

全国高等医药院校重点规划教材

# 基础医学科技英语

主编 曹民主 安强梅 张宏斌



科学出版社

# 基础医学科技英语

科学出版社

北京

## 内 容 简 介

本书依照国家对高等医学院校人才培养的精神,以英语与专业融合为主线,关注世界医学科技的前沿。本书选取了国外原版材料内容,英语语言地道、严谨、准确,融解剖、生理等核心内容为一体。共20章,涉及解剖、生理、病理、预防与治疗、环境与健康、保健与锻炼等方向的知识,每章除了专业性文章外,还列出生词、词组、典型句分析与翻译等,章后配有相应的练习。基础医学阶段的英语词汇覆盖率达90%,有利于学生对基础医学知识的学习。

本书可作为医学相关专业本科生、研究生的医学英语教材,也可作为具有一定医学英语基础的从业人员的参考书。

### 图书在版编目(CIP)数据

基础医学科技英语/曹民主,安强梅,张宏斌主编.—北京:科学出版社,2013

全国高等医药院校重点规划教材

ISBN 978-7-03-037722-7

I. ①基… II. ①曹… ②安… ③张… III. ①医学-英语-医学院校-教材  
IV. ①H31

中国版本图书馆 CIP 数据核字(2013)第 188170 号

责任编辑:胡云志 李淑丽 / 责任校对:包志虹

责任印制:肖 兴 / 封面设计:华路天然工作室

科学出版社出版

北京东黄城根北街16号

邮政编码:100717

<http://www.sciencep.com>

新科印刷有限公司印刷

科学出版社发行 各地新华书店经销

\*

2013年8月第 一 版 开本:787×1092 1/16

2014年8月第三次印刷 印张:24 1/2

字数:580 000

定价:49.00 元

(如有印装质量问题,我社负责调换)

## 编者名单

主 编 曹民主 安强梅 张宏斌

副主编 段 平 黄 江 林德福 尹曼芬

编 者 (按姓氏笔画排序)

万 艳 韦 娅 韦建辉 包冬结

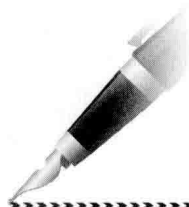
李红梅 肖 燕 何录江 张 婧

赵润兴 林滢静雅 和芝兰

陆昌兴 陈美丽 姜 立 祝世军

莫 茉 黄 峻 黄琪春 韩 璐

阚 雯 缪希松



## 前 言

### Foreword

随着我国改革开放的不断深化,国际化趋势已越来越明显。国家对高等医学院校人才培养的主旨精神,在某种程度上越来越体现出社会对高等医学院校学生的要求正逐步发生着变化。这不仅顺应了时代的需要,更反映出与国际接轨的必然要求。这种要求就是为适应区域经济与社会发展的需求,紧跟世界医学科技快速发展的前沿,医药卫生类的本科生和研究生必须以现实基础为起点,进一步加强和拓宽专业领域的广度、深度和厚度,以对知识的不断巩固来达到不断升级。为达到这种复合型人才的培养要求,医学院校学生的英语学习和提高就必然要走与专业融合的道路,其中基础医学英语的学习和研究是必经之路。基于以上思考,以及社会发展的必然和需要,我们选编此本教材,希望它能抛砖引玉,发出萤火之光。

本书取材于部分国外教材,根据内容系统和实际需要重新整理,编撰为 20 章,涉及人体所有的系统,涵盖了解剖、生理、病理、预防与治疗、环境与健康、保健与锻炼等方面的知识内容。全书语言地道,准确简练,规范实用。基础医学阶段的英语词汇覆盖面达 90%。本书英语用法表述严谨生动,科学性、知识性、趣味性、探索性一应俱全。本书不仅提供和展示了学习专业英语的平台,更可使读者对自己学过的基础医学知识进行完整系统的全面回顾、加固、综合、融汇、贯通和应用。

为有助于读者对各个章节的学习、理解、消化和吸收,本书除了列出生词、词组、典型句分析与翻译,还增加了相关中心内容的对照翻译,每章后面配有相应的练习,利于熟悉该章内容和记忆训练,每章的练习答案集中附后。此外,还附有 200 多个使用频率较高的医学词缀。

