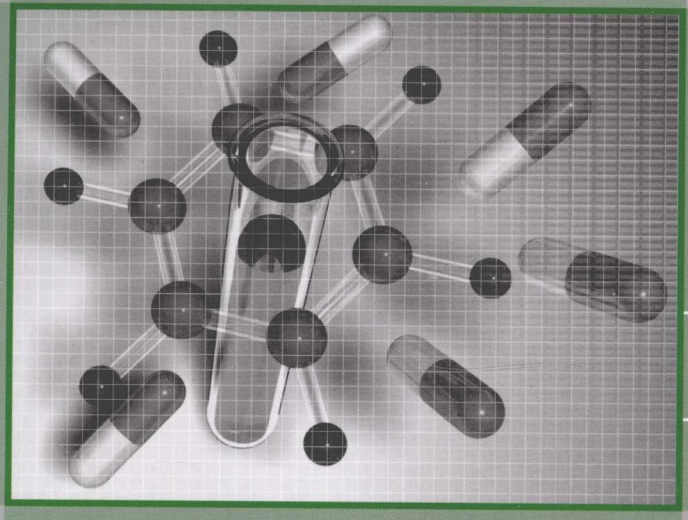
English Readings in Modern Medicine

现代医学英语文选

（第三集）



生物医学·新技术

主　编　洪班信

人民卫生出版社

English Readings in Modern Medicine

现代医学英语文选

第三集

主　编　洪班信

副主编　王应杰

编　者　刘向前　方　敏　杨海涛
王群英　赵庆红

人民卫生出版社

图书在版编目（CIP）数据

现代医学英语文选(第三集)/洪班信主编. —北京：人民卫生出版社，2009.10

ISBN 978-7-117-11951-1

Ⅰ.现… Ⅱ.洪… Ⅲ.医学-英语-文集 Ⅳ.H31-53

中国版本图书馆CIP数据核字（2009）第083642号

现代医学英语文选

第三集

主　　编：洪班信
出版发行：人民卫生出版社（中继线 010-67616688）
地　　址：北京市丰台区方庄芳群园3区3号楼
邮　　编：100078
E-mail：pmph@pmph.com
购书热线：010-67605754　010-65264830
印　　刷：潮河印业有限公司
经　　销：新华书店
开　　本：850×1168　1/16　　**印张**：22.25
字　　数：621千字
版　　次：2009年10月第1版　　2009年10月第1版第1次印刷
标准书号：ISBN 978-7-117-11951-1/R·11952
定　　价：45.00元

前　言

阅读是我们学习英语的主要目的之一，也是我们英语运用能力的基本表现。作为医学生、医生和医学科研人员，医学阅读是我们在专业领域里的重要活动，是我们希望能掌握的一项有用工具。但是，如何才能培养较为熟练的英语阅读能力呢？常言说，“从游泳中学游泳”，同样，我们也要“从阅读中学阅读”，实践出真知。学过基础英语，通过了大学英语四、六级考试，具备了英语阅读的初步能力，在这个关键时期，用一把力就上去了，进入一个更高境界，一旦停滞下来，就有可能前功尽弃。这时最重要的就是大量阅读。它不仅可使你的阅读逐步熟练，而且也可带动听说和写作能力的提高。在具有一般阅读初步能力的基础上，及时转向医学专业阅读，让自己慢慢积累医学术语，熟悉医学英语的语言结构特点，经过一段坚持和努力，必然会在医学阅读能力上取得飞跃进展。

本书提供的大量阅读材料全部选自近两三年国外期刊、报纸和个别专著，反映了医学和医疗在全世界的最新进展。文体兼有报道和论述，文章有长有短，文字有易有难，读者通过多种形式的接触可以提高今后阅读国外不同文献的适应能力。系统阅读本书不仅可在语言上得到提升，而且在专业上也可同时获得大量最新信息，真是一举两得。

本套书共分三集，每集收有文章 80 篇，共 240 篇。每集均有一个主题，第一集：环境、健康、疾病预防；第二集：临床医学新进展；第三集：生物医学、新技术。每一集里的文章又有一个大致的归类，每类设有小标题，方便读者了解选材的全貌，或者寻找与自己专业有关的及感兴趣的部分。每课后面均编有词汇练习和理解练习，读者如能系统去做，必将有助于词汇的巩固和对文章的深入理解，进一步提高学习效果。

