# PCEM 2 – ANGLAIS MÉDICAL

## 1ER TEXTE – MARS 2012

**TRAVAIL DE PRÉPARATION.** Il est demandé aux étudiants d'effectuer le travail suivant comme préparation au cours.

**1. VOCABULAIRE :** POUR CHAQUE DÉFINITION INDIQUER LE MOT EN ANGLAIS ET SA TRADUCTION EN FRANÇAIS. NB. *Il ne s'agit en aucun cas de deviner les mots, ceux-ci sont soulignés dans le texte et suivent le même ordre que les définitions. Il est inutile d'ailleurs de recourir au dictionnaire pour les traductions puisqu'un lexique figure à la fin du texte (En revanche, si vous ne connaissez pas certains mots non soulignés, le dictionnaire peut toujours être utile).*

**2. QUESTIONS NUMÉROTÉES DE 1 À 18 :** POUR CHAQUE INFORMATION DEMANDÉE,
—(1.) FORMULER D'ABORD UNE QUESTION. NB. *Certains mots qui figurent en italique dans les amorces ne sont pas a priori utilisables tels quels dans les questions. Il faut soit les modifier* (p. ex. : *The* <u>*production of*</u> enzymes *in* the pancreas. → What enzymes does the pancreas <u>produce</u> ?), *soit les supprimer.*
—(2.) PUIS UTILISER LES MOTS SUGGÉRÉS DANS LES CADRES POUR RÉDIGER UNE RÉPONSE. *Les mots proposés pour chaque réponse doivent servir de guide et non pas d'obstacle. Ils proviennent d'une réponse type, qui n'est pourtant pas la seule envisageable. Les étudiants sont encouragés à utiliser le plus de mots possible pour que leurs réponses soient complètes, cependant il n'est pas toujours indispensable d'utiliser tous les mots, et les étudiants peuvent les modifier s'ils en éprouvent le besoin.*

**3. "True or False ?" :** La réponse à ces questions peut être "*vrai*", "*faux*" mais encore "*imprécis*", "*incomplet*", "*vrai pour la première moitié seulement*" etc. En règle générale, des précisions supplémentaires seraient opportunes, il ne suffit pas de citer une phrase du texte mot pour mot. Il faut toujours être prêt à expliquer sa réponse, et à en débattre si jamais d'autres étudiants ne sont pas d'accord.

*Il est impératif de faire les questions personnelles à la fin de chaque section du texte (***Make up one original question of your own…***) car ce sont celles qui serviront de base à la discussion en cours. Toute question, si simple ou compliquée soit-elle, sera acceptée.*

**Introduction :** **Anatomy**[1]

**1. Use the definitions on the right to describe each of the scientific disciplines listed on the left**

| | | |
|---|---|---|
| **Biology** | | • the biological study of the functions of living organisms and their parts. |
| **Anatomy** | | • the chemical composition of living matter and of the chemical processes that go on in living organisms. |
| **Physiology** | **refers to** | • the formation, structure, and function of cells. |
| **Histology** | | • the science of life and of living organisms, including their structure, function, growth, origin, evolution, and distribution. |
| **Cytology** | **deals with** | • the scientific study of the microscopic structure of tissues. |
| **Biochemistry** | | • the scientific study or practice of diagnosing, treating, and preventing diseases or disorders of the body or mind. |
| **Medicine** | | • the shape and structure of organisms and their parts. |

**2. Match the descriptions on the right with the appropriate anatomical structure on the left**

| | |
|---|---|
| **Organelles** | • accomplish a specific function.<br>• are contained within a semi-permeable, hydrophobic, phospholipid bilayer.<br>• are found in a specific location. |
| **Cells** | • are generally classified into four major categories.<br>• are generally considered the basic units of living organisms.<br>• are genetically identical to other cells within the same organism.<br>• are made up of morphologically similar cells. |
| **Tissues** | • are made up of several different types of tissues.<br>• are recognizable by their structure.<br>• are specialized structures inside cells. |
| **Organs** | • can be studied using a light microscope (a.k.a. "optical" microscope).<br>• can only be seen with an electron microscope.<br>• include mitochondria, Golgi complex, lysosomes, endoplasmic reticulum, ribosomes, centrioles.<br>• were first defined as an anatomical level of organization by Xavier Bichat around 1800. |

**VOCABULARY**[2] ***in context.*** **Match the following definitions with words from the reading passage below, then give an appropriate translation in French.**

1. *The entire material or physical structure of an organism, especially of a human. :* _____
2. To a high degree or extent, extremely : _____
3. *To be composed of, to be formed of :* _____
4. *The smallest structural unit of an organism that is capable of independent functioning, consisting of one or more nuclei, cytoplasm, and various organelles, all surrounded by a semipermeable cell membrane. :* _____
5. To succeed in doing; bring to pass. To put in effect : _____
6. To keep in existence; maintain. : _____
7. *Scientific study of living organisms. :* _____
8. *The science of the structure of living organisms :* _____
9. *1. the science which treats of the functions of the living organism and its parts, and of the physical and chemical factors and processes involved. 2. the basic processes underlying the functioning of a species or class of organism, or any of its parts or processes.* _____
10. *Relative position or rank on a scale. A relative degree :* _____
11. *A constituent element or part. :* _____
12. *A differentiated part of the body that performs a specific function. :* _____
13. *The condition or fact of being related; connection or association. :* _____
14. *The study of the structures of the body that can be seen with the naked eye. Also called macroscopic anatomy. :* _____
15. *The pursuit of knowledge, as by reading, observation, or research. :* _____
16. The eye unassisted by an optical instrument. : _____
17. Throughout the course or duration of. At some time in : _____
18. *The act or an instance of cutting apart or separating tissue, especially for anatomical study :* _____
19. An implement used to facilitate work, especially to a relatively small precision tool used by trained professionals. Syn. tool. : _____
20. The process of treating (specimens for the microscope) with a reagent or dye that makes visible certain structures without affecting others. : _____
21. A substance used to color materials or substances, such as cells, tissues, and microorganisms. : _____

[1] Adapted from : *Merck Manual Home Edition*

[2] NB. *Les définitions numérotées en* ***GRAS*** *correspondent aux mots de vocabulaire susceptibles de figurer dans une interrogation, et qu'il faut donc réviser. Les autres définitions sont données seulement pour faciliter la compréhension du texte, ou bien pour vérifier la prononciation en cours.*

**22.** *The branch of biology that deals with the formation, structure, and activity of macromolecules essential to life, such as nucleic acids, and especially with their role in cell replication and the transmission of genetic information. :* _____

**23.** *1. Relating to the study of the chemical substances and vital processes occurring in living organisms. 2. Relating to the chemical composition of a particular living system or biological substance. :* _____

24. Attracting notice as being unusual or extraordinary. In such a way as to elicit comment because it is unusual or extraordinary : _____

**25.** *Union of male and female gametes to form the diploid zygote, leading to development of a new individual. :* _____

**26.** *A coming into being; act or process of being born. :* _____

**27.** *The speed or frequency with which an event or circumstance occurs per unit of time, population, or other standard of comparison. :* _____

28. To become slow or slower. : _____

29. The time or state of being a child. The period of life between infancy and puberty. : _____

30. Up to or at a specified time; yet. All the same; nevertheless. : _____

**31.** *The process of growing. The progressive increase in size of a living thing, especially the process by which the body reaches its point of complete physical development. :* _____

32. To take place. : _____

33. Beyond in time; later than or after : _____

34. The period of time after physical growth has stopped and an organism is fully developed : _____

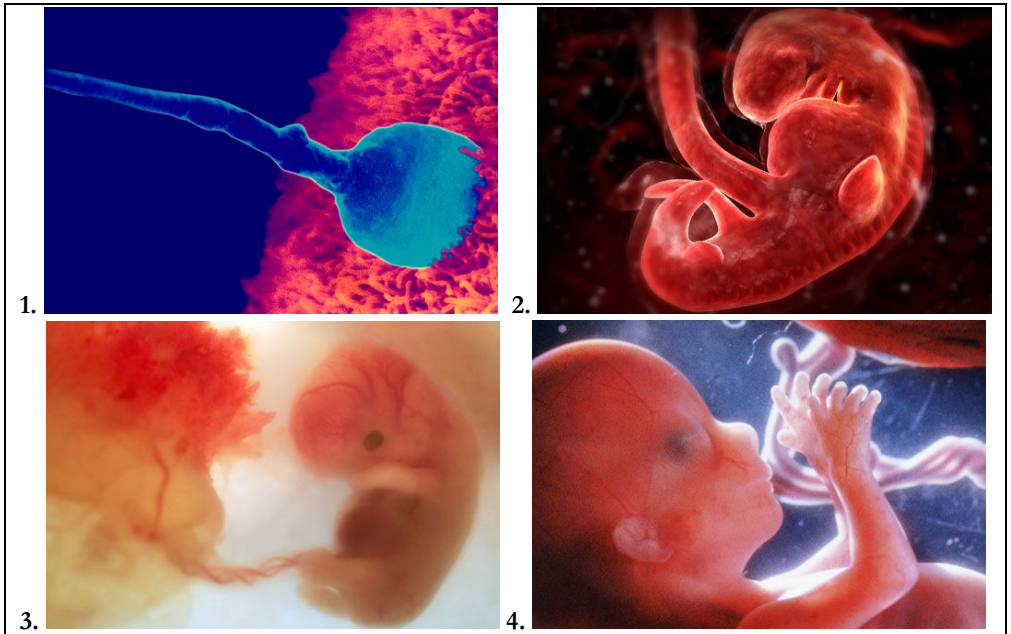
35. To participate in personally; undergo. To live through, to undergo an emotional sensation : _____

**36.** *The process of growing old or maturing. The gradual changes in the structure of a mature organism that occur normally over time and increase the probability of death. :* _____

The human body is a complex, highly organized structure made up of unique cells that* work together to accomplish the specific functions necessary for sustaining life. The biology of the human body includes structure (anatomy) and function (physiology).