本书适用于任何需要基础医学的各专业研究生、本科生以及同等学力读者。

本书在编写过程中,得到了科学出版社有关领导和编辑的耐心指导和帮助。在此,编者深表谢意。

由于编者水平有限,加之时间紧迫,工作任务繁重,难免存在不妥和疏漏之处。诚望各位专家、同仁不吝赐教,广大读者批评指正。

编 者

2013 年 6 月



# 目 录

## Contents

### 前言 Foreword

<b>Chapter 1 The General Plan of the Human Body</b>	1
1.1 What are Living Things Made of	1
1.2 Body Systems	2
1.3 Directions in the Body	3
1.4 Body Cavities	4
1.5 The Metric System	5
<b>Chapter 2 Disease and Disease-producing Organisms</b>	11
2.1 What is Disease	11
2.2 The Study of Disease	12
2.3 Disease Terminology	13
2.4 Infection	14
2.5 The Microorganisms	14
2.6 Microbial Control	19
2.7 Laboratory Identification of Pathogens	22
<b>Chapter 3 Chemistry of Life</b>	30
3.1 What is Chemistry	30
3.2 A Look at Atoms	30
3.3 Molecules, Elements, Compounds and Mixtures	31
3.4 Ions and Electrolytes	33
3.5 Acids and Bases	34
3.6 The Chemistry of Living Matter	34
<b>Chapter 4 Cell Structure and Function</b>	42
4.1 Cellular Organization	42
4.2 Crossing the Plasma	43
4.3 The Cell Cycle	45
<b>Chapter 5 Body Tissues and Membranes</b>	51
5.1 Epithelial Tissue	51
5.2 Connective Tissue	54
5.3 Muscular Tissue	58
5.4 Nervous Tissue	59

5.5	Extracellular Junctions, Glands, and Membranes .....	60
<b>Chapter 6</b>	<b>The Blood .....</b>	<b>69</b>
6.1	Purposes of the Blood .....	69
6.2	Blood Constituents .....	69
6.3	Origin of the Corpuscles .....	72
6.4	Blood Clotting .....	73
6.5	Uses of Blood Derivatives .....	73
6.6	Blood Disorders .....	74
6.7	Blood Studies .....	77
6.8	Blood Chemistry Tests .....	78
6.9	Other Blood Tests .....	79
<b>Chapter 7</b>	<b>The Heart and the Heart Disease .....</b>	<b>89</b>
7.1	Circulation and the Heart .....	89
7.2	Structure of the Heart .....	90
7.3	Physiology of the Heart .....	91
7.4	Heart Disease .....	93
7.5	Prevention of Heart Ailments .....	97
7.6	Some Practical Aspects of Treatment .....	97
<b>Chapter 8</b>	<b>Blood Vessels and Blood Circulation .....</b>	<b>109</b>
8.1	Kinds of Blood Vessels .....	109
8.2	Structure of Blood Vessels .....	109
8.3	Names of Systemic Arteries .....	111
8.4	Names of Systemic Veins .....	114
8.5	How Capillaries Work .....	117
8.6	Pulse and Blood Pressure .....	118
8.7	Disorders Involving the Blood Vessels .....	120
8.8	Replacement of Arteries .....	123
<b>Chapter 9</b>	<b>Bones, Joints and Muscles .....</b>	<b>133</b>
9.1	The Musculoskeletal System .....	133
9.2	The Bones .....	133
<b>Chapter 10</b>	<b>The Integumentary System .....</b>	<b>157</b>
10.1	Structure of the Skin .....	157
10.2	Accessory Structures of the Skin .....	159
10.3	Disorders of the Skin .....	162
10.4	Effects of Aging .....	165
10.5	Homeostasis .....	165
<b>Chapter 11</b>	<b>Respiration .....</b>	<b>176</b>
11.1	Respiration .....	176

11.2	The Respiratory System .....	176
11.3	The Lung Cavities .....	179
11.4	Physiology of Respiration .....	179
11.5	Disorders of the Respiratory System .....	181
11.6	Some Practical Aspects of Ventilation .....	187
11.7	Special Equipment for Respiratory Tract Treatments .....	188
<b>Chapter 12</b>	<b>Digestion and Indigestion .....</b>	<b>200</b>
12.1	What the Digestive System Does .....	200
12.2	The Alimentary Canal .....	201
12.3	The Accessory Structures .....	211
12.4	The Peritoneum .....	213
12.5	Some Practical Aspects of Nutrition .....	214
<b>Chapter 13</b>	<b>Urinary System and Excretion .....</b>	<b>224</b>
13.1	Urinary System .....	224
13.2	Anatomy of the Kidney and Excretion .....	227
13.3	Regulatory Functions of the Kidneys .....	230
13.4	Problems with Kidney Function .....	234
13.5	Effects of Aging .....	235
<b>Chapter 14</b>	<b>The Endocrine System .....</b>	<b>241</b>
14.1	Endocrine Glands .....	241
14.2	Hypothalamus and Pituitary Gland .....	242
14.3	Thyroid and Parathyroid Glands .....	244
14.4	Adrenal Glands .....	245
14.5	Pancreas .....	248
14.6	Other Endocrine Glands .....	248
14.7	Chemical Signals .....	250
14.8	Effects of Aging .....	251
14.9	Homeostasis .....	252
<b>Chapter 15</b>	<b>The Brain, the Spinal Cord and the Nerves .....</b>	<b>259</b>
15.1	The Nervous System as a Whole .....	259
15.2	Nerves in General .....	260
15.3	Central Nervous System .....	260
15.4	The Peripheral Nervous System .....	269
15.5	The Autonomic Nervous System .....	272
<b>Chapter 16</b>	<b>The Sensory System .....</b>	<b>281</b>
16.1	Sense and Sensory Mechanisms .....	281
16.2	The Eye .....	281
16.3	The Ear .....	288