这套文选的计划和编写得到了华中科技大学同济医学院院长田玉科教授的支持和鼓励；得到了人民卫生出版社的认可和支持，并对全书的总体安排提出了宝贵意见；我院鲁文清教授和孙奕副教授在选材上提供过帮助；在此一并表示衷心的感谢。编者在编写过程中虽然尽了很大努力，但仍不免存在缺点和错误，敬希同行和读者指正。

编　者

目　录

遗传 1～9 …… 1

1. Genetic Testing: Weighing Its Benefits and Risks(Ⅰ) …… 1
2. Genetic Testing: Weighing Its Benefits and Risks(Ⅱ) …… 4
3. To What Extent Are Genetic Variation and Personal Health Linked? …… 7
4. Novel Molecular Approaches to Cystic Fibrosis Gene Therapy …… 11
5. Gene Discovery Could Change Psychiatric Care …… 14
6. First Clinical Trial of Gene Therapy for Muscular Dystrophy Now Under Way …… 16
7. Genetic Diseases of the Skin: Progress and Perspectives …… 20
8. Fetal Alcohol Syndrome …… 23
9. Public Health Approach to Birth Defects, Developmental Disabilities, and Genetic Conditions …… 27

基因 10～17 …… 31

10. Why Do Humans Have So Few Genes? …… 31
11. New RNAi Tools Enable Systematic Studies of Gene Function …… 34
12. Gene Therapy …… 37
13. Scientists Find Gene Mutation That Drives Melanoma …… 40
14. Gene Plays Key Role in Stopping Spread of Some Cancers …… 42
15. How Gene Transfer May Save Lives …… 44
16. Safer-Gene Therapy in Sight for Cystic Fibrosis …… 47
17. Acute Lymphocytic Leukemia (ALL) Survivors Bear Genetic Damage from Life-saving Chemotherapy …… 49

免疫 18～23 …… 53

18. Can We Selectively Shut Off Immune Responses? …… 53
19. Immune System Protein May Ward Off AIDS …… 56
20. How the Glucocorticoids Suppress Immunity(Ⅰ) …… 59
21. How the Glucocorticoids Suppress Immunity(Ⅱ) …… 62
22. Discovering Lymphocyte Subsets …… 64
23. Rules of Engagement: the Discovery of MHC Restriction …… 67

干细胞 24～31 …… 71

24. Circles of DNA Might Help Predict Success of Stem Cell Transplantation …… 71
25. Stem Cell Division …… 74

26. Neural Stem Cell Gene Plays Crucial Role in Eye Development …… 77
27. Scientists Report 2 Major Advances in Stem-Cell Research …… 79
28. Sperm Stem Cells Closer to Being Like Embryonic Stem Cells …… 83
29. Stem Cells May Protect Brain, Nervous System …… 87
30. Stem Cells: Medicine's New Frontier …… 88
31. Teasing Out Tissue from Blood …… 92

生物技术 32～39 …… 95
32. New Findings in Vaccines Described from Russia, Spain and the United States …… 95
33. BioPAL Announces Next-Generation Kidney Diagnostic Assays …… 98
34. Research in Diabetes Provides New Insights …… 101
35. Edwards Unveils Ascendra Aortic Heart Valve Replacement System …… 105
36. First Production of Human Monoclonal Antibodies in Chicken Eggs …… 107
37. National Center for Biotechnology Information …… 110
38. Amgen's New Drug Promotes the Rebuilding of Bones …… 113
39. Recent Advances in Hepatitis B Virus Research …… 116

生物医学 40～47 …… 120
40. Parasite Genome Similarities Offer Hope for New Drugs and Vaccines …… 120
41. Biodefense and Bioterrorism …… 122
42. Harry Goldblatt and the Discovery of Renin …… 125
43. How Will Big Pictures Emerge From a Sea of Biological Data? …… 128
44. Michael Heidelberger and the Demystification of Antibodies …… 130
45. T Cell Traffic Signals …… 133
46. Thomas Rivers and the EAE Model …… 135
47. Peyton Rous:Father of The Tumor Virus …… 138