Anatomy is organized by levels, from the smallest components of cells to the largest organs and their* relationships to other organs. Gross anatomy is the study of the body's organs as seen* with the naked eye during visual inspection and when the body is cut open for examination (dissection). Cellular anatomy is the study of cells and their components, which* can be observed only with the use of special instruments such as microscopes and special techniques like staining with specific dyes (e.g. iodine to show starch or glycogen, or methylene blue to reveal cell nuclei). Molecular anatomy (often called molecular biology) is the study of the smallest components of cells at the biochemical level.

Anatomy and physiology change remarkably between fertilization and birth. After birth, the rate of anatomic and physiologic changes slows, but childhood is still a time of remarkable growth and development. Some anatomic changes occur past adulthood, but the physiologic changes in the body's cells and organs are what contribute most to what we experience as aging.




**1. Fertilization (conception) :** *If a sperm cell meets and penetrates an egg, it will fertilize it (conception) At this moment, the genetic make-up is complete, including the sex of the infant. Within about three days after conception, the fertilized egg, which is dividing rapidly into many cells (cleavage), passes through the fallopian tube into the uterus where it attaches to the uterine wall (implantation).* **2. Fetal Development at 4 Weeks :** *The structures that eventually form the face and neck are becoming evident. The heart and blood vessels continue to develop. And the lungs, stomach, and liver start to develop.* **3. Fetal Development at 8 Weeks :** *The baby is now almost an inch in size (2.5 cm). Eyelids and ears are forming and even the tip of the nose is visible. The arms and legs are well formed. The fingers and toes grow longer and more distinct.***4. Fetal Development at 16 Weeks :** *The fetus now measures about 4.3 to 4.6 inches*

*(11.5 cm) and weighs about 2.8 ounces (80 g.). The baby's eyes can blink and the heart and blood vessels are fully formed. The baby's fingers and toes have fingerprints.*[3]

**Stages of Life :**

| Age (years) | Stage of development |
|---|---|
| (Prenatal) | *Pregnancy (gestation), Fetal development* |
| 0 | *Birth* |
| 0-2 | *Infancy* |
| 2-12 | *Childhood (youth)* |
| 12-18 | *Puberty (adolescence)* |
| 18-40 | *Adulthood* |
| 40-65 | *Middle age* |
| 65-Death | *Old age* |

***What do the following words refer to ?**

a. *"that* work together to accomplish"* → "That" refers to…
b. *"and their* relationships to other organs"* → "Their" refers to…
c. *"the study … as* seen with the naked eye"* → "As seen with the naked eye" refers to …
d. *"and their* components"* → "Their" refers to …
e. *"which* can be observed only with the use of special techniques"* → "Which" refers to …

**True or False ? (Be ready to explain and discuss).**

*i. Another name for "cellular anatomy" is histology.*
*ii. To investigate the body's organs, doctors mainly practice visual inspection and dissection.*

**Questions : (1) Ask questions about the following points, then (2) let someone else answer in a complete sentence (3) using as many of the suggested terms as possible.**

WHAT – HOW

1. **Techniques *that* gross anatomy involves. *The difference between* the techniques of cellular anatomy and gross anatomy. →** …

studying – by simple – and dissection – whereas – observation – and – such as – required for – and cellular – a.k.a.[4] – anatomy

*Gross anatomy …*

2. **Make up one original question of your own relating to this section of the article, and write a 2-3 line answer to it using information either from the article or from outside sources.**

*For example :*
*–Is the study of anatomy an important part of medicine ? Why ?*
*–How are anatomy and physiology related ? Give some examples …*
*–etc.*

[3] http://www.webmd.com/baby/slideshow-fetal-development
[4] NB. a.k.a. = also known as / *appelé aussi, connu aussi sous le nom de…, alias…*

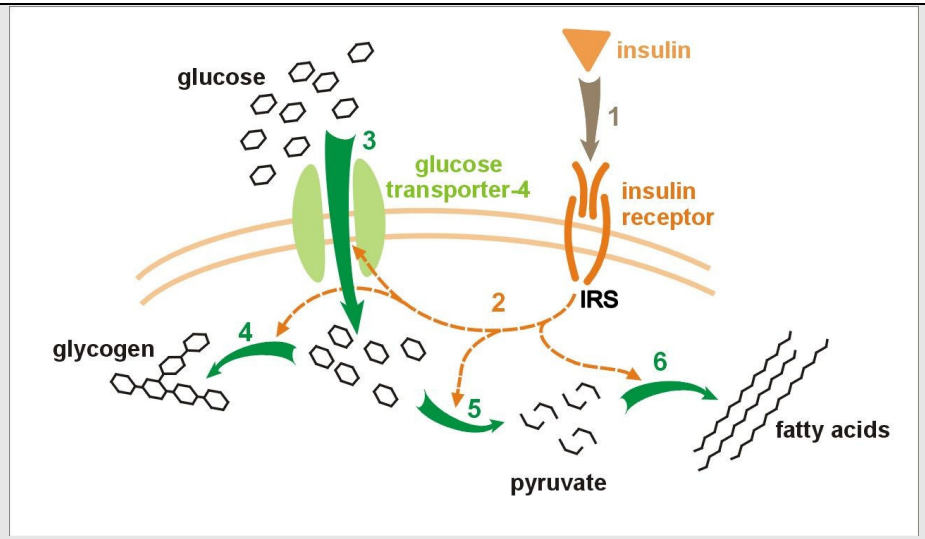
**Cells**

**VOCABULARY *in context*. Match the following definitions with words from the reading passage below, then give an appropriate translation in French.**

***37.*** *Be composed of :* _____
38. Individual, particular, characteristic : _____
39. Physical dimensions, proportions : _____
40. To a certain degree : _____
***41.*** *A female gamete; an ovum :* _____
42. All that is contained in a volume; everything inside : _____
43. To join; connect : _____
***44.*** *Biochemistry. A molecular structure or site on the surface or interior of a cell that binds with substances such as hormones, antigens, drugs, or neurotransmitters :* _____
***45.*** *To act in response to or under the influence of a stimulus :* _____
***46.*** *1. A substance used in the diagnosis, treatment, or prevention of a disease or as a component of a medication. 2. A chemical substance, such as a narcotic or hallucinogen, that affects the central nervous system, causing changes in behavior and often addiction :* _____
***47.*** *To receive; include Syn. to absorb :* _____
48. To permit; to make possible : _____
49. To come into existence; produce an effect Syn. happen, occur : _____
50. Inside the limits; in the interior; internally : _____
51. One of the parts or spaces into which an area is subdivided; A section :_____
***52.*** *To expend; use :* _____
***53.*** *To begin and carry through to completion; do :* _____
***54.*** *The process by which a cell divides to form two daughter cells :* _____
***55.*** *1. Sugar in the form of glucose in the blood. 2. The concentration of glucose in the blood, measured in milligrams of glucose per 100 milliliters of blood. :* _____
***56.*** *A differentiated structure within a cell, such as a mitochondrion, vacuole, or chloroplast, that performs a specific function :* _____

Often thought* of as the smallest unit of living organisms, a cell is made up of many even smaller parts, each* with its* own function. Human cells vary in size, but all* are quite small. The largest*, a fertilized egg, is too small to be seen with the naked eye (< 0.2 mm).

Human cells have a **membrane** that holds the contents together. However, this membrane is not just a sac. It* has **receptors** that identify the cell to other cells. Receptors also react to substances produced in the body and to drugs taken into the body, selectively allowing these* substances or drugs to enter and leave the cell. Reactions that take place at the receptors often alter and control a cell's functions. An example of this* is when insulin binds to receptors on the cell membrane to maintain appropriate blood sugar levels and to allow glucose to enter cells.




**Effect of insulin on glucose uptake and metabolism**. *There are special transporter proteins in cell membranes through which glucose from the blood can enter a cell. These transporters are, indirectly, under insulin control in certain body cell types (e.g., muscle cells). Activation of insulin receptors leads to internal cellular mechanisms that directly affect glucose uptake by regulating the number and operation of protein molecules in the cell membrane that transport glucose into the cell. Insulin binds to its receptor (1) activating an Insulin Receptor Substrate (IRS) an intracellular protein which in turn starts various protein activation cascades (2). These include : translocation of Glut-4 transporter to the plasma membrane and influx of glucose (3), glycogen synthesis (4), glycolysis (breakdown of glucose to release energy in the form of ATP) (5) and fatty acid synthesis (6). Two types of tissues are most strongly influenced by insulin, as far as the stimulation of glucose uptake is concerned: muscle cells (myocytes) and fat cells (adipocytes). There are some tissues, such as the brain and the liver, that do not require insulin for efficient uptake of glucose. This is because these cells don't use Glut-4, but rather, another transporter that is not insulin-dependent. In the liver, insulin activates several enzymes that are directly involved in glycogen synthesis, including glycogen synthase and promotes synthesis of fatty acids when the liver is saturated with glycogen.*[5]

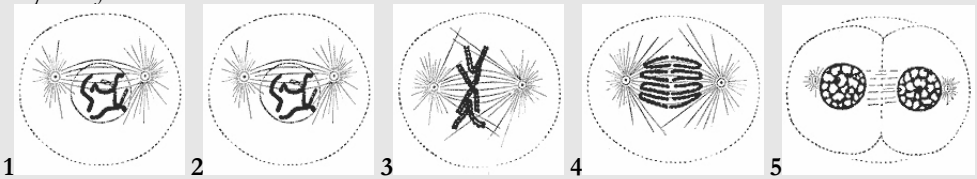
Within the cell membrane are two major compartments, the **cytoplasm** and the **nucleus**. The cytoplasm contains structures that consume and transform energy and perform the cell's functions. The nucleus contains the cell's genetic material and the structures that control cell division and reproduction. Inside every

[5] http://arbl.cvmbs.colostate.edu/hbooks/pathphys/endocrine/pancreas/insulin_phys.html

cell are mitochondria. **Mitochondria** are tiny structures (organelles) that provide the cell with energy.