16.4	Other Organs of Special Sense .....	290
16.5	General Senses .....	291
<b>Chapter 17</b>	<b>Body Temperature and Its Regulation .....</b>	<b>299</b>
17.1	Body Temperature and Homeostasis .....	299
17.2	Heat Production .....	299
17.3	Heat Loss .....	300
17.4	Temperature Regulation .....	301
17.5	Normal Body Temperature .....	301
17.6	Abnormal Body Temperature .....	302
17.7	Effects of Extreme .....	303
<b>Chapter 18</b>	<b>The Lymphatic System and Body Defenses .....</b>	<b>310</b>
18.1	Lymphatic System .....	310
18.2	Organs, Tissue and Cells of the Immune System .....	311
18.3	Nonspecific and Specific Defenses .....	313
18.4	Induced Immunity .....	319
18.5	Effects of Aging .....	323
18.6	Homeostasis .....	324
<b>Chapter 19</b>	<b>Reproduction .....</b>	<b>329</b>
19.1	Male Reproductive System .....	329
19.2	Female Reproductive System .....	332
19.3	Pregnancy .....	337
19.4	The Menopause .....	343
<b>Chapter 20</b>	<b>Human Genetics .....</b>	<b>351</b>
20.1	Chromosomal Inheritance .....	351
20.2	Down Syndrome .....	354
20.3	Too Many/Too Few Sex Chromosomes .....	355
20.4	Genetic Inheritance .....	356
20.5	DNA Technology .....	359
	<b>Medical Terminology .....</b>	<b>370</b>
	<b>Key to the Exercises .....</b>	<b>373</b>
	<b>参考文献 References .....</b>	<b>382</b>



## Chapter 1 The General Plan of the Human Body

### 1.1 What are Living Things Made of

According to a nursery rhyme children are made of sugar and spice, or perhaps of puppy dogs' tails, depending on which sex we are discussing. More accurately, the "stuff" of which all living things are made is called protoplasm. This word is made up of two Greek words: proto, meaning "original" and plasm, meaning "substance." Chemically, protoplasm is composed of quite ordinary elements, such as carbon, oxygen, hydrogen, sulfur, nitrogen and phosphorus. There is nothing extraordinary, either, in the appearance of protoplasm; it looks very much like the white of an egg. Nobody has been able to explain why protoplasm has that characteristic which we call life. We will learn more about this intricate substance in Chapter 3.

If the building material of all living things, both plants and animals, is protoplasm, the building blocks made of this are called cells (Fig. 1.1). Cells vary a great deal in size. Something as small as a worm may be composed of millions of cells, yet we all are familiar with at least one of the larger kinds of cells, of which an egg is a perfectly good example. In fact, if we keep the egg in mind, the construction of the cell will be quite easy to visualize. Let us work our way from the outside to the center.

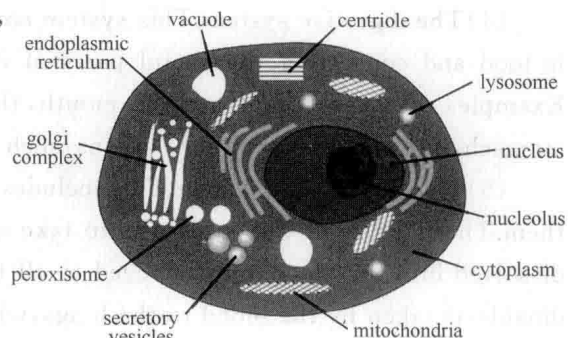


Fig. 1.1 A typical cell

First comes the outer covering, called the cell membrane. Next is the main substance of the cell, the cytoplasm, which might be likened to the white of the egg. The cytoplasm contains water, food particles, pigment and other specialized materials. In the center of the cell, comparable with the egg yolk, is a globule called the nucleus, containing the chromatin network. The nucleus controls some of the activities of the cell, including its reproduction. Within the nucleus is still another tiny globule of matter called the nucleolus, the function is related to reproduction.