肿瘤研究 48～52 …… 141
48. Breast Cancer (BRCA) Gene Testing …… 141
49. New Findings Challenge Standard Breast Cancer Care …… 143
50. Gene Trait Boosts Cancer Therapy …… 145
51. Amplified Dose of Immune Cells Killed Cancer …… 147
52. Whole New Understanding of the Way Cancer Develops …… 150

纳米技术 53～57 …… 152
53. Bio-nanotubes to Fight Cancer …… 152
54. Nanotechnology: The Size of Things to Come …… 154
55. Nanodevices …… 157
56. Nanoparticle Boosts Chemo Effectiveness …… 160
57. Nanoparticles Image Sentinel Lymph Nodes …… 162

影像技术 58～67 …… 166
58. Interventional Radiology Is 21st Century Medicine …… 166
59. Radiation Therapy: A Basic Introduction …… 167
60. Interventional Radiology Is New Face of Surgery …… 170
61. Multiple Views from CT Scans May Improve Diagnosis …… 173
62. Cheap Hand-held MRI Scanners May One Day Be a Reality …… 175
63. PET Images Change Cancer Care …… 176
64. Diagnostic Imaging: Contrast Counts …… 179
65. Brain Imaging …… 182
66. Gamma Knife …… 184
67. High-tech Tool Offers Breakthrough Cancer Treatment …… 187

医疗器械 68～77 …… 189
68. Endoscopy …… 189
69. A Novel Diagnostic Method for Evaluation of Vascular Lesions in the Digestive Tract Using Infrared Fluorescence Endoscopy …… 193
70. Laparoscopy-assisted Colectomy May Improve Survival Rates …… 196
71. Thoracoscopy …… 198
72. Magnetically Guided Catheter Zaps Atrial Fibrillation …… 201
73. Optical Coherence Tomography: Positive Results in Clinical Study Reported …… 204
74. UCI Eye Doctors Invent Laser-assisted Cornea-transplant Surgery …… 206
75. Near Infrared Laser Device Can Measure Brain Oxygen Levels …… 208
76. Robotic Weight-loss Surgery Appears Safe …… 211
77. Evanston Northwestern Healthcare First To Use Latest Robotic Surgical System …… 213

综合组(长文)78～80 …… 216
78. Bioinformatics …… 216
79. Proteomics …… 221
80. Principles of Microsurgery …… 224

参考译文 …… 232

遗传 1～9 …… 232
1. 遗传学测试:权衡益处与风险(1) …… 232
2. 遗传学测试:权衡益处与风险(2) …… 233
3. 遗传变异与个人健康的关联有多大? …… 235
4. 囊性纤维化基因治疗新的分子方法 …… 236
5. 基因的发现能够改变精神病治疗 …… 237
6. 肌肉萎缩症基因治疗的首次临床试验正在进行中 …… 238
7. 遗传性皮肤病:进展与展望 …… 239
8. 胎儿酒精综合征 …… 240
9. 出生缺陷、发育性残疾与遗传性疾病的公共卫生学方法 …… 241

基因 10～17 …… 243
10. 为什么人类有如此少的基因？ …… 243
11. 新的 RNA 干扰工具使系统研究基因功能成为可能 …… 244
12. 基因疗法 …… 245
13. 科学家发现促发黑色素瘤的基因突变 …… 246
14. 在阻止一些肿瘤扩散上基因发挥关键作用 …… 246
15. 基因转移怎样挽救生命 …… 247
16. 较安全的基因疗法有望用于治疗囊性纤维变性 …… 248
17. 急性淋巴细胞白血病生存者带有因救命性化学治疗而致的遗传损伤 …… 249

免疫 18～23 …… 251
18. 我们能选择性地关闭免疫应答吗？ …… 251
19. 免疫系统蛋白可防止艾滋病 …… 252
20. 糖皮质激素是怎样抑制免疫力的(1) …… 253
21. 糖皮质激素是怎样抑制免疫力的(2) …… 254
22. 淋巴细胞亚群的发现 …… 255
23. 免疫细胞结合的规则：MHC 限制性的发现 …… 256