**Cell division (Mitosis)**

**S-phase (Interphase, *not shown*) :** *DNA synthesis or replication occurs. At the beginning of the S stage, each chromosome is composed of one coiled DNA double helix molecule, which is called a chromatid. At the end of this stage, each chromosome has two identical DNA double helix molecules, and therefore is composed of two sister chromatids.*




**1. Prophase :** *Chromatin condenses together into chromosomes. The replicated chromosomes have two sister chromatids.*

**2. Prometaphase :** *Microtubules which have radiated from the two centrosomes located at the opposite poles of the cells invade the nuclear space as the nuclear membrane dissolves.*

**3. Metaphase :** *The chromatids line up along the equator of the cell and are attached to spindle fibres, which begin to drag the chromatids apart.*

**4. Anaphase :** *The proteins that bind sister chromatids together are cleaved, allowing them to separate.*

**5. Telophase :** *A new nuclear envelope forms around each set of separated sister chromosomes. Both sets of chromosomes unfold back into chromatin.*

**Cytokinesis :** *The membrane cleaves to form two separate cells. Each daughter cell has a complete copy of the genome of its parent cell.*

***What do the following words refer to ?**

f. *"thought* of as the smallest unit"* → "Thought of as" describes …
g. *"each* with its* own function"* → "Each" and "its" refer to …
h. *"all* are quite small"* → "All" refers to …
i. *"The largest*, a fertilized egg…"* → "The largest" means the largest …
j. *"It* has receptors that identify the cell"* → "It" refers to …
k. *"selectively allowing these* substances … to enter and leave the cell"* → "These substances" refers to …
l. *"An example of this*"* → "This" refers to…

**True or False ? (Be ready to explain and discuss).**

*iii. Cells are the smallest units of living organisms.*
*iv. The cell's genetic material is contained in the nucleus in the form of chromosomes.*
*v. Substances such as hormones or drugs enter or leave the cell through receptors*[6]

**Questions : (1) Ask questions about the following points, then (2) let someone else answer in a complete sentence (3) using as many of the suggested terms as possible.**

WHAT – WHERE

**3. The functions *of* the cell membrane.** → …

not only – together – but also – contains – surface – other cells – and helps – functions – thanks to[7] – which – selectively – or – and leave

*The cell membrane …*

**4. *The location of* the cellular structures that control energy consumption, cell division and other major functions.** → …

including – and – of energy, – out – by – contained within – while[8] – and – controlled – those contained – in which – also

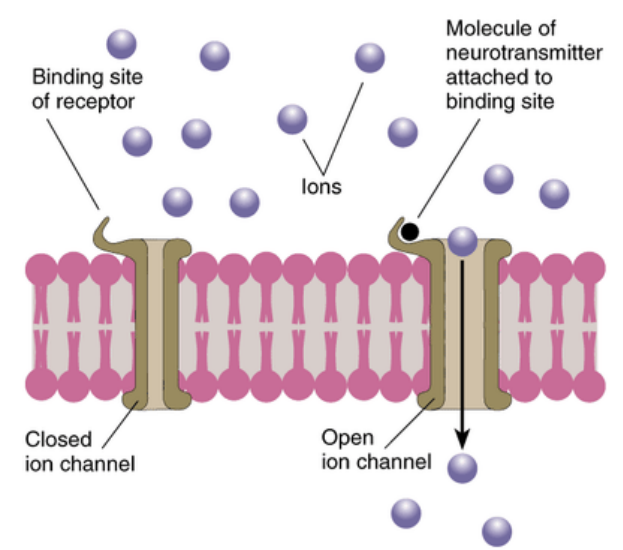
*The cell's primary functions, …*

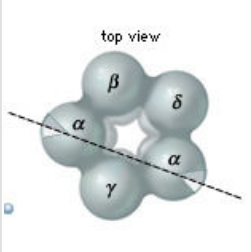
**5. Make up one original question of your own relating to this section of the article, and write a 2-3 line answer to it using information either from the article or from outside sources.**

[6] Cf. infra : *Receptors : Ionotropic, Metabotropic*
[7] NB. thanks to = because of, on account of / *grâce à*
[8] NB. while = 1. *pendant que*, 2. *tandis que*

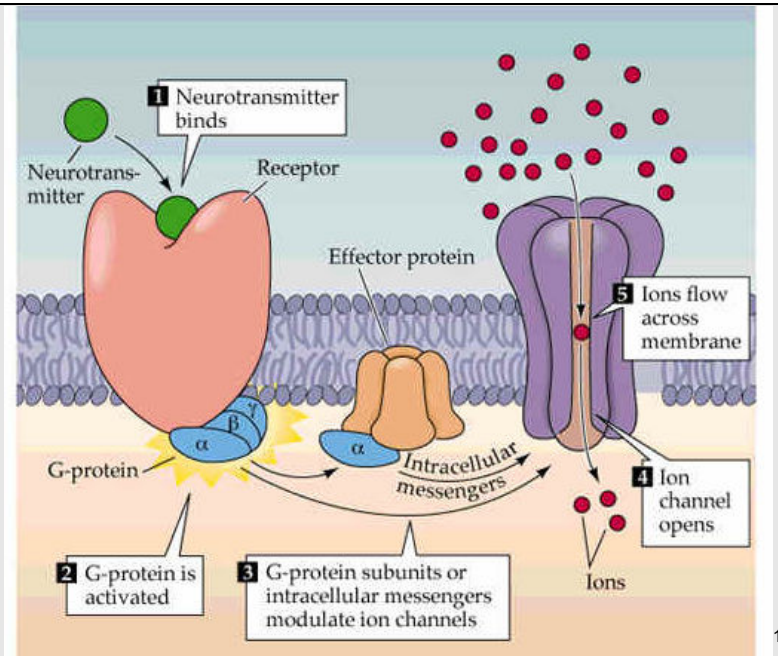
**Receptors** *exist in different types, depending on their ligand (i.e. the effector molecule, such as a neurotransmitter, hormone or drug, that binds to a site on a macromolecule's surface) and function.*

*Receptors typically respond only to a specific molecule or ligand. Many hormone receptors and neurotransmitter receptors are transmembrane proteins, embedded in the lipid bilayer of cell membranes, which allow the activation of signal transduction pathways in response to the activation by the binding molecule, or ligand.*




**Ionotropic receptor[9] :** *The Ligand-gated ion channels, also referred to as LGICs, or ionotropic receptors, are opened in response to binding of a chemical messenger. The prototypic ligand-gated ion channel is the nicotinic acetylcholine receptor, found in the central nervous system and the peripheral nervous system as well as in the neuromuscular junctions of somatic muscles. It consists of a pentamer of protein subunits, with two binding sites for acetylcholine, which alter the receptor's configuration and cause an internal pore to open. This pore allows $Na^+$ ions to flow down into the cell. With a sufficient number of channels opening, the intracellular $Na^+$ concentration rises to the point at which the positive charge within the cell is enough to depolarize the membrane, and an action potential is initiated.*

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**Metabotropic[11] receptors** *do not form an ion channel pore, but are coupled to G proteins and affect the cell indirectly through enzymes which control ion channels present elsewhere in the membrane. Signal* ***transduction*** *refers to the process by which a cell converts one kind of signal or stimulus into another. Upon binding to its receptor, a ligand initiates transmission of a signal across the plasma membrane by inducing a change in the shape or conformation of the intercellular part of the receptor. Muscarinic acetylcholine receptors (e.g. M2 receptors which slow the rate of contraction in the heart) are one type of metabotropic receptor.*

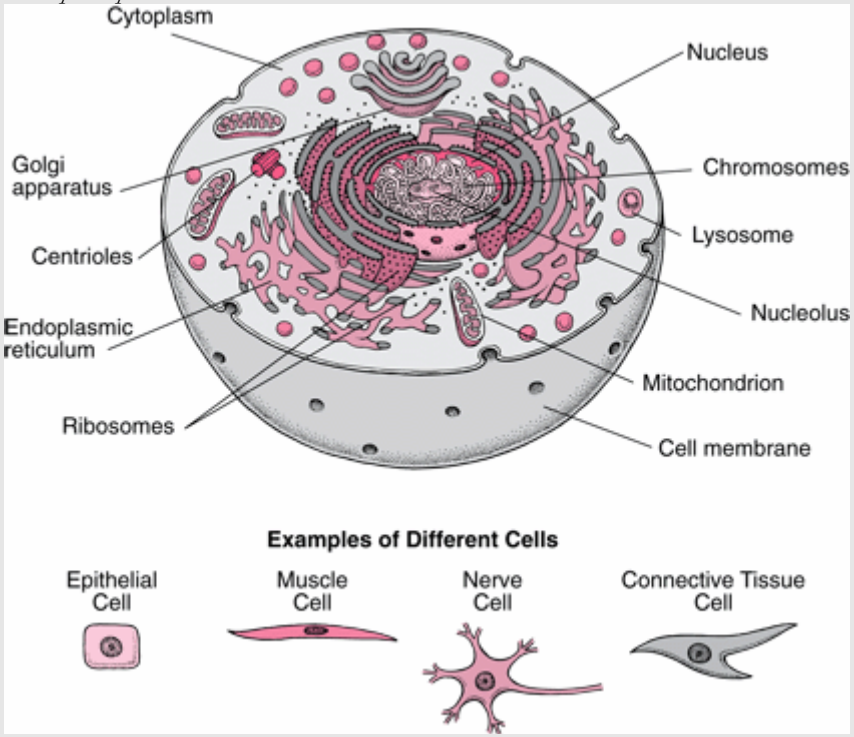
[9] Image source(s) : http://homepage.psy.utexas.edu/homepage/class/Psy332/Salinas/Neurotransmission/Neurotrans.html ; http://cache.eb.com/eb/image?id=54741