The cell is the basic unit of all life. When you study the causes of disease, you will encounter a number of primitive living things which are composed of but one cell. However,

for the moment we shall confine our discussion to the human body, which is made up of many millions of cells. The body is composed of specialized groups of cells, the first of which are called tissues. Various tissues that together perform a single function form organs, and several organs and parts grouped together for certain functions form systems. The heart is an organ composed of muscle tissue, connective tissue and nerve tissue, all working together to pump blood. The heart and the blood vessels comprise the circulatory system.

## 1.2 Body Systems

The body systems have been variously stated to be nine, ten or eleven in number, depending on how many details one wishes to include.

Here is a list of systems:

(1) The skeletal system. The basic framework of the body is a system of over 200 bones with their joints, collectively known as the skeleton.

(2) The muscular system. Body movements are due to the action of the muscles which are attached to the bones. Other types of muscles are present in the walls of such organs as the intestine and the heart.

(3) The circulatory system. The heart, blood vessels, lymph vessels and lymph nodes all make up the system whereby the blood is pumped to all the body tissues, bringing with them food, oxygen and other substances, and carrying away waste materials.

(4) The digestive system. This system comprises all organs which have to do with taking in food and converting the useful parts of it into substances that the body cells can use. Examples of these organs are the mouth, the teeth and the alimentary tract (esophagus, stomach, intestine and accessory organs, such as the liver and the pancreas).

(5) The respiratory system. This includes the lungs and the passages leading to and from them. The purpose of this system is to take in air, and from it extract oxygen which is then dissolved into the blood and conveyed to all the tissues. A waste product of the cells, carbon dioxide, is taken by the blood to the lungs, whence it is expelled to the outside air.

(6) The integumentary system. The word "integument" means "skin." The skin is considered by some authorities to be a separate body system. It includes the hair, nails, sweat and oil glands, and other related structures.

(7) The urinary system. This is also called the excretory system. Its main components are the kidneys, the ureters, the bladder and the urethra. Its purpose is to filter out and rid the body of certain waste products taken by the blood from the cells. (Note that other waste products are removed via the digestive and the respiratory systems.)

(8) The nervous system. The brain, the spinal cord and the nerves all make up this very complex system by which all parts of the body are controlled and coordinated. The organs of special sense (such as the eyes, ears, taste buds and organs of smell), sometimes classed as a separate sensory system, together with the sense of touch, receive stimuli from the outside world, which are then converted into impulses that are transmitted to the brain. The brain

determines to a great extent the body's responses, to messages from without and within, and in it occur such higher functions as memory and reasoning.

(9) The endocrine system. A few scattered organs known as endocrine glands produce special substances called hormones, which regulate such body functions as growth, food utilization within the cells, and reproduction. Examples of endocrine glands are the thyroid and the pituitary glands.

(10) The reproductive system. This system includes the external sex organs and all related inner structures which are concerned with the production of new individuals.

### 1.3 Directions in the Body

Because it would be awkward and incorrect to speak of bandaging the "southwest part" of the chest, a number of terms have been devised to designate specific regions and directions in the body. Some of the more important of these are listed as follows (note that they refer to the body in the "anatomic position"—upright with palms facing forward):

(1) Superior is a relative term meaning "above" or "in a higher position." Its opposite, inferior, means "below" or "lower." The heart, for example, is superior to the intestine.

(2) Ventral and anterior mean the same thing in humans: "located near the belly surface or front of the body." Their corresponding opposites, dorsal and posterior, refer to locations nearer the back.

(3) Cranial means "near the head"; caudal means "near the sacral region of the spinal column" (i.e., where the tail is located in lower animals).

(4) Medial means "near an imaginary plane that passes through the midline of the body, dividing it into left and right portions." Lateral, its opposite, means "farther away from the midline" toward the side.

(5) Proximal means "nearest the origin of a structure"; distal means "farthest from that point." For example, the part of your thumb where it joins your hand is its proximal region. The tip of the thumb is its distal region.

For convenience in visualizing the spatial relationships of various body structures to each other, anatomists have divided the body by means of three imaginary planes. Think of a body plane as a huge cleaver (Fig. 1.2).