干细胞 24～31 …… 258
24. DNA 环可能帮助预测干细胞移植的成功 …… 258
25. 干细胞分裂 …… 259
26. 神经干细胞基因在眼的发育过程中起决定性作用 …… 260
27. 科学家们报道干细胞研究的两项重要进展 …… 261
28. 生精干细胞愈加接近像胚胎干细胞 …… 262
29. 干细胞可保护大脑和神经系统 …… 264
30. 干细胞：医学的新前沿 …… 264
31. 从血液中得到组织 …… 266

生物技术 32～39 …… 267
32. 俄罗斯、西班牙和美国在疫苗上的新发现 …… 267
33. BioPAL 发布下一代肾脏诊断测定法 …… 268
34. 糖尿病研究新视角 …… 269
35. Edwards 揭开 Ascendra 心脏主动脉瓣置换系统的面纱 …… 270
36. 首次在鸡蛋中产生的人单克隆抗体 …… 271
37. (美国)国家生物技术信息中心 (NCBI) …… 273
38. Amgen 的新药促进骨的重建 …… 273
39. 乙肝病毒研究的最新进展 …… 275

生物医学 40～47 …… 277
40. 寄生虫基因组的相似性为研制新药物和疫苗带来了希望 …… 277
41. 生物防御和生物恐怖主义 …… 278
42. 哈里·戈德布拉特和肾素的发现 …… 279

43. 重要的图画是如何从海量生物学数据中浮现出来的? …… 280
44. 迈克尔·海德尔贝格和抗体揭秘 …… 281
45. T 细胞传输信号 …… 282
46. 托马斯·里维斯和实验性自身免疫性脑脊髓炎模型 …… 283
47. 佩顿·劳斯:肿瘤病毒之父 …… 284

肿瘤研究 48～52 …… 286
48. 乳腺癌基因检测 …… 286
49. 新发现挑战标准的乳腺癌治疗 …… 287
50. 基因特性促进癌症治疗 …… 288
51. 扩增的免疫细胞可杀死癌症 …… 288
52. 对癌症发生方式的全新理解 …… 290

纳米技术 53～57 …… 291
53. 生物纳米管治疗癌症 …… 291
54. 纳米技术:小尺寸用品的到来 …… 291
55. 纳米设备 …… 293
56. 纳米微粒提高化疗效果 …… 294
57. 用纳米颗粒进行前哨淋巴结成像 …… 295

影像技术 58～67 …… 297
58. 介入放射学——21 世纪的医学 …… 297
59. 放射疗法简介 …… 297
60. 介入放射学带来外科手术的新面貌 …… 299
61. CT 扫描多平面成像可改善影像诊断 …… 300
62. 廉价的手提式磁共振扫描仪可能成为现实 …… 301
63. PET 影像改变癌症的治疗 …… 301
64. 影像诊断学中的对比增强剂 …… 302
65. 脑成像 …… 303
66. 伽马刀 …… 304
67. 高新技术器械提供突破性癌症疗法 …… 305

医疗器械 68～77 …… 307
68. 内镜检查 …… 307
69. 用红外线荧光内镜检查消化道血管病变的新的诊断方法 …… 308
70. 腹腔镜下结肠切除术提高患者生存率 …… 309
71. 胸腔镜检查术 …… 310
72. 磁场引导的导管治疗心房纤颤 …… 311
73. 光学相干断层成像术:临床研究取得积极成果 …… 312
74. 美国加州大学尔湾分校的眼科医生发明激光辅助角膜移植术 …… 313
75. 近红外激光器能测量大脑含氧水平 …… 314
76. 机器人减肥手术显得安全 …… 315

77. 埃文斯顿西北医疗联合体首试最新的机器人手术系统 …… 316

综合组(长文)78～80 …… 318
78. 生物信息学 …… 318
79. 蛋白质组学 …… 320
80. 显微外科原理 …… 322

练习答案 …… 326

遗传 1～9

1. Genetic Testing: Weighing Its Benefits and Risks(Ⅰ)

Genetic testing sounds like a concept straight out of a science fiction[1] novel. But this chance to peek[2] into the future of your health is an opportunity many families are taking today. Families with a history of certain medical conditions can plan for their futures by understanding the risks to them and their future generations.