[10] http ://www.arts.uwaterloo.ca/~bfleming/psych261/lec4se2.jpg

[11] Source(s) : adapted from http ://en.wikipedia.org ; "Receptor (biochemistry)", "Signal transduction"

**Inside a Cell**

*Although there are different types of cells, most cells have the same components. A cell consists of a* ***nucleus*** *and* ***cytoplasm*** *and is contained within the cell* ***membrane****, which regulates what passes in and out. The nucleus contains* ***chromosomes****, which are the cell's genetic material, and a* ***nucleolus****, which produces ribosomes.* ***Ribosomes*** *produce proteins, which are packaged by the* ***Golgi apparatus*** *so that they can leave the cell. The cytoplasm consists of a fluid material and* ***organelles****, which could be considered the cell's "organs". The* ***endoplasmic reticulum*** *transports materials within the cell.* ***Mitochondria*** *generate energy for the cell's activities.* ***Lysosomes*** *contain enzymes that can break down particles entering the cell.* ***Centrioles*** *participate in cell division.*




**Match the terms in the image above with their definitions below :**

***i.*** *The semipermeable membrane that encloses the cytoplasm of a cell :* _____

***ii.*** *Two cylindrical cellular structures that are composed of nine triplet microtubules and form the asters during mitosis :* _____

***iii.*** *A threadlike linear strand of DNA and associated proteins in the nucleus that carries the genes and functions in the transmission of hereditary information :* _____

***iv.*** *Tissue arising chiefly from the embryonic mesoderm that is characterized by a highly vascular matrix and includes collagenous, elastic, and reticular fibers, adipose tissue, cartilage, and bone. It forms the supporting and connecting structures of the body :* _____

***v.*** *The complex, semifluid, translucent substance outside the nucleus of a cell :* _____

***vi.*** *A membrane network within the cytoplasm of cells involved in the synthesis, modification, and transport of cellular materials :* _____

***vii.*** *Cells separated by very little intercellular substance and forming the covering of most internal and external surfaces of the body and its organs :* _____

***viii.*** *A network of stacked membranous vesicles that functions in the formation of secretions within the cell :* _____

***ix.*** *A membrane-bound organelle in the cytoplasm containing various hydrolytic enzymes that function in intracellular digestion :* _____

***x.*** *A spherical or elongated organelle in the cytoplasm, containing genetic material and many enzymes important for cell metabolism, including those responsible for the conversion of food to usable energy :* _____

***xi.*** *A cylindrical, multinucleate cell composed of numerous myofibrils that contracts when stimulated :* _____

***xii.*** *The impulse-conducting cells that constitute the brain, spinal column, and nerves, consisting of a nucleated cell body with one or more dendrites and a single axon :* _____

***xiii.*** *A small, typically round, granular body composed of protein and RNA in the nucleus of a cell, usually associated with a specific chromosomal site and involved in ribosomal RNA synthesis and the formation of ribosomes :* _____

***xiv.*** *A large, membrane-bound, usually spherical protoplasmic structure, containing the cell's hereditary material and controlling its metabolism, growth, and reproduction :* _____

***xv.*** *A minute, round particle composed of RNA and protein found in the cytoplasm of living cells and active in the synthesis of proteins :* _____

**Cells** *(continued)*

**VOCABULARY *in context*. Match the following definitions with words from the reading passage below, then give an appropriate translation in French.**

57. For example : _____
58. *The fluid consisting of plasma, erythrocytes, leukocyte, corpuscles and platelets that is circulated by the heart through the vascular system, carrying oxygen and nutrients to and waste materials away from all body tissues :* _____
59. Without physical restriction; at liberty : _____
60. Solidly, durably, securely : _____
61. *The membranous tissue forming the external covering of the body and consisting of the epidermis and dermis :* _____
62. Rapidly; in a short time : _____
63. *Cordlike bundles of fibers made up of neurons through which sensory stimuli and motor impulses pass between the brain or other parts of the central nervous system and the eyes, glands, muscles, and other parts of the body :* _____
64. Functioning as a gland : _____
65. First in importance; principal : _____
66. *A substance, usually a peptide or steroid, produced by one tissue and conveyed by the bloodstream to another to effect physiological activity, such as growth or metabolism :* _____
67. *Numerous proteins functioning as biochemical catalysts :* _____
68. *Two milk-secreting, glandular organs on the chest of a woman; the human mammary gland :* _____
69. *A long, irregularly shaped gland, lying behind the stomach, that secretes enzymes into the duodenum and insulin, glucagon, and somatostatin into the bloodstream :* _____
70. *A polypeptide hormone functioning in the regulation of the metabolism of carbohydrates and fats, especially the conversion of glucose to glycogen, which lowers the blood glucose level :* _____
71. *A covering or coating for an inside surface :* _____
72. *Two spongy, saclike respiratory organs occupying the chest cavity together with the heart and functioning to remove carbon dioxide from the blood and provide it with oxygen :* _____
73. *The viscous, slippery substance that consists chiefly of mucin, water, cells, and inorganic salts and is secreted as a protective lubricant coating by cells and glands of the mucous membranes :* _____
74. *The cavity lying at the upper end of the alimentary canal, bounded on the outside by the lips and inside by the oropharynx and containing the tongue, gums, and teeth :* _____
75. *The watery mixture of secretions from the salivary and oral mucous glands that lubricates chewed food, moistens the oral walls, and contains ptyalin :* _____
76. To serve as a medium; transmit : _____
77. *The electrochemical transmission of a signal that produces an excitatory or inhibitory response at a target tissue, such as a muscle or another nerve :* _____
78. *The portion of the nervous system consisting of the brain and spinal cord, to which sensory impulses are transmitted and from which motor impulses pass out, and which supervises and coordinates the activity of the entire nervous system :* _____
79. *The portion of the central nervous system that is enclosed within the cranium, continuous with the spinal cord, and composed of gray matter and white matter. It is the primary center for the regulation and control of bodily activities, receiving and interpreting sensory impulses, and transmitting information to the muscles and body organs. It is also the seat of consciousness, thought, memory, and emotion :* _____
80. *The thick, whitish cord of nerve tissue that extends from the medulla oblongata down through the spinal column and from which the spinal nerves branch off to various parts of the body :* _____

The body is composed of many different types of cells, each* with its* own structure and function. Some*, such as white blood cells, move freely, unattached to other cells. Others*, such as muscle cells, are firmly attached one to another*. Some cells, such as skin cells, divide and reproduce quickly; others, such as nerve cells, do not divide or reproduce except under unusual circumstances. Some cells, especially glandular cells, have as their* primary function the production of complex substances, such as a hormone or an enzyme. For example, some cells in the breast produce milk, some* in the pancreas produce insulin, some* in the lining of the lungs produce mucus, and some* in the mouth produce saliva. Other cells have primary functions that* are not related to the production of substances – for example, muscle cells contract, allowing movement. Nerve cells generate and conduct electrical impulses, allowing communication between the central nervous system (brain and spinal cord) and the rest of the body.

**Glandular organs :**

| Endocrine | *product(s)* | Exocrine | *product(s)* |
|---|---|---|---|
| • **Hypothalamus** | *Thyrotropin-releasing hormone, Dopamine, Growth hormone-releasing hormone, Somatostatin, etc.* | • **Sweat (a.k.a. *sudoriferous*) glands** | *sweat (perspiration)* |
| • **Pituitary Gland** | *Growth hormone, Thyroid-stimulating hormone, Follicle-stimulating hormone, Luteinizing hormone, etc.* | • **Salivary glands** | *saliva* |
| • **Thyroid** | *Thyroxine, Calcitonin* | • **Mammary glands** | *milk* |
| • **Stomach** | *Gastrin, Ghrelin, Neuropeptide Y* | • **Stomach** | *pepsin, hydrochloric acid, mucus* |
| • **Duodenum** | *Secretin, Cholecystokinin* | | |
| • **Liver** | *Insulin-like growth factor, Angiotensin, Thrombopoietin* | • **Liver** | *bile* |
| • **Pancreas** | *Insulin, Glucagon* | • **Pancreas** | *trypsin, lipase, amylase* |
| • **Kidney** | *Renin, Erythropoietin* | | |
| • **Adrenal glands** | *Adrenaline* | | |

***What do the following words refer to ?**

m. *"each* with its* own structure and function"* → "Each" and "its" refer to …

n. *"Some*, such as white blood cells, move freely… Others*, such as muscle cells…"* → "Some" and "others" refer to …

o. *"firmly attached one to another*"* → "One" and "another" refer to …

p. *"as their* primary function"* → "Their" refers to …

q. *"some* in the pancreas produce insulin, some* in the lining of the lungs … and some* in the mouth…"* → "Some" refers to …

r. *"that* are not related to the production of substances"* → "That" refers to …

**True or False ? (Be ready to explain and discuss).**

*vi. Like white blood cells, red blood cells move freely within the body unattached to other cells.*

*vii. Endocrine glands secrete substances within the body, whereas exocrine glands secrete substances outside the body.*

**Questions : (1) Ask questions about the following points, then (2) let someone else answer in a complete sentence (3) using as many of the suggested terms as possible.**