(1) The midsagittal plane. If the cleaver were to cut the body in two down the middle in a fore-and-aft direction, separating it into right and left portions, the sections you would see would be midsagittal.

(2) The frontal plane. If, instead of the above operation, the cleaver were held in line with the ears and then were brought down the middle of the body, creating a front and a rear portion, you would see a front (anterior or ventral) section and a rear (posterior or dorsal) section.

(3) The transverse plane. If the cleaver blade were swung horizontally, it would divide the body into an upper (superior) part and a lower (inferior) portion. There could be many such

cross sections, each of which is on a transverse plane.

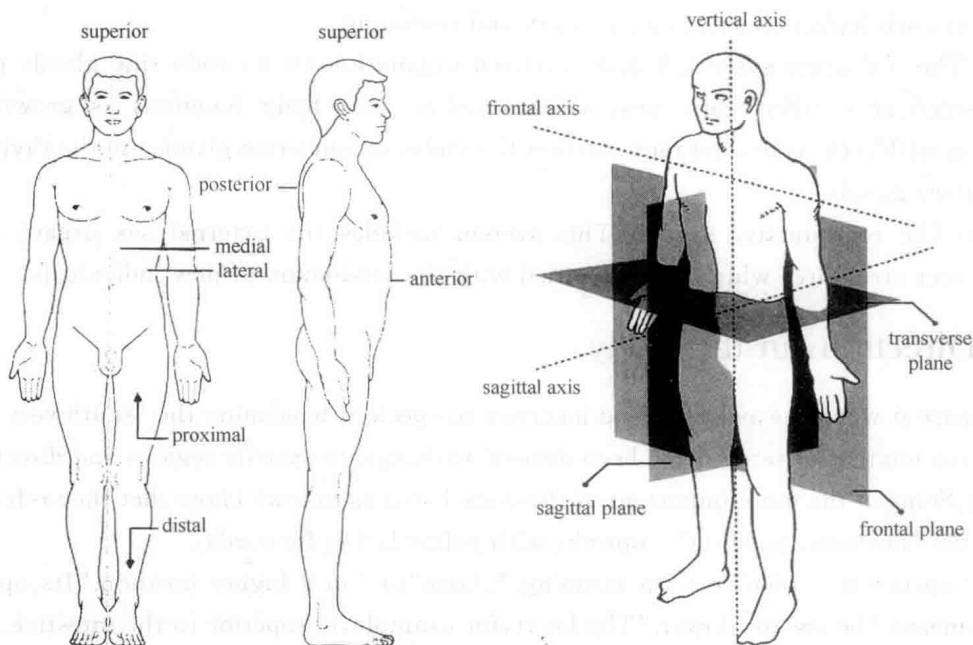


Fig.1.2 Body planes and directions

## 1.4 Body Cavities

The body contains a few large internal spaces or cavities within which various organs are located. There are two groups of cavities; dorsal and ventral (Fig.1.3).

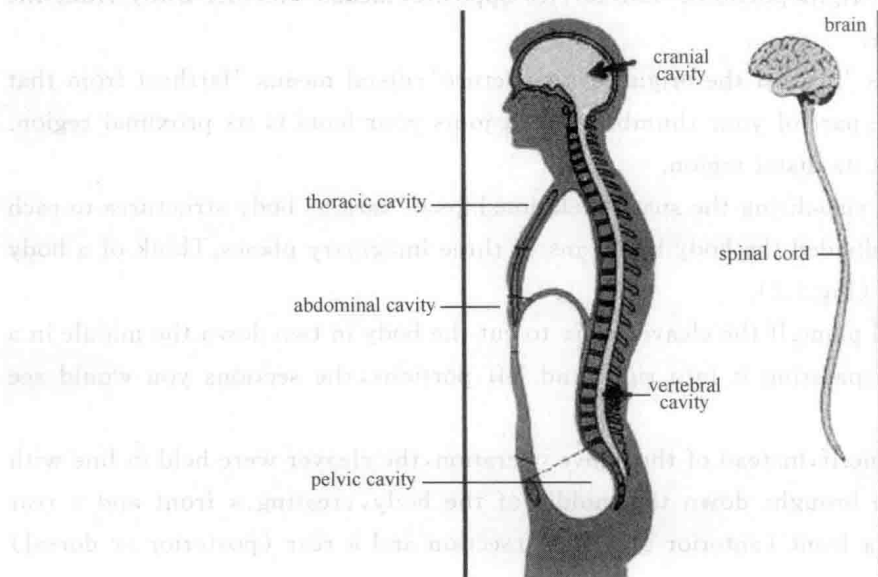


Fig.1.3 Side view of body cavities

### Dorsal Cavities

There are two dorsal cavities; ① the cranial cavity, containing the brain; and ② the spinal cavity, enclosing the spinal cord. Both of these cavities join, hence they are a continuous space.