Unfortunately, genetic testing isn't as easy as gazing into a crystal ball[3]. For many conditions, genetic testing can give you only an idea of your risk of developing certain conditions. Genetic testing can't tell you if you'll definitely develop cancer or when you'll start to notice symptoms of Alzheimer's disease[4].

If you're considering genetic testing, take time to weigh the pros and cons[5]. Though it might be tempting to get a glimpse of your future, realize that the results can produce anxiety as easily as they can produce peace of mind.

Genetics and disease

Genetic disorders are caused by abnormalities (mutations[6]) in your DNA. These abnormalities are formed by the erroneous[7] addition, deletion[8] or substitution of chemicals that make up your DNA. Mutations can occur spontaneously[9], or they can be inherited from your parents. Mutations can also be caused by your environment, such as exposure to chemicals or radiation[10].

Your parents pass their genes on to you in the form of chromosomes[11]. Each chromosome contains genes made up of DNA, which guides your cells in creating proteins that are necessary for normal function.

If your DNA contains a mutation, your cells may create proteins that don't work properly or may not create a certain protein at all. If this occurs with a protein that plays a critical[12] role in your body's function, you could develop a medical condition.

Your genes don't cause diseases. Mutations in your genes cause your cells to stop functioning properly, which can then lead to disease.

How genetic tests are used

Your doctor uses a genetic test to predict or diagnose genetic disorders caused by mutations in your genes. You might be interested in:

Testing in newborns[13]

Newborns are tested for genetic disorders that could be dangerous if left untreated. For instance, phenylketonuria[14] (PKU) is a condition in which a specific amino acid[15] isn't properly digested. If left untreated, PKU can lead to mental retardation[16] and seizures[17]. By identifying your baby's condition early, the doctor can recommend appropriate dietary[18] changes that can prevent

these problems. States mandate[19] routine screening tests[20] of all newborns for certain inherited mutations, such as PKU.

Testing for carriers

Carrier testing is used in family planning to determine your chance of passing a genetic disorder on to your children. If you or your partner has a family history of genetic disorders, such as cystic fibrosis[21], Tay-Sachs disease or sickle cell disease, you and your partner can be tested to see if either of you carry the genes associated with these diseases. Your child's risk of having the disorder depends on how it's passed. In so-called recessive[22] disorders, such as sickle cell disease, your child needs to inherit two bad copies of the gene — one from each parent — to develop the disease. Dominant[23] disorders require that only one mutated gene be present to inherit the disorder, such as in polycystic[24] kidney disease.

Testing before a baby is born

Prenatal[25] testing is used to determine whether a fetus is at increased risk of genetic disorders or physical deformities[26]. Older parents, those with a family history of genetic disorders or pregnant women who have been exposed to harmful chemicals are among those who might choose prenatal genetic testing.

Testing to determine your individual level of risk

A predictive gene test can determine if you have gene mutations that increase your chances of developing a disease. Though you might not have any signs or symptoms of the disease, if you have a strong family history of a genetic condition, you might be at risk of developing that disorder. Tests for the breast and ovarian cancer genes[27] BRCA1 and BRCA2 are examples of tests that help determine your personal risk of particular diseases.

Testing to confirm a diagnosis

Genetic tests can be used to confirm a diagnosis. This can help your doctor devise a plan for your care. Your doctor might use this type of test to confirm or rule out[28] cystic fibrosis. Your care or medications could differ depending on your diagnosis.

Notes to the text

1. science fiction 科学幻想小说
2. peek [pi:k] *n.* 一瞥,匆忙看过 *v.* 偷看
3. crystal ball (占卜用的)水晶球,玻璃球,预言未来的方法。如:gazing into a crystal ball; crystal-gazer *n.* 水晶球占卜者
4. Alzheimer's disease 阿尔茨海默病
5. weigh the pros and cons 掂量赞成的论点和反对的论点,权衡利弊;pros and cons 赞成与反对
6. mutation [mju(:)'teiʃən] *n.* (生物物种的)突变
7. erroneous [i'rəunjəs] *a.* 错误的,不正确的
8. deletion [di'li:ʃən] *n.* [遗传学]缺失,中间缺失;删除
9. spontaneously [spɔn'teinjəsli,-niəsli] *adv.* 自发地,本能地
10. radiation [ˌreidi'eiʃən] *n.* 辐射,放射,放射线,放射物
11. chromosome ['krəuməsəum] *n.* [生物]染色体
12. critical ['kritikəl] *a.* 重要的,关键的