HOW (×2) – WHY – WHERE – WHAT SORTS OF

6. ***The difference between*** **white blood cells and other types of cells.** ***The reason for this.*** **→ …**

cells – to other – thus[12] – freely – within – so as to[13] – pathogenic

*Unlike …*

7. ***The location of*** **glandular cells.** ***Examples of products*** **of glandular cells. → …**

wherever[14] – such as – or – secreted – e.g.[15] in – where milk – which – insulin – of the lungs – protected – or – where – secreted

*Glandular cells …*

8. ***Means by which the*** **CNS communicates with other parts of the body. → …**

the rest – by means[16] of – which – to other – by – cells

*The CNS …*

9. **Make up one original question of your own relating to this section of the article, and write a 2-3 line answer to it using information either from the article or from outside sources.**

[12] NB. thus = 1. In this manner, 2. For this reason, consequently / *ainsi*
[13] NB. so as to = in order to / *afin de* (cf. so that)
[14] NB. wherever = in every place where (something happens…) / *partout où…*
[15] NB. e.g. = "exempli gratia" (lat.), for example / *par exemple*
[16] NB. a means = *un moyen*

**Tissues**

**VOCABULARY *in context*. Match the following definitions with words from the reading passage below, then give an appropriate translation in French.**

81. Associated; Connected by common origin etc. : _____
82. *To make a reference (by a specific name) :* _____
83. *Biology. An aggregation of morphologically similar cells and associated intercellular matter acting together to perform one or more specific functions in the body. There are four basic types : muscle, nerve, epidermal, and connective :* _____
84. *Exactly equal; Having such a close similarity or resemblance as to be essentially equal or interchangeable :* _____
85. *To function; operate :* _____
86. *A portion, piece, or segment that is representative of a whole; a specimen :* _____
87. *To move from a place; to take away; to extract :* _____
88. *An optical instrument that uses a lens or a combination of lenses to produce magnified images :* _____
89. *The removal and examination of a sample of tissue from a living body for diagnostic purposes :* _____
90. Even if; despite the fact that : _____
91. *Membranous tissue composed of one or more layers of cells separated by very little intercellular substance and forming the covering of most internal and external surfaces of the body and its organs. :* _____
92. *To cover the inner surface :* _____
93. *A material covering a surface; a single thickness, usually horizontal ; a stratum :* _____
94. *a sheet of amorphous extracellular material upon which epithelial cells rest, interposed between the cellular elements and the underlying connective layer :* _____
95. *A cell, a group of cells, or an organ that produces a secretion for use elsewhere in the body or in a body cavity or for elimination from the body. :* _____
96. *Tissue arising chiefly from the embryonic mesoderm that is characterized by a highly vascular matrix and includes collagenous, elastic, and reticular fibers, adipose tissue, cartilage, and bone. It forms the supporting and connecting structures of the body :* _____
97. Strong and resilient : _____
98. *To connect; to cause to cohere or stick together :* _____
99. Determined by conditions or circumstances that follow. cf. according to : _____
100. *A band of tough, fibrous, inelastic tissue made chiefly of collagen that connects a muscle to a bone :* _____
101. *A strong, flexible connective tissue that is found in various parts of the body, including the joints, the outer ear, and the larynx. :* _____
102. To make available; supply; give : _____
103. *The region of the digestive and respiratory tracts extending from the back of the mouth (nasopharynx) to just below the larynx, including the pharynx, the larynx, and related structures. :* _____
104. *The dense, semirigid, porous, calcified connective tissue forming the major portion of the skeleton, consisting of a dense organic matrix and an inorganic, mineral component. :* _____
105. *The specialized tissue making up the central and peripheral nervous systems, consisting of neurons with their processes, other specialized or supporting cells, and extracellular material. :* _____
106. *The impulse-conducting cells that constitute the brain, spinal column, and nerves, consisting of a nucleated cell body with one or more dendrites and a single axon. Also called nerve cell :* _____
107. *The supportive tissue of the nervous system, including the network of branched cells in the central nervous system (astrocytes, microglia, and oligodendrocytes) and the supporting cells of the peripheral nervous system (Schwann cells and satellite cells). :* _____
108. *A kind of tissue consisting predominantly of contractile cells, causing movement of body parts and organs, and classified as skeletal, cardiac, or smooth. :* _____
109. *A usually voluntary muscle made up of elongated, multinucleated, transversely striated muscle fibers, connected at either or both ends to a bone. :* _____
110. *The internal structure composed of bone and cartilage that protects and supports the soft organs, tissues, and other parts of the body :* _____
111. *Muscle tissue that contracts without conscious control, having the form of thin layers or sheets made up of spindle-shaped, unstriated cells with single nuclei and found in the walls of the internal organs, such as the stomach, intestine, bladder, and blood vessels :* _____
112. *The specialized striated muscle tissue of the heart; the myocardium. :* _____
113. *A structure within the body bounding, limiting or enclosing a space, cavity, chamber, or other anatomical unit. :* _____
114. *1. A useless or worthless byproduct 2. The undigested residue of food eliminated from the body; excrement :* _____
115. *The clear, yellowish fluid portion of blood, lymph, or intramuscular fluid in which cells are suspended. :* _____
116. *A disk-shaped, biconcave cell in the blood that contains hemoglobin, lacks a nucleus, and transports oxygen and carbon dioxide to and from the tissues. :* _____
117. *Any of the colorless cells in the blood that have a nucleus and cytoplasm and help protect the body from infection and disease. :* _____

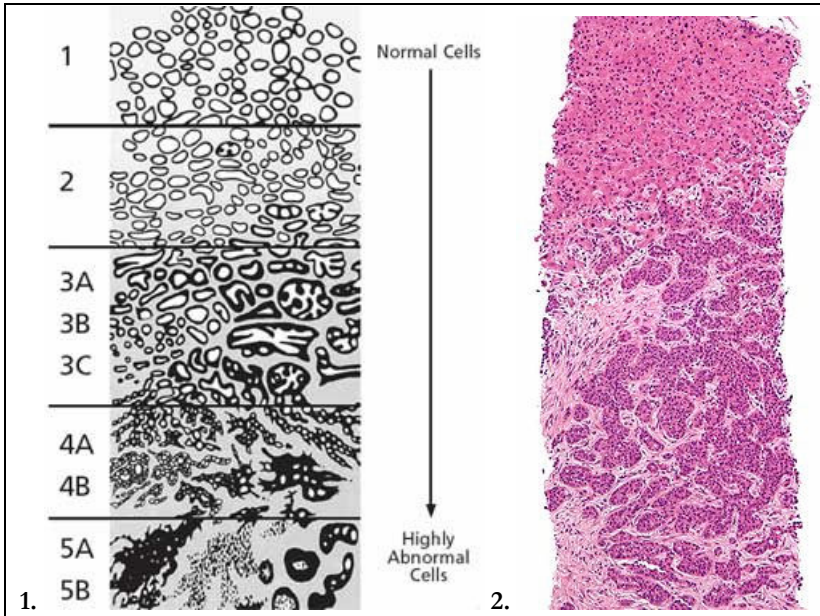
***118.*** *A minute, irregularly shaped, disklike cytoplasmic body found in blood plasma that promotes blood clotting and has no definite nucleus, no DNA, and no hemoglobin. : _____*

***119.*** *A clear, watery, sometimes faintly yellowish fluid derived from body tissues that contains white blood cells and circulates throughout the body, returning to the venous bloodstream through the thoracic duct, acting to remove bacteria and certain proteins from the tissues, transport fat from the small intestine, and supply mature lymphocytes to the blood. : _____*

***120.*** *Any of the small, oval or round bodies, located along the lymphatic vessels, that supply lymphocytes to the bloodstream and remove bacteria and foreign particles from the lymph. : _____*

***121.*** *The integrated body system of organs, tissues, cells, and cell products that differentiates self from nonself and neutralizes potentially pathogenic organisms or substances. : _____*

Related cells joined together are collectively referred to as a **tissue**. The cells in a tissue are not identical, but they* work together to accomplish specific functions. A sample of tissue removed for examination under a microscope (biopsy) contains many types of cells, even though a doctor may be interested in only one specific type.




**Biopsies 1. Prostate Cancer Stages (Gleason score)** *The Gleason Score reflects how abnormal prostate cells look under the microscope. Grading is done by a pathologist, who examines tissue taken from a biopsy. Abnormal-looking cells tend to grow and spread more quickly.*[17] **2. Micrograph of a liver core needle biopsy showing cancer.**

The fundamental tissues in the human body are epithelial, connective, nerve, and muscle tissue. Blood and lymph are commonly classified separately as vascular tissue[18].

Epithelium is a tissue composed of cells that line the cavities and surfaces of structures throughout the body. It* lies on top of connective tissue, and the two layers* are separated by a basement membrane[19]. In addition to their protective function, epithelial cells secrete and absorb substances necessary for digestion, lubrication, excretion, and the regulation of metabolic processes. Many glands are also formed from epithelial tissue.

Connective tissue is the tough, often fibrous tissue that binds the body's structures together. It* is present in almost every organ, forming a large part of skin, tendons, and muscles. The characteristics of connective tissue and the types

[17] http://www.coreoncology.com/patient/pc_about_stages.aspx
[18] http://www.answers.com/topic/tissue
[19] http://www.answers.com/main/ntquery?s=epithelial+tissue&gwp=13

of cells it* contains vary, depending on where it is found in the body. Fibroblasts secrete an extracellular matrix rich in collagen and are the most common cells of connective tissue. Tendons are strong bands of collagenous and elastic fibers which connect muscles to bones. Cartilage is a rigid connective tissue which covers the ends of bones in joints and provides structure to the ear, nose and throat. Osseous, or bone, tissue is a mineralized connective tissue formed by cells called osteoblasts that deposit a matrix of collagen, calcium, magnesium, and phosphate.