### Ventral Cavities

The ventral cavities are much larger than the dorsal ones. There are two ventral cavities: ① the thoracic cavity, containing mainly the heart, and ② the abdominal cavity. This latter space is subdivided into two portions, one containing the stomach, most of the intestine, the kidneys, the liver, the gallbladder, the pancreas and the spleen; and a lower one called the pelvis, or pelvic cavity, in which are located the urinary bladder, the rectum and the internal parts of the reproductive system.

Unlike the dorsal cavities, the ventral cavities are not continuous. They are separated by a muscular partition, the diaphragm.

### Regions in the abdominal cavity

Because the abdominal cavity is so large, it has been found helpful to divide it into nine regions. These are shown in Fig. 1.3. The three central regions are the epigastrium, located just below the breastbone; the umbilical about the umbilicus, commonly called the navel; and the hypogastric region, the lowest of all of the midline regions. At each side are the right and left hypochondriac regions, just below the ribs; then the right and left lumbar regions; and finally, the right and left iliac, or inguinal, regions. A much simpler division into four quadrants (right upper, left upper, right lower and left lower) is now less frequently used.

## 1.5 The Metric System

Now that we have set the stage for further study of the body, its structure and its processes, a look at the metric system would be essential for someone who plans a career in health should be acquainted with two general metrics. Here in some medical related measurement systems are shown in the table below.

Table 1.1 measurement systems

1 m = 100 cm = 3.281 feet (ft)	1 kg = 2.205 pounds (lb)
1 cm = 10 mm = 0.394 inch (in)	1 ounce (oz) = 28.350 g
1 km = 1000 m = 0.621 mile	1 g = 1000 mg
1 L = 1000 ml	1 L = 1.06 quart (qt)
1 ounce (oz) = 30 ml	1 g = 1 ml
1 point (pt) = 473 ml	1 gallon (gal) = 4 qt = 8 pt