13. newborn [nju:'bɔ:n,'nju:bɔ:n] *n.* 新生儿
14. phenylketonuria [ˌfi:nilˌki:tə'njuəriə] *n.* A genetic disorder in which the body lacks the enzyme necessary to metabolize phenylalanine to tyrosine. Left untreated, the disorder can cause brain damage and progressive mental retardation as a result of the accumulation of phenylalanine and its breakdown products. 苯丙酮尿症:一种先天性代谢异常,这时机体缺乏将苯丙氨酸代谢成酪氨酸所必需的酶。如果不治疗,这种异常会导致脑损伤和精神抑制,系由苯丙氨酸沉积及其分解的产物造成。
15. amino ['æminəu] acid *n.* 氨基酸
16. mental retardation [ˌri:tɑ:'deiʃən] 智力迟钝;智力障碍
17. seizure ['si:ʒə] *n.* 癫痫发作
18. dietary ['daiətəri] *a.* 饮食的;与饮食有关的
19. mandate ['mændeit] *v.* 命令;指令;批准
20. screening test: to test or examine for the presence of disease or infection. 筛查,检测:测试或者检验疾病或感染存在与否。
21. cystic fibrosis ['sistik] [fai'brəusis] *n.* A hereditary disease of the exocrine glands, usually developing during early childhood and affecting mainly the pancreas, respiratory system, and sweat glands. It is characterized by the production of abnormally viscous mucus by the affected glands, usually resulting in chronic respiratory infections and impaired pancreatic function. Also called mucoviscidosis. 囊性纤维变性:一种外分泌腺的遗传病,通常发生在幼儿时期,而且主要影响胰腺、呼吸系统和汗腺。特征为由带病的腺产生反常的黏液,通常会引起一些慢性呼吸感染,而且会损害胰腺功能。也称作mucoviscidosis。
22. recessive [ri'sesiv] *a.* (Genetics) Of, relating to, or designating an allele that does not produce a characteristic effect when present with a dominant allele. [遗传学]隐性的:属于、指向或与某种等位基因有关的,这种等位基因与显性等位基因同时出现时,它不产生显性后果。
23. dominant ['dɔminənt] *a.* (Genetics) Of, relating to, or being an allele that produces the same phenotypic effect whether inherited with a homozygous or heterozygous allele. [遗传学]显性的:不管遗传纯合子等位基因还是杂合子等位基因都产生相同表现型结果的等位基因的。
24. polycystic [pɔli'sistik] *a.* 多囊的;polycystic kidney disease 多囊性肾病
25. prenatal ['pri:'neitl] *a.* 出生以前的
26. physical deformities 身体畸形
27. breast and ovarian cancer genes 乳房卵巢癌症基因
28. rule out 避免;排除在外

Increase your vocabulary

Roots:	chromo- 表示"颜色"之义	nati- 出生
Examples:	chromosome 染色体	natimortality 婴儿死亡率
	chromoscan 彩色扫描	natal 出生的

Write out the Chinese meanings of the following terms.

1. chromoblast
2. chromocyte
3. chromogen
4. chromometer
5. chromophil
6. prenatal
7. antenatal
8. natality
9. natuary
10. neonate

Check your understanding

Answer the following questions briefly.

1. What are the benefits of genetic testing?
2. What are the risks of genetic testing?
3. Give the definition of the term "mutations".
4. What can cause the mutations to occur?
5. Why do all newborns need routine screening tests for certain inherited mutations?
6. Who should get prenatal genetic testing?

2. Genetic Testing: Weighing Its Benefits and Risks(Ⅱ)

Who gets tested

Whether you're a candidate[1] for genetic testing is usually based on your family history of genetic disorders. The exception is newborn testing, which is performed on all babies, as directed by state law. You can, however, opt out of[2] newborn testing.

For other genetic tests, the decision to be tested is decided with your doctor based on your family history. If your family history suggests that a gene is passed through your family, your doctor might suggest genetic testing to see how likely you are to develop that condition.