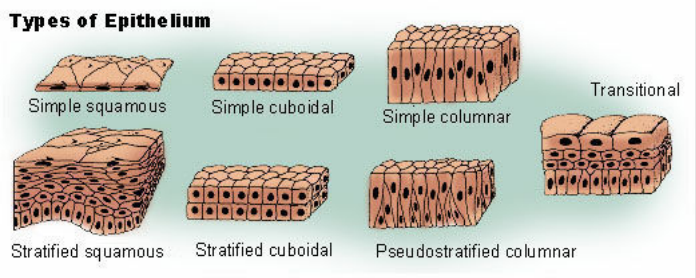
Nervous tissue is the main component of the nervous system – the brain, spinal cord, and nerves. It* contains neurons, or nerve cells, which transmit electro-chemical impulses to other cells, and neuroglial cells which maintain homeostasis, and provide support and protection. Functions of nervous tissue include sensation, control of muscles and glands, homeostasis, and mental activity[20].

Muscle tissue is the contractile tissue that effects the movement of the body. Muscle tissue is classified as striated, smooth, or cardiac[21]. Striated, or skeletal, muscles are responsible for voluntary movement and are attached to the skeleton by tendons, usually in pairs that pull in opposite directions, e.g., the biceps (flexor) and triceps (extensor) that move the forearm at the elbow. Smooth muscle, which lines most of the hollow organs of the body (blood vessels, digestive tract, urinary and genital tract), is not under voluntary control, but is regulated by the autonomic nervous system. Cardiac muscle also known as "myocardium" is striated like skeletal muscle but, like smooth muscle, is controlled involuntarily. It* is found only in the thick walls of the heart.

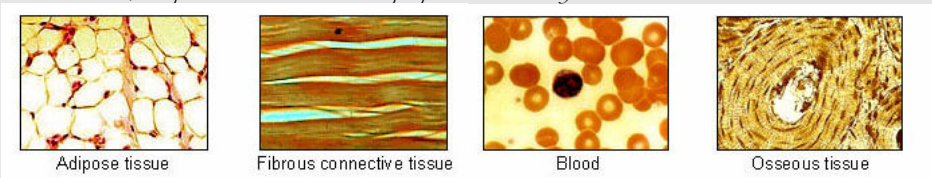
Blood carries oxygen and nutrients to cells throughout the body and removes carbon dioxide and other wastes. Blood consists of plasma, red cells (erythrocytes), white cells (leukocytes) and platelets (thrombocytes). Lymph carries bacteria and other particles to lymph nodes for filtering and contains lymphocytes and macrophages, the primary cells of the immune system[22].

**Types of tissue :** *There are four basic types of tissue.*

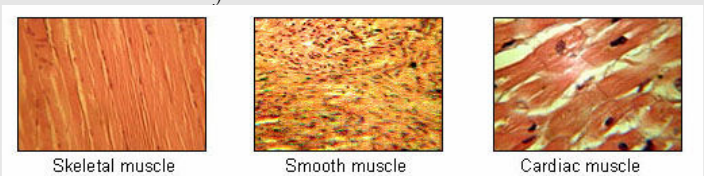
- **Epithelium** – *Tissues composed of layers of cells that cover organ surfaces such as surface of the skin and inner lining of digestive tract : the tissues that serve for protection, secretion, and absorption.*



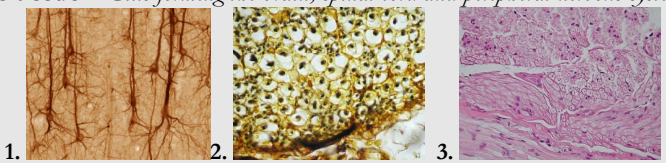

- **Connective tissue** – *Connective tissue holds everything together. These tissues contain extensive extracellular matrix (collagen fibers, proteins and minerals outside the cell). Blood, cartilage, and bone are often considered connective tissues as well, but because they differ so substantially from the other tissues in this class, the phrase "connective tissue proper" is commonly used to exclude those three.*




- **Muscle tissue** – *Muscle cells contain contractile filaments that change the size of the cell. Muscle tissue also is separated into three distinct categories : visceral or smooth muscle, which is found in the inner linings of organs; skeletal muscle, which is found attached to bone in order for mobility to take place; and cardiac muscle which is found in the heart.*




- **Nervous tissue** – *Cells forming the brain, spinal cord and peripheral nervous system.*




***1. Pyramidal neurons in cerebral cortex, 2. Myelinated fibers in the spinal cord, 3. Peripheral nerve cross section***

[20] http://en.wikipedia.org/wiki/Nervous_tissue
[21] http://www.answers.com/main/ntquery?s=muscle+tissue&gwp=13
[22] http://www.answers.com/main/ntquery?s=lymph&gwp=13

***What do the following words refer to ?**

s. *"they* work together to accomplish specific functions"* → "They" refers to …
t. *"It* lies on top of connective tissue"* → "It" refers to …
u. *"the two layers* are separated by a basement membrane"* → "The two layers" refers to …
v. *"It* is present in almost every organ"* → "It" refers to …
w. *"the types of cells it* contains vary"* → "It" refers to …
x. *"It* contains neurons, or nerve cells"* → "It" refers to …
y. *"It* is found only in the thick walls of the heart"* → "It" refers to …

**True or False ? (Be ready to explain and discuss).**

*viii. In total, there are 4 types of tissue in the body.*
*ix. Skeletal muscle is under voluntary nervous control, whereas smooth and cardiac muscles contract without nervous control.*

**Questions : (1) Ask questions about the following points, then (2) let someone else answer in a complete sentence (3) using as many of the suggested terms as possible.**

HOW (2) – WHAT

**10. *The relationship* between cells in a tissue. →** …

together – and – together – specific – thus – and structurally – to one another[23] – even though[24] – identical

*The cells that* …

**11. The functions *of* epithelium and connective tissue. →** …

contain – tissues such as – which provide – and bind – (e.g. – and bones) – moreover – layer – which – protection – and perform

*Almost all* …

**12. The *nervous control and regulation of* muscular contractions. →** …

contracts – in response to – to effect – voluntarily – involuntarily – by

*Whereas skeletal, a.k.a.* …

**13. Make up one original question of your own relating to this section of the article, and write a 2-3 line answer to it using information either from the article or from outside sources.**

[23] NB. one another = *l'un et l'autre, l'un avec l'autre, l'un envers l'autre* (pronom réfléchi)
[24] NB. even though, although, though = *même si, quoique, bien que*

**Organs**

**VOCABULARY *in context*. Match the following definitions with words from the reading passage below, then give an appropriate translation in French.**

**122.** *A differentiated structure (such as an eye, a heart or a kidney) consisting of cells and tissues and performing a specific function :* _____

**123.** *Anatomy. The chambered, muscular organ that pumps blood received from the veins into the arteries, thereby maintaining the flow of blood through the entire circulatory system :* _____

**124.** *Anatomy. A large, reddish-brown, glandular organ located in the upper right portion of the abdominal cavity that secretes bile and is active in the formation of certain blood proteins and in the metabolism of carbohydrates, fats, and proteins :* _____

**125.** *The organ of vision having a lens capable of focusing incident light on an internal photosensitive retina :* _____

**126.** *The enlarged, saclike portion of the alimentary canal, one of the principal organs of digestion, located between the esophagus and the small intestine :* _____

**127.** *To compose, constitute; form :* _____

**128.** *Anatomy. A membranous structure in a hollow organ or passage, as in an artery or a vein, that folds or closes to prevent the return flow of the body fluid passing through it :* _____

**129.** *A quantity measured with respect to another measured quantity; A measure of a part with respect to a whole; a proportion; a speed :* _____

**130.** *A single complete pulsation of the heart :* _____

**131.** *Any of the membranes lining the passages of the body, such as the respiratory and digestive tracts, that open to the outside, the cells of which secrete mucus, which lubricates the membranes and protects against infection. :* _____

**132.** *Either of the two main branches of the trachea that lead to the lungs, where they divide into smaller branches. :* _____

**133.** *Any of the small, thin-walled tubes that branch from a bronchus and end in the alveolar sacs of the lung. :* _____

**134.** *A tiny, thin-walled, capillary-rich sac in the lungs where the exchange of oxygen and carbon dioxide takes place. :* _____

135. To make certain or sure; guarantee : _____

**136.** *The black circular opening in the center of the iris of the eye, through which light passes to the retina :* _____

**137.** *A transparent, biconvex body of the eye between the iris and the vitreous humor that focuses light rays entering through the pupil to form an image on the retina :* _____

**138.** *The transparent, convex, anterior portion of the outer fibrous coat of the eyeball that covers the iris and the pupil and is continuous with the sclera :* _____

**139.** *To perceive; To detect :* _____

140. Though it may seem improbable : _____

**141.** *The soft, fatty, vascular tissue that fills most bone cavities and is the source of red blood cells and many white blood cells. :* _____

**142.** *A small, pear-shaped muscular sac, located under the right lobe of the liver, in which bile secreted by the liver is stored until needed by the body for digestion :* _____

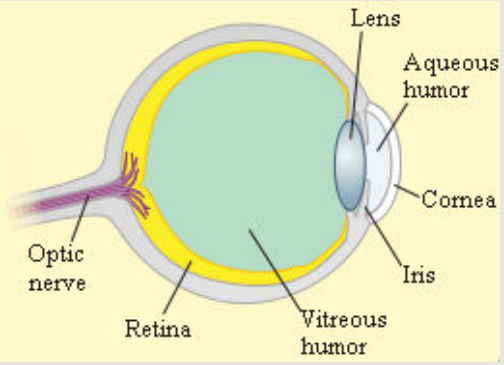
**143.** *A bitter, alkaline, brownish-yellow or greenish-yellow fluid that is secreted by the liver, stored in the gallbladder, and discharged into the duodenum and aids in the emulsification, digestion, and absorption of fats. Also called gall :* _____