## New Words

- protoplasm['prəʊplæzəm] *n.* 原生质; 原浆; 细胞质  
carbon['kɑ:bən] *n.* [化学] 碳 carbon dioxide 二氧化碳  
oxygen['ɒksɪdʒən] *n.* [化] 氧; 氧气  
hydrogen['haɪdrədʒən] *n.* [化] 氢  
sulfur['sʌlfə] *n.* [化] 硫磺  
nitrogen['naɪtrədʒən] *n.* [化] 氮  
phosphorus['fɒsfərəs] *n.* [化] 磷; 磷光体  
cell[sel] *n.* [生] 细胞  
membrane['mem,brɪn] *n.* (动物或植物体内的) 薄膜; 隔膜  
cytoplasm['saɪtəplæzəm] *n.* 细胞质  
pigment['pɪgmənt] *n.* [生] 色素  
globule['glɒbjʊ:l] *n.* 小球  
nucleus['nju:kliəs] *n.* (原子) 核  
chromatin['krəʊmətɪn] *n.* 染色质; 核染色  
reproduction[ri:prədʌkʃən] *n.* 繁殖; 生殖;  
nucleolus['nju:kli:ələs] *n.* 核; [细胞] 核仁; 细胞核  
primitive['prɪmɪtɪv] *adj.* 原始的; 远古的; 简单的  
tissue['tɪʃju:] *n.* [生] 组织  
organ['ɔ:gən] *n.* [生] 器官  
circulatory['sɜ:kjələtɔ:ri:] *adj.* (血液或汁液) 循环的  
skeletal['skelɪt] *adj.* 骨骼的  
joint[dʒɔɪnt] *n.* [解剖] 关节; 接合处  
muscular['mʌskjələ] *adj.* ad 肌肉的; 肌肉发达的; 强健的  
vessel['vesəl] *n.* [组织] 脉管; 血管  
lymph['lɪmf] *n.* [解剖] 淋巴; 淋巴液 lymph node 淋巴结  
digestive[daɪdʒestɪv] *adj.* 消化的; 助消化的  
alimentary [æli'mentəri] *adj.* 滋养的; 食物的  
alimentary tract 消化道  
esophagus[ai'sɒfəgəs] *n.* [解剖] 食管; [解剖] 食道  
intestine['ɪntestɪn] *n.* [解剖] 肠  
liver['lɪvə] *n.* 肝脏  
pancreas['pæŋkri:əs] *n.* [解剖] 胰腺  
respiratory[respə'retɔ:ri:] *n.* 呼吸的  
lung[lʌŋ] *n.* 肺; 呼吸器  
whence[wens] *conj.* 由此  
integumentary[ɪntegju'mentəri] *adj.* 表皮的, 皮肤的  
gland[glænd] *n.* [解剖] 腺; 腺体  
urinary['jʊərəneri] *adj.* 泌尿的; 泌尿的  
excretory[eks'kri:tɔ:ri:] *adj.* 排泄的  
kidney['kɪdni] *n.* [解剖] 肾脏; 腰子  
ureter[juə'ri:tə] *n.* 尿管; [解剖] 输尿管  
bladder['blædə] *n.* [解剖] 膀胱  
urethra[juə'ri:θrə] *n.* [解剖] 尿道  
nervous['nə:vəs] *adj.* 神经的  
taste bud[teɪst bʌd] *n.* [解剖] 味蕾  
stimuli['stimjulai] *n.* 刺激; 刺激物  
impulse[ɪmpʌls] *n.* [医] 脉冲; 脉搏  
endocrine[ɛndəʊkraɪn] *adj.* 内分泌的; 激素的  
hormones['hɔ:məʊnz] *n.* 激素; 荷尔蒙; 性激素  
thyroid[θaɪrɔɪd] *n./adj.* 甲状腺; 甲状腺的  
pituitary['pɪtju:teri] *n./adj.* 脑垂体; 脑垂体的  
reproductive[ri:prədʌktɪv] *adj.* 生殖的; 再生的  
anatomic[ænə'tɒmɪk] *adj.* 组织的; 解剖学上的  
sacral[seɪkrəl] *adj.* 骶骨的  
anatomist[ə'nætə'mɪst] *n.* 解剖学家  
cleaver['kli:və] *n.* 劈刀; 切肉刀  
midsagittal plane[mɪd'sædʒɪtəl plæn] *n.* [医] 中切面  
fore-and-aft[fɔ:ændʌft] *adj.* 纵向的  
transverse[træns've:s] *adj.* 横切的; 横断的  
horizontally[hɔ:rɪzəntəli] *adv.* 水平地; 横向地  
cavity['kævɪti] *n.* 腔; 洞  
dorsal cavity['dɔ:səl 'kævɪti] 背侧腔  
cranial cavity['kreɪnjəl 'kævɪti] 颅腔  
spinal cavity['spaɪnəl 'kævɪti] 脊髓腔  
ventral cavity['ventrəl 'kævɪti] 腹侧腔  
thoracic cavity[θɔ:resɪk 'kævɪti] 胸腔  
abdominal cavity[æb'dɒmənəl 'kævɪti] 腹腔  
gallbladder['gɔ:blædə] *n.* [解剖] 胆囊  
spleen[spli:n] *n.* 脾脏  
pelvis['pelvɪs] *n.* 骨盆  
rectum['rektəm] *n.* 直肠  
partition[pɑ:'tɪʃən] *n.* 分割; 隔离物  
diaphragm[daɪə'fræm] *n.* [解剖] 横隔膜; 膜片  
epigastrium[epɪ'gæstriəm] *n.* [解剖] 上腹部  
umbilical[ʌmbɪlaɪkəl] *adj.* 肚脐的; 脐带的  
umbilicus[ʌmbɪlɪkəs] *n.* 肚脐; 中心  
navel['neɪvəl] *n.* 肚脐  
hypogastric[həɪpəʊ'gæstri:k] *adj.* 下腹部的  
hypochondriac[həɪpəkəndriæk] *adj.* 季肋的

rib[ri:b] *n.* 肋骨

left lumbar region[left 'lʌmbə 'ri:dʒən] 左腰部

iliac['iliæk] *adj.* 髂的

inguinal['iŋɡwɪnəl] *adj.* [解剖][动物] 腹股沟的

## Idioms and Expressions

### 1. be composed of 由……构成, 由……组成

e.g. All animals and plants are composed of cells. 一切动植物均由细胞组成。

### 2. be linked to 与……有关联

e.g. It is reported that Michael Jackson's death may be linked to his longstanding use of painkillers. 据报道迈克尔·杰克逊的死可能与他长时间使用止痛药有关。

### 3. confine...to 仅限于, 限于……之内

e.g. We'll confine our discussion to the main issue. 我们将只讨论主要问题。

### 4. convert...into 把……转换成, 折合

e.g. Once inside the tumor cell, the compounds convert from inactive form into an active anti-cancer drug. 一旦进入肿瘤细胞, 这些复合物便由非活性形态转化成活性抗癌药物。

### 5. dissolve...into 溶入, 溶解

e.g. It can dissolve into any water and be washed quickly. 其可以完全溶解于各种水质, 且易于冲洗。

### 6. filter...out 过滤, 滤除

e.g. It is designed to filter out viruses and toxins before they attack organs. 设计该器件可在病毒和毒物攻击器官之前滤除病毒。

## Notes

1. According to a nursery rhyme, children are made of sugar and spice, or perhaps of puppy dogs' tails, depending on which sex we are discussing.