Your doctor may refer you to[3] a genetic counselor[4]— a doctor who specializes in medical genetics. The genetic counselor reviews your family history with you. He or she will discuss genetic testing and points to consider in deciding whether you want to pursue testing.

Types of genetic tests

If you decide to pursue[5] genetic testing, four main types of tests can be performed to examine your genes. Which type of test you undergo is based on the genetic mutation you're looking for.

Genetic tests usually require a blood sample. Others require hair, skin, amniotic fluid[6]— for prenatal testing — or other tissue. Some tests require cells from the inside of your cheek. To collect these cells, your doctor will rub a cotton ball on the inside of your cheek.

Your sample is sent to a lab, where it's analyzed using one of the following types of tests:

DNA testing is often used when searching for a single-gene disorder, such as cystic fibrosis or hemophilia[7]. If your doctor already has an idea of what your disorder is, the laboratory looks for your gene mutation by comparing it to known mutations in that gene. For rare or unknown disorders, the laboratory might compare the DNA of several people in your family to try to find a link.

Cytogenic[8] testing analyzes your chromosomes. The laboratory examines your chromosomes

for proper structure, arrangement and any abnormalities. This type of testing is used to detect Down syndrome[9]— a disorder that results from an extra chromosome.

Biochemical testing focuses on the proteins and enzymes[10] that are produced by your cells. The laboratory tests to see if certain enzymes or proteins are missing. For instance, PKU is detected by showing that your body is missing an enzyme.

Your genetic counselor will go over your results with you. That way he or she can explain exactly what the results mean for your future and what they can't tell you. How long you wait for the results will depend on what sort of testing you have done. Waiting times can vary from a few weeks to several months.

Limitations of genetic testing

Genetic testing isn't 100 percent predictive. Limitations to the predictive ability of genetic testing include:

Many genetic tests fail to detect all of the mutations that can cause a disease. Cystic fibrosis, for example, is linked to hundreds of mutations — most of which are rare. Other diseases are caused by mutations that can occur in one of several genes. So while you may test negative[11] by current methods, you may have another unknown genetic defect that increases your risk of a particular disease.

A positive[12] result doesn't mean you'll develop a disease. Genetic tests can't always tell you with certainty whether you'll develop a disease. They can only tell you that you have a mutation that's shown to be associated with the disease. Your probability of developing the disease may be low or high.

A negative result doesn't mean you won't develop a disease. Noninherited[13], sporadic[14] gene changes can occur, or you might carry a different, unknown gene that increases your risk. For example, most cancers result from genetic damage that occurs after birth, such as from smoking or exposure to UV rays[15].

A positive test doesn't predict severity of the disease. For example, symptoms of cystic fibrosis range from mild bronchial abnormalities to severe lung, pancreatic[16] and intestinal difficulties, regardless of[17] results from genetic tests.

Individual genes are only part of the puzzle. Most cancers and common disorders such as heart disease arise from multiple causes, including interactions among several genes. A disease that runs in your family may be the result of shared environmental conditions, not genetics. Factors include diet, smoking and exposure to chemicals, sunlight and other forms of radiation.

Genetic testing can be expensive. Costs range from less than $ 100 to a few thousand dollars. Your health insurance may not cover[18] testing.

Maintaining your health after genetic testing

Learning that you don't possess a gene mutation that predisposes[19] you to a disorder can give you peace of mind. However, this shouldn't prevent you from maintaining your health through balanced nutrition, regular exercise and regular health screenings.

A positive test result allows you and your doctor to monitor your health and start treatment as soon as it's necessary. It might also allow for you to take certain preventive measures, such as preventive mastectomy[20] if you're a woman who has inherited a breast cancer gene. What you do will depend on what disease you're at risk of. Even if effective prevention and therapy aren't

available, you can take steps to protect your health, including having regular checkups.

Knowing you're at increased risk of a genetic disorder can be stressful and could strain[21] your relationships with loved ones. If you test positive for a gene mutation, it could have emotional and financial implications[22] for your children or your future children. For instance, it could result in higher insurance rates or you could be denied insurance entirely.

Privacy and genetic testing

Undergoing genetic testing may put you at risk of discrimination[23]. If your employer or insurance company knew of your results, would they treat you differently?