144. To force out; To discharge from a receptacle : _____

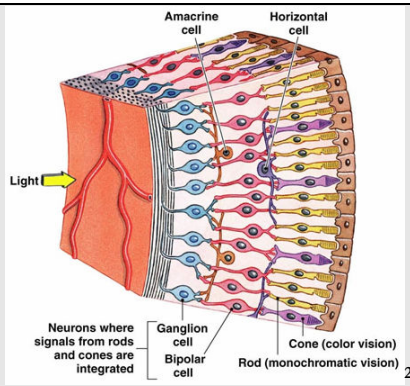
**145.** *On the outside; external :* _____

The body's functions are conducted by organs. Each organ is a recognizable structure – for example, the heart, lungs, liver, eyes, and stomach – that performs specific functions. An organ is made of several types of tissue and therefore several types of cells. For example, the heart contains muscle tissue that contracts to pump blood, fibrous tissue that makes up the heart valves, and special cells that maintain the rate and rhythm of heartbeats. The lungs contain blood vessels, cartilage and mucous glands in the bronchi, smooth muscles to constrict and dilate the bronchioles[25], and millions of tiny alveolar sacs made up of epithelium and surrounded by capillaries to ensure the exchange of oxygen and carbon dioxide. The eye contains muscle cells that open and close the pupil, clear cells that make up the lens and cornea, cells that produce the fluid within the eye, cells that sense light, and nerve cells that conduct impulses to the brain. Bones are organs made up not only of mineralized osseous tissue, but also nerves, cartilage, blood vessels and bone marrow, the specialized vascular tissue which produces blood cells (hematopoiesis). Even an organ as apparently simple as the gallbladder contains different types of cells, such as those* that form a lining resistant to the irritative effects of bile, muscle cells that contract to expel bile, and cells that form the fibrous outer wall holding the sac together.

[25] *Krause's Essential Human Histology for Medical Students*
http://web.mac.com/wjkrause/iWeb/Histology/Blog/F64E794B-35B0-4888-ACA0-83C399943667.html




1.




2.[26]

**1. Cross-sectional diagram of a human eye.** *The* ***cornea*** *and* ***lens*** *help to converge light rays to focus onto the* ***retina****. The lens, behind the* ***iris****, is a convex, springy disk which focuses light onto the retina. The iris, between the lens and the first humour, is a pigmented ring of fibrovascular tissue and muscle fibres. Light must first pass though the centre of the iris, the* ***pupil****. The size of the pupil is actively adjusted to maintain a relatively constant level of light entering the eye. Too much light being let in could damage the retina ; too little light makes sight difficult.* **2. Photoreceptor cells,** *are a specialized type of neuron (nerve cell) found in the retina that is capable of phototransduction. The two classic photoreceptors are* ***rods*** *and* ***cones****, each contributing information used by the visual system to form a representation of the visual world, sight. A third class of photoreceptors, photosensitive ganglion cells, was discovered during the 1990s. There are major functional differences between the rods and cones.* ***Cones*** *are adapted to detect* ***colors****, and function well in bright light;* ***rods*** *are more sensitive, but do not detect color well, being adapted for* ***low light****.*

***What do the following words refer to ?**

z. *"such as those* that form a lining"* → "Those" refers to …

**True or False ? (Be ready to explain and discuss).**

x. *A synonym for the heart is the "myocardium".*

xi. *Blood contains several different types of cells, with different functions, and should therefore be considered as an organ.*

xii. *The light-sensitive cells in the pupil control the amount of light that enters the eye.*

**Questions : (1) Ask questions about the following points, then (2) let someone else answer in a complete sentence (3) using as many of the suggested terms as possible.**

WHAT (×5) – WHICH – HOW (×2)

[26] http://www.colorado.edu/intphys/Class/IPHY3430-200/008sensory.htm

**14. "Organs"** ***and their composition.*** **→ …**

of several – which – recognizable – such as[27] – or – that – specific – (e.g. – )

*Organs …*

**15. The "myocardium".** ***Other tissue types that*** **the heart contains. → …**

tissue – in – which – to – blood – however – also – which – composed – as well as[28] – that control

*The myocardium is the …*

**16.** ***The*** **cells** ***that*** **control the amount (quantity) of light that enters the eye.** ***The mechanism of perception & transmission of*** **images. Other types of cells** ***that*** **the eye contains. → …**

iris – pupil – so as to – amount of – that enters – perceived by – -sensitive – in – and – conducted to – via – In addition, – contains – secrete – as well as – of which – composed

*The muscle cells in …*

**17.** ***The means by which*** **the lungs ensure the exchange gases between the air and blood. → …**

arrives – through – and – then – absorbed – and – exits from – epithelium

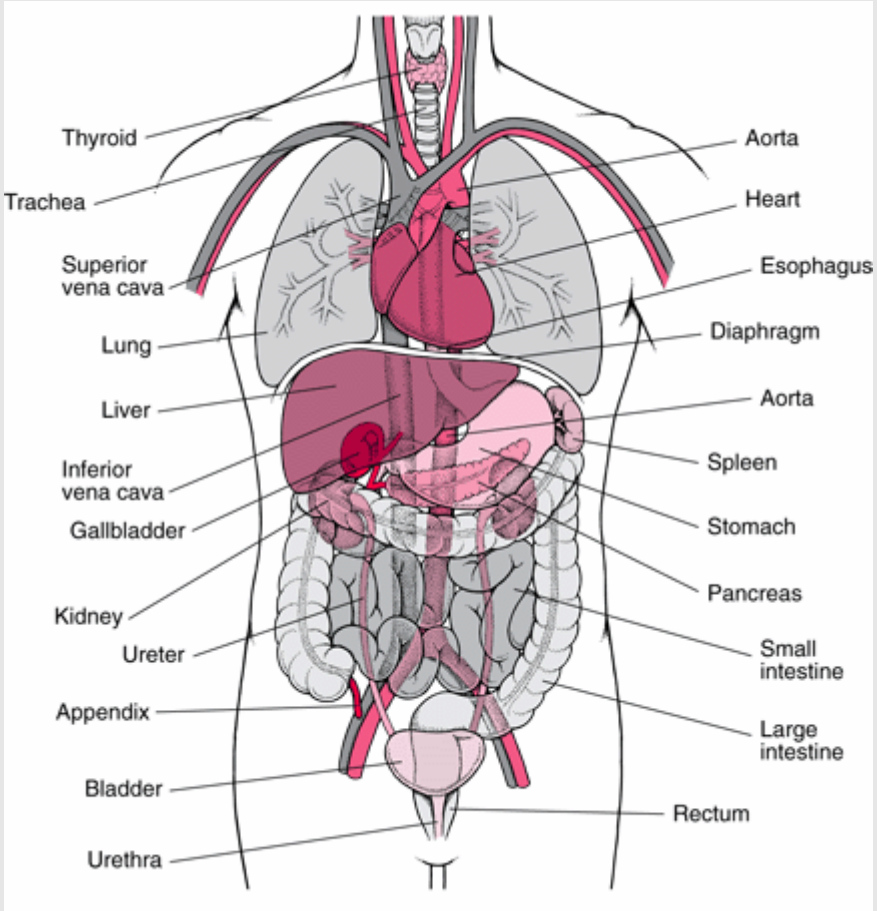
*Oxygen from …*

**18. Make up one original question of your own relating to this section of the article, and write a 2-3 line answer to it using information either from the article or from outside sources.**

[27] NB. such as = for example / *tel que*

[28] NB. as well as = in addition to / *aussi bien que, de même que, en plus de*

**Inside the Torso**




**Match the terms in the image above with their definitions below :**

***i.*** *The main trunk of the systemic arteries, carrying blood from the left side of the heart to the arteries of all limbs and organs except the lungs :* _____

***ii.*** *A narrow vestigial process projecting from the cecum in the lower right-hand part of the abdomen :* _____

***iii.*** *A muscular membranous partition separating the abdominal and thoracic cavities and functioning in respiration. Also called midriff :* _____

***iv.*** *The muscular, membranous tube for the passage of food from the pharynx to the stomach :* _____

***v.*** *A small, pear-shaped muscular sac, located under the right lobe of the liver, in which bile secreted by the liver is stored until needed by the body for digestion :* _____

***vi.*** *The chambered, muscular organ that pumps blood received from the veins into the arteries, thereby maintaining the flow of blood through the entire circulatory system :* _____

***vii.*** *A pair of organs in the dorsal region of the abdominal cavity, functioning to maintain proper water and electrolyte balance, regulate acid-base concentration, and filter the blood of metabolic wastes, which are then excreted as urine :* _____

***viii.*** *The portion of the intestine that extends from the ileum to the anus, forming an arch around the convolutions of the small intestine and including the cecum, colon, rectum, and anal canal :* _____

***ix.*** *A large, reddish-brown, glandular organ located in the upper right portion of the abdominal cavity that secretes bile and is active in the formation of certain blood proteins and in the metabolism of carbohydrates, fats, and proteins :* _____

***x.*** *Two spongy, saclike respiratory organs, occupying the chest cavity together with the heart and functioning to remove carbon dioxide from the blood and provide it with oxygen :* _____

***xi.*** *A long, irregularly shaped gland, lying behind the stomach, that secretes enzymes that aid in digestion into the duodenum and insulin, glucagon, and somatostatin into the bloodstream :* _____

***xii.*** *The terminal portion of the large intestine, extending from the sigmoid flexure to the anal canal :* _____

***xiii.*** *The narrow, winding, upper part of the intestine where digestion is completed and nutrients are absorbed by the blood. It extends from the pylorus to the cecum and consists of the duodenum, the jejunum, and the ileum :* _____

***xiv.*** *A large, highly vascular lymphoid organ, lying in the human body to the left of the stomach below the diaphragm, serving to store blood, disintegrate old blood cells, filter foreign substances from the blood, and produce lymphocytes :* _____

***xv.*** *The enlarged, saclike portion of the alimentary canal, one of the principal organs of digestion, located between the esophagus and the small intestine :* _____

***xvi.*** *A two-lobed endocrine gland, located in front of and on either side of the trachea in human beings, and producing various hormones, such as triiodothyronine and calcitonin :* _____

***xvii.*** *A thin-walled tube of cartilaginous and membranous tissue descending from the larynx to the bronchi and carrying air to the lungs. Also called windpipe :* _____

***xviii.*** *The long, narrow duct that conveys urine from the kidney to the urinary bladder :* _____

***xix.*** *An elastic, muscular sac situated in the anterior part of the pelvic cavity in which urine collects before excretion :* _____

***xx.*** *The canal through which urine is discharged from the bladder and through which semen is discharged in the male :* _____

***xxi.*** *Two large veins that drain blood from the upper body and from the lower body and empty into the right atrium of the heart :* _____

**NB. Le verbe "permettre" ne s'utilise pas toujours de la même façon en anglais qu'en français et pose régulièrement problème de ce fait. Souligner les équivalents de "permettre" dans les exemples ci-dessous :**

- *Receptors react to substances produced in the body and to drugs taken into the body, selectively allowing these substances or drugs to enter and leave the cell.*
- *Insulin binds to receptors on the cell membrane to maintain appropriate blood sugar levels and to allow glucose to enter cells.*
- *Muscle cells contract, allowing movement. Nerve cells generate and conduct electrical impulses, allowing communication between the central nervous system and the rest of the body.*
- *CAT Scans allow doctors to see inside the brain, heart, lungs, liver, colon – all vital organs that cannot ordinarily be seen with an x-ray exam. The technology makes it possible to diagnose certain diseases earlier and more accurately. (http://www.hvhc.org/serRad16Slice.asp)*[29]

**Traduire :**

1/ *Historiquement l'invention du microscope a permis aux scientifiques de découvrir non seulement que la cellule était l'unité fondamentale de la vie, mais aussi que beaucoup de maladies étaient provoquées par des microbes comme les bactéries.* =

2/ *Le microscope électronique permet d'observer des structures comme les ribosomes que les microscopes optiques ne permettent pas de distinguer.* =

NB. La traduction de "permettre" pose souvent problème aux étudiants français. Il y a 2 cas de figure :

1/ Quand on permet À QUELQU'UN de faire quelque chose …

- aucun problème, on traduit par "*allow*"+N+V

2/ Dans un sens IMPERSONNEL, quand on ne sait pas précisément à qui on permet de faire qqch …

- il y a une solution relativement facile : "*make it possible to*" *The EM makes it possible to see … ribosomes*
- et une solution plus sophistiquée : passif (ne permettent pas de voir ⇒ *cannot be seen*) + complément de manière ou de moyen (*with light microscopes*)

**Suggested outline for oral summary :**

**I. Biology of the human body**
- **A) Levels of study**
  - **i) Anatomy (gross, cellular)**
  - **ii) Physiology (biochemistry)**
- **B) Growth and aging**

**II. Cells**
- **A) Membrane**
  - **i) Structural integrity**
  - **ii) Receptors**
    - **Communication**
    - **Regulation (e.g. insulin)**
- **B) Cytoplasm**
- **C) Nucleus**
  - **i) Genetic material**
  - **ii) Mitosis**

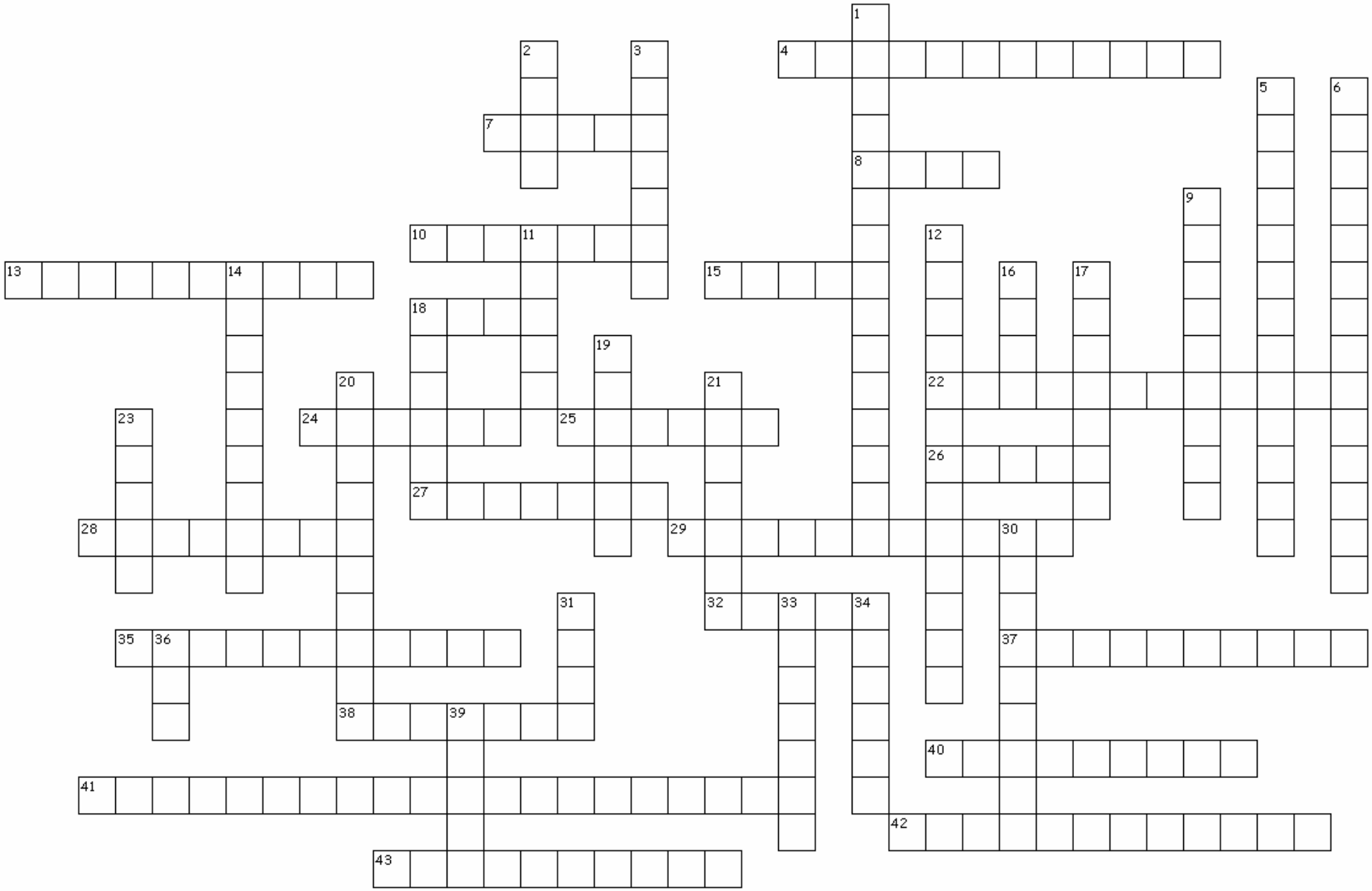
**III. Different types of cells, e.g. :**
- **A) Blood cells**
  - **i) Red blood cells**
  - **ii) White blood cells**
- **B) Glandular cells**
- **C) Muscle cells**
- **D) Nerve cells**

**IV. Tissues :**
- **A) Definition : related cells joined together**
- **B) 4 basic types**
  - **i) Muscle**
  - **ii) Nerve**
  - **iii) Epithelium**
  - **iv) Connective**

**V. Organs**
- **A) Definition :**
  - **i) Several tissues/cells**
  - **ii) Recognizable structure**
  - **iii) Specific function**
- **B) Examples**
  - **i) Heart**
  - **ii) Lungs**
  - **iii) Eye**
  - **iv) Gallbladder**

[29] CAT scan, CT scan : *un scanner, la tomodensitométrie*

***The Human Body – Part 1***



***The Human Body – Part 1***

| **Across** | **Down** |
|---|---|
| *4. The process by which a cell divides to form two daughter cells.*<br>*7. The fluid consisting of plasma, erythrocytes, leukocyte, corpuscles and platelets that is circulated by the heart through the vascular system, carrying oxygen and nutrients to and waste materials away from all body tissues.*<br>*8. 1. A substance used in the diagnosis, treatment, or prevention of a disease or as a component of a medication. 2. A chemical substance, such as a narcotic or hallucinogen, that affects the central nervous system, causing changes in behavior and often addiction.*<br>*10. Scientific study of living organisms.*<br>*13. The thick, whitish cord of nerve tissue that extends from the medulla oblongata down through the spinal column and from which the spinal nerves branch off to various parts of the body.*<br>*15. The process of growing old or maturing. The gradual changes in the structure of a mature organism that occur normally over time and increase the probability of death.*<br>*18. The membranous tissue forming the external covering of the body and consisting of the epidermis and dermis.*<br>*22. The semipermeable membrane that encloses the cytoplasm of a cell.*<br>*24. The removal and examination of a sample of tissue from a living body for diagnostic purposes.*<br>*25. The process of growing. The progressive increase in size of a living thing, especially the process by which the body reaches its point of complete physical development.*<br>*26. A differentiated part of the body that performs a specific function.*<br>*27. Numerous proteins functioning as biochemical catalysts.*<br>*28. A minute, round particle composed of RNA and protein found in the cytoplