vertebral column, which has twenty-six bones, supports the structure of the trunk and contains most of the key nerves. The thoracic cavity, which is surrounded by the sternum and ribs, holds most of the vital organs, such as the heart and lungs. Finally, our head has more than twenty bones, with the cranium covering the brain and the others shaping the face.

A. Read the passage and list at least three functions of the skeleton according to the passage.

_____

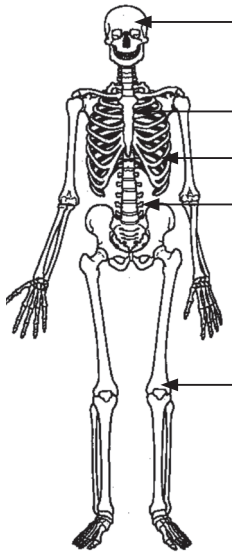
_____

_____

_____

B. Look at the picture of the human skeleton and find the right names for the five parts with the words given below.

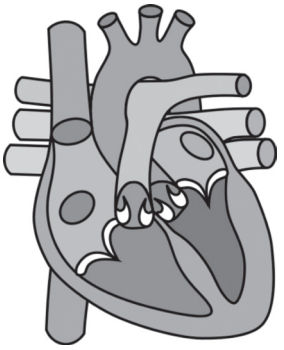
femur, vertebral column, sternum, rib, cranium



1. _____
2. _____
3. _____
4. _____
5. _____

7 Writing an Introduction to the Heart

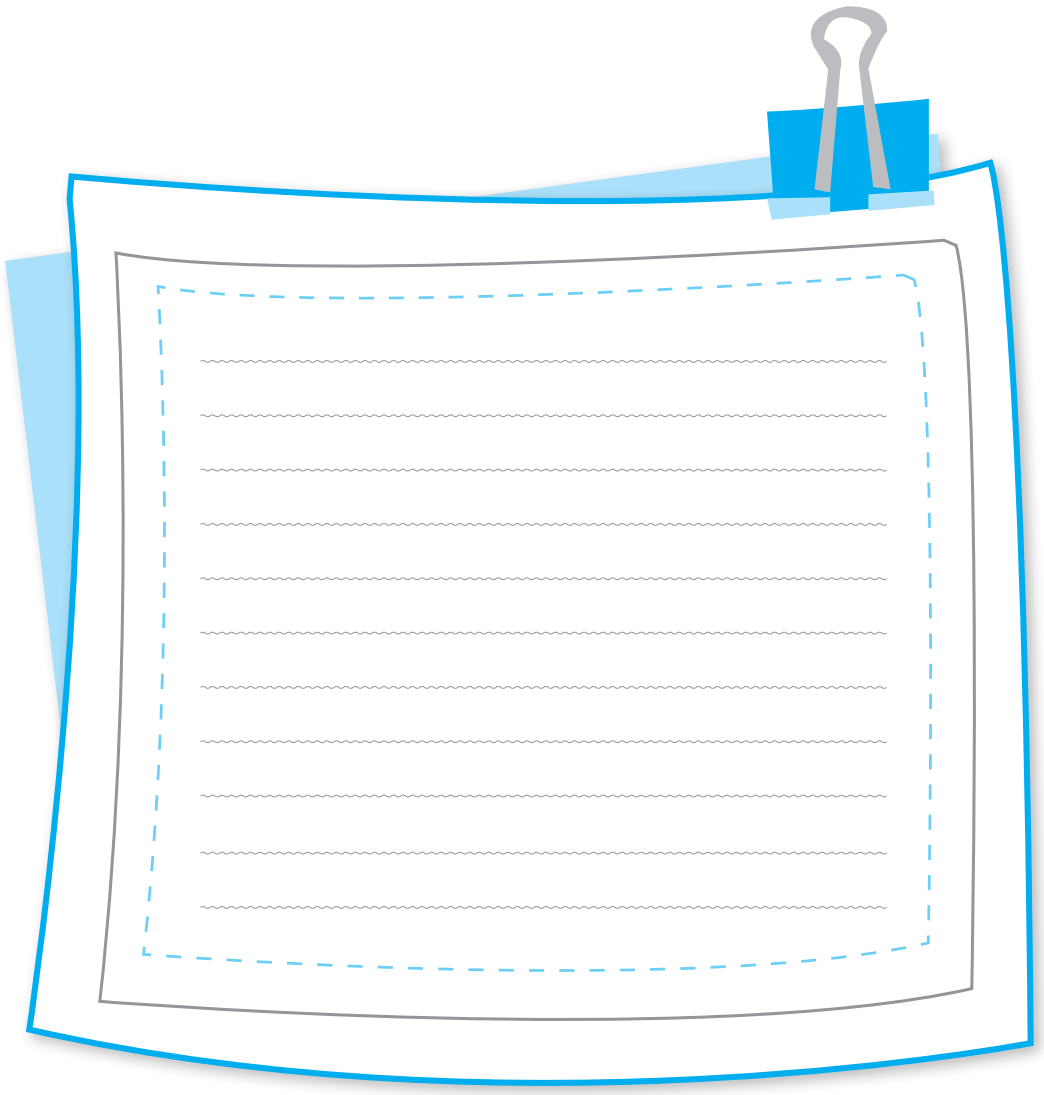
Write an introduction to the organ of the heart according to the information given below.
A sample is provided below for your reference.