Results of your genetic tests are usually kept in your medical records. When you apply for disability, health or life insurance, the company might want to examine your medical records. In some cases, your employer might also have access to[24] your medical records.

Though laws exist to protect your privacy, the field of genetic testing is growing quickly, which means laws aren't in place to cover every situation. Consult an attorney[25] if you're concerned about your privacy.

It's your decision

Talk with your doctor and your genetic counselor about the risks and benefits of genetic testing. Consider whether this information will help you, and how you might do things differently if you have the genetic mutation. Ask questions and be sure you have enough information to make your decision. Don't feel pressured by your family or your doctors. The decision to be tested for genetic mutations is yours alone.

Notes to the text

1. candidate ['kændidit] *n.* 候选人;投考者,攻读学位者
2. opt [ɔpt] *v.* 选择 opt out(常与 of 连用)决定不参加,撤退;退出;脱离
3. refer... to... 引……去求助 e. g. refer her to a heart specialist 叫她找心脏病专家
4. counselor ['kaunsələ] *n.* 顾问
5. pursue [pə'sju:] *v.* 努力去获得或完成;追求
6. amniotic [ˌæmni'ɔtik] fluid 羊膜水,羊水
7. hemophilia [ˌhi:mə'filiə] *n.* 血友病
8. cytogenic *a.* 细胞遗传学的
9. Down syndrome 唐氏综合征(先天愚型,21 三体综合征)
10. enzyme ['enzaim] *n.* 酶
11. negative ['negətiv] *a.* 阴性的;否定的,消极的
12. positive ['pɔzətiv] *a.* 阳性的;肯定的,积极的
13. noninherited *a.* 非遗传的
14. sporadic [spə'rædik] *a.* 零星的;散发性的;偶发的
15. UV rays=ultraviolet rays 紫外线
16. pancreatic [ˌpæŋkri'ætik] *a.* 胰腺的
17. regardless of... 不管……的;不顾……的
18. cover *v.* 包括,包含
19. predispose [ˌpri:dis'pəuz] *v.* 使易受……的影响或易于…… e. g. conditions that predispose miners to lung disease 易于引起矿工肺病的环境

20. mastectomy [mæs'tektəmi] *n.* 乳房切除术
21. strain [strein] *v.* (使)紧张
22. implication [ˌimpli'keiʃən] *n.* 含意,暗示
23. discrimination [disˌkrimi'neiʃən] *n.* 歧视
24. have access to 进入;接近
25. attorney [ə'tə:ni] *n.* <美>律师,(业务或法律事务上的)代理人

Increase your vocabulary

Roots:	amnio- 羊膜,胞衣	cyst- 囊,胞
Examples:	amnion 羊膜	cystalgia 膀胱痛
	amnionic 羊膜的	cystitis 膀胱炎
	amniote 羊膜动物	cystiform 胞状的,囊状的
	amniography 羊膜腔造影术	cystectomy 囊切除术
	amnioscopy 羊膜镜检法	cystatrophia 膀胱萎缩
	amniocentesis 羊膜穿刺术	cystelcosis 膀胱溃疡

Choose the English terms from the above examples to match the following definitions.

1. A procedure in which a small sample of amniotic fluid is drawn out of the uterus, which is then analyzed to detect genetic abnormalities in the fetus. ( )
2. A thin, tough, membranous sac filled with a serous fluid in which the embryo is suspended.
3. Inflammation of the urinary bladder. ( )
4. Surgical removal of a cyst. ( )
5. Shrinkage of the bladder. ( )
6. Examination of fetus using an optical instrument that is inserted directly into the amniotic cavity. ( )

Check your understanding

Write "T" if the statement is true or "F" if it is false.

1. All newborn babies must be tested for genetic disorders with no exception according to the state law.
2. Saliva secreted from the mouth can also be collected for genetic test.
3. DNA testing is often used to see if certain enzymes or proteins are missing.
4. If the result of genetic testing is positive, that means you will develop a severe genetic disease sooner or later.
5. You cannot take it easy even if the result of genetic testing is negative.

3. To What Extent Are Genetic Variation[1] and Personal Health Linked?

Forty years ago, doctors learned why some patients who received the anesthetic[2]