分析: 该句中 according to 为介词短语, 意思为根据、按照、取决于, 通常用在句首, be made of 为动词短语, 意思为由……构成, depending on 为动词的现在分词形式, 在句中作条件状语, 其中 which 引入宾语从句。

译文: 儿歌中根据孩子的性别不同, 认为孩子是由糖和香料组成, 或是小狗的尾巴。

2. Something as small as a worm may be composed of millions of cells, yet we all are familiar with at least one of the larger kinds of cells, of which an egg is a perfectly good example.

分析: 该句是由 yet 连接的两个转折关系的句子, 前半句中 as small as 表示同级比较, as small as worm 作为后置定语修饰 something, 后半句包含由 of which 引导的非限制性定语从句, 修饰先行词 cell。

译文: 一只小小的蠕虫就可能由数百万细胞组成, 而我们至少应当熟悉较大细胞中的一种, 其中鸡蛋便是个很好的例子。

3. In the center of the cell, comparable with the egg yolk, is a globule called the nucleus, containing the chromatin network.

分析: 该句主干部分为倒装句, 真正的主语为 globule, 介词短语 in the center of the cell 为句子的表语, 而 comparable with the egg yolk 为插入语, containing 为现在分词作后置定语。

译文: 在细胞的正中央有一个包含染色质网络的核, 我们把其比作蛋黄, 称为细胞核。

4. The heart, blood vessels, lymph vessels and lymph nodes all make up the system whereby blood is pumped to all the body tissues, bringing with it food, oxygen and other substances, and carrying away waste materials.

分析: 该句为两个并列分句组成, 前后部分是由 whereby 连接, 意为“而”, 后一分句的主语 blood, 后半句 bringing 和 carrying 为两个平行的现在分词短语作目的状语。

译文: 心脏、血管、淋巴管和淋巴结共同构成人体的循环系统, 而血液在体内通过这些器官被送往至各个组



织,伴随血液传送的有养分、氧气及其他物质,同时带走体内垃圾。

5. This latter space is subdivided into two portions, one containing the stomach, most of the intestine, the kidneys, the liver, the gallbladder, the pancreas and the spleen; and a lower one called the pelvis, or pelvic cavity, in which are located the urinary bladder, the rectum and the internal parts of the reproductive system.

分析:该句主句是“This latter...portions”,后有两个并列成分,其中前一并列成分 one containing the stomach 为独立主格结构,起解释说明的作用,后一并列成分是 a lower one called the pelvis, in which 引导非限制性定语从句,修饰先行词 pelvic cavity.

译文:腹腔分为两个部分,一个部分包含胃、大部分肠、肾、肝、胆囊、胰腺和脾;下面的部分为骨盆,或称盆腔,盆腔中有膀胱、直肠以及生殖系统的内部结构。

## Key Points

### 1. Body systems

skeletal, muscular, circulatory, digestive, respiratory, integumentary, urinary, nervous (and sensory), endocrine, reproductive.

### 2. Body directions

(1) Superior, near head; inferior, away from head.

(2) Ventral (anterior), near belly; dorsal (posterior), near back.

(3) Cranial, near head; caudal, near end of spinal column.

(4) Medial, near midsagittal plan; lateral, toward side.

(5) Proximal, near origin; distal, distant from origin.

(6) Body direction by plans:

Midsagittal: left and right portions.

Frontal: front and rear portions.

Transverse: top and bottom portions.

### 3. Body Cavities

(1) Dorsal:

Cranial Spinal

(2) Ventral:

Thoracic Abdominal

(a) 9 regions include epigastric, umbilical, hypogastric, right and left hypochondriac, right and left lumbar, and right and left iliac, or inguinal.

(b) 4 quadrants (no longer extensively used).

(3) Dorsal cavities continuous, abdominal cavities separated by diaphragm.

## Medical Focus

### Imaging the Body

#### 身体影像

Imaging the body for diagnosis of disease is based on chemical properties of subatomic particles. For example, X-rays, which are produced when high-speed electrons strike a heavy metal, have long been used to image body parts. Dense structures such as bone absorb X-rays well and show up as light