system	cardiovascular system
location	inside the thoracic cavity, between lungs
function	pump oxygen-rich blood throughout the body, pump the oxygen-poor blood into the lungs
anatomy	4 chambers: 2 atria and 2 ventricles
frequency	60-100 beats per minute

Sample

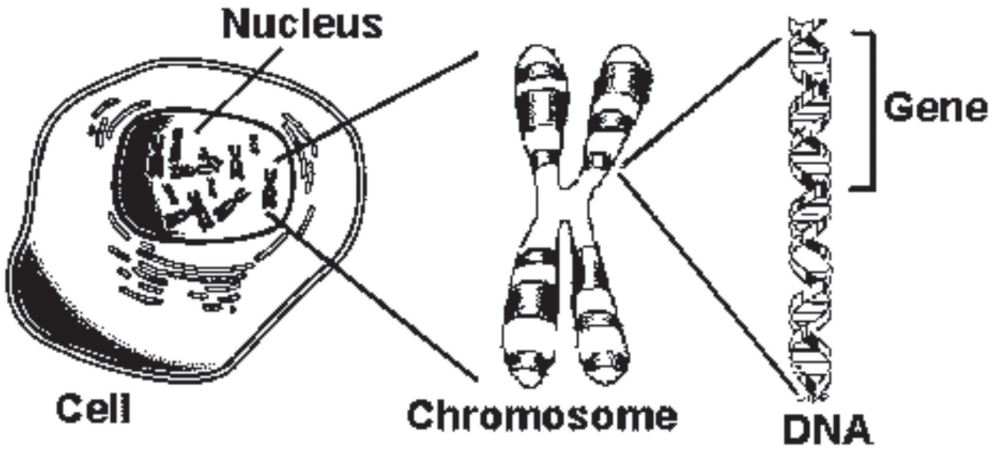
The stomach is an organ of the digestive system. It is located in the abdominal cavity (腹腔) between the esophagus (食道) and the intestines. The organ stores, mixes, and digests the food we eat. It is a saclike (囊状的) muscular bag and can be divided into four parts. They are cardia (贲门), fundus (基底), body, and pylorus (幽门). Usually, the stomach may digest the food as fast as in 40 minutes or as long as in a few hours.



8 Supplementary Reading

Read the passage and decide whether the following statements are true (T) or false (F).

( ) 1. DNA is the basic unit of chromosome, which further forms genes.
( ) 2. Chromosomes are packed in bundles inside the nucleus.
( ) 3. Parents and their children share the same characters through biological heredity.
( ) 4. DNA is composed of nucleotides and bases.
( ) 5. J. Watson won the Nobel Prize for finding the hereditary function of DNA.



DNA

DNA is not a new word to us and its significance has been well recognized. Why has DNA become so popular in natural science? What's the importance of DNA for each of us? Let's find the answer from the beginning. Here are some basic facts about DNA.

DNA is the abbreviated form of deoxyribonucleic acid (脱氧核糖核酸). The picture above shows the relationship between the basic units of our body. It is quite clear that a certain length of DNA linear sequence makes up a gene. Large numbers of genes are packaged in bundles to form the chromosome (染色体), which is located inside the nucleus (细胞核) of the cell. It is DNA that carries the genetic information in the body's cells. It is responsible for the transmission of hereditary characteristics from parents to their child.

The DNA chain consists of two long arms of nucleotides (核苷酸), which twist into a double helix (双螺旋). The basic unit for nucleotides is called the base, which can be classified into four

types, namely adenine (腺嘌呤), thymine (胸腺嘧啶), cytosine (胞嘧啶), and guanine (鸟嘌呤). The two long arms of the DNA chain are further linked by hydrogen bonds (氢键) between the bases.

In 1928 and 1943, two bacteriologists (细菌学家), F. Griffith from the United Kingdom and O.T. Avery from the United States, found the first proof that DNA was the hereditary material. In 1953 J. Watson and F. Crick discovered the double helical structure of DNA, for which the two scientists were granted the 1962 Nobel Prize in Physiology.

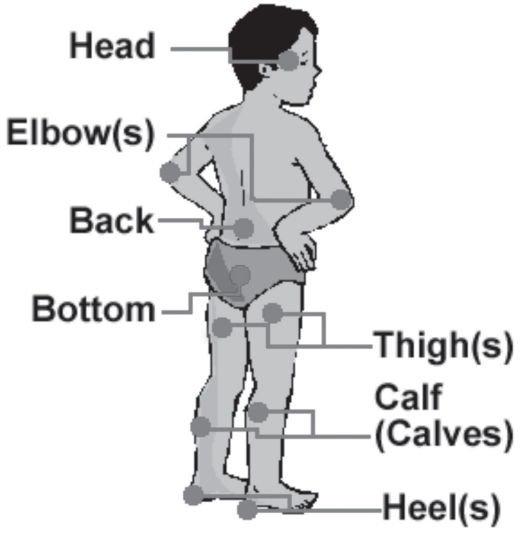
9 Surfing the Internet

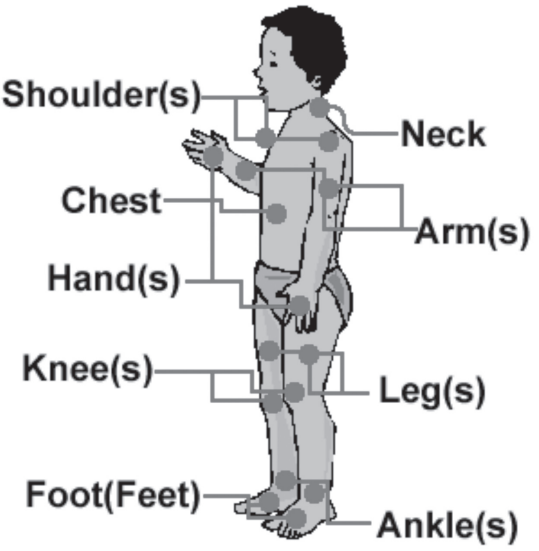
Can you name the organs of the endocrine system? Can you find them in your body? Do you know their functions? Search the Internet and find out the answers.

Search

10 Enjoying Yourself

Look at the two pictures and become familiar with the names of the body parts. Try them in your own body.





Vocabulary

New Words

organ /ˈɔːgən/ *n.* 器官	The human brain is a complex organ.	1.1
appendix /əˈpendɪks/ *n.* 阑尾	He had his appendix removed last month.	1.1
intestine /ɪnˈtestɪn/ *n.* 肠	The intestine is divided into two major parts: small intestine and large intestine.	1.1
larynx /ˈlærɪŋks/ *n.* 喉，喉头	The child must be in pain because his larynx is all red and swollen.	1.1
bladder /ˈblædə(r)/ *n.* 膀胱	The urethra originates at the neck of the bladder.	1.1
kidney /ˈkɪdnɪ/ *n.* 肾，肾脏	The main function of the kidney is to remove unwanted substances from the blood.	1.1
biology /baɪˈɒlədʒɪ/ *n.* 生物学	The biology of bacteria can be quite hard to understand.	1.2
cell /sel/ *n.* 细胞	The cell is the smallest structural unit of an organism.	1.2
trillion /ˈtrɪljən/ *num.* 万亿，兆	They have a fortune of 2.2 trillion U.S. dollars.	1.2
organism /ˈɔːgənɪzəm/ *n.* 生物，有机体	A fungus is an organism that does not have roots or leaves.	1.2
structure /ˈstrʌktʃə(r)/ *n.* 结构	Can you talk about the structure of the liver?	1.2
microscope /ˈmaɪkrəskəʊp/ *n.* 显微镜	Please put a section of the tissue under the microscope.	1.2
winding /ˈwaɪndɪŋ/ *a.* 弯曲的	It is a winding path.	1.3
digestive /daɪˈdʒestɪv/ *a.* 消化的，助消化的	Blood gets oxygen from the lungs, and fuel from the digestive system.	1.3
tract /trækt/ *n.* 道；系统	This is how the intestinal tract keeps itself clean.	1.3
character /ˈkærəktə(r)/ *n.* 特性，特色	Every human organ is different in character.	1.3
function /ˈfʌŋkʃn/ *n.* 官能，功能	Will you tell us the function of the heart?	1.3
compound /ˈkɒmpaʊnd/ *n.* 化合物，混合物	Oxygen is part of many compounds.	1.3
absorb /əbˈsɔːb/ *v.* 吸收，吸取	This material will absorb water from the air.	1.3
bloodstream /ˈblʌdstriːm/ *n.* 血液，血流	Alcohol goes immediately to your stomach and is quickly passed to your bloodstream and circulated throughout your body.	1.3
unbelievable /ˌʌnbɪˈliːvəbl/ *a.* 难以置信的	They are working with unbelievable speed.	1.4

encyclopedia /ɪnˌsaɪkləˈpiːdɪə/ *n.* 百科全书	The encyclopedia has been published.	1.4
amazing /əˈmeɪzɪŋ/ *a.* 令人吃惊的，惊人的	It's amazing that so many people come to these meetings.	1.4
tongue /tʌŋ/ *n.* 舌	The doctor told the boy to put out his tongue.	1.4
tissue /ˈtɪʃuː/ *n.* 组织	A tissue is a group of similar cells which have the same function.	1.5
circulatory /ˌsɜːkjəˈleɪtərɪ/ *a.* （血液等）循环的	The circulatory system is made up of the vessels and the muscles that help and control the flow of the blood around the body.	1.5
respiratory /rəˈspɪrətrɪ/ *a.* 呼吸的	The primary function of the respiratory system is to supply the blood with oxygen.	1.5
urinary /ˈjʊərɪnərɪ/ *a.* 泌尿的；泌尿器官的	The urinary system is the organ system that produces, stores, and eliminates urine.	1.5
nervous /ˈnɜːvəs/ *a.* 神经的	The nervous system is the body's information gatherer, storage center, and control system.	1.5
endocrine /ˈendəʊkraɪn/ *a.* 内分泌的	The endocrine system is a system of glands, each of which secretes a type of hormone into the bloodstream to regulate the body.	1.5
reproductive /ˌriːprəˈdʌktɪv/ *a.* 生殖的	Every animal has reproductive organs.	1.5
immune /ɪˈmjuːn/ *a.* 免疫的	An immune system protects against disease by identifying and killing pathogens and tumor cells.	1.5
skeletal /ˈskelətl/ *a.* 骨骼的	The main job of the skeletal system is to provide support for our body.	1.5
muscular /ˈmʌskjələ(r)/ *a.* 肌肉的	Muscular activity accounts for much of the body's energy consumption.	1.5
gland /glænd/ *n.* 腺	Saliva is secreted from the exocrine gland.	1.5
framework /ˈfreɪmwɜːk/ *n.* 构架，框架	The wind was so strong that the framework of the umbrella was broken.	1.6
skeleton /ˈskelɪtn/ *n.* 骨架，骨骼	The human skeleton consists of 206 bones.	1.6
cartilage /ˈkɑːtɪlɪdʒ/ *n.* 软骨	Cartilage is formed at the ends of long bones, between the bones of the spine, and in the ears, nose, and internal respiratory passages.	1.6
tendon /ˈtendən/ *n.* 腱	Tendons are tissues that connect muscles to bones.	1.6

ligament /ˈlɪgəmənt/ *n.* 韧带，系带	Ligament is the fibrous tissue connecting bones and cartilages or supporting muscles and organs.	1.6
femur /ˈfiːmə(r)/ *n.* 股骨	The femur is the longest and thickest bone of the human skeleton.	1.6
thigh /θaɪ/ *n.* 大腿，股	The thigh is usually bigger than the calf.	1.6
vertebral /ˈvɜːtɪbrəl/ *a.* 椎骨的，脊柱的	The vertebral column consists of a series of 26 irregularly shaped bones.	1.6
thoracic /θɔːˈræsɪk/ *a.* 胸的，胸廓的	The thoracic injuries were mainly caused by traffic accidents.	1.6
sternum /ˈstɜːnəm/ *n.* 胸骨	The pain in the sternum could be acute or chronic.	1.6
rib /rɪb/ *n.* 肋骨	I feel a pain in my rib.	1.6
cranium /ˈkreɪnɪəm/ *n.* 头颅，颅盖骨	A thin cover of skin, called the scalp, covers most of the cranium.	1.6
cardiovascular /ˌkɑːdɪəʊˈvæskjʊlə(r)/ *a.* 心血管的	The drug helps to improve the function of the cardiovascular system.	1.7
pump /pʌmp/ *v.* 用泵抽吸，用泵抽运	The function of the heart is to pump blood through the body.	1.7
oxygen /ˈɒksɪdʒən/ *n.* 氧	Man takes in oxygen through the lungs.	1.7
anatomy /əˈnætəmɪ/ *n.* 结构	Various parts of his anatomy were clearly visible.	1.7
chamber /ˈtʃeɪmbə(r)/ *n.* 室，腔	The heart has four chambers.	1.7
atria /ˈɑːtrɪə/ *n.* 心房，房	There is an abnormal opening between the left and right atria of the heart.	1.7
ventricle /ˈventrɪkl/ *n.* 心室	The four-chamber view shows the asymmetry of his ventricle.	1.7

Phrases and Expressions

be composed of	由……组成	1.2
come from	来自，源于	1.2
digestive tract	消化道	1.3
divide into	把……分为，把……分成	1.3
be responsible for	负责……，是形成……的原因	1.3
break down	分解	1.3
pass through	经过，通过	1.3
spend… doing	花……时间或金钱等做某事	1.4
show sb. sth.	给某人展示某物	1.4
large numbers of	大量的	1.5

make up	构成	1.5
be familiar to sb.	为某人熟悉	1.5
on the other hand	另一方面	1.5
be strange to sb.	不为某人所熟悉	1.5
rather than	不是……而是	1.6
enable… to do…	使……能做某事	1.6
protect… from	保护……免受	1.6
be made up of	由……组成	1.6
carry out	完成，执行	1.6
vertebral column	脊柱	1.6
thoracic cavity	胸腔	1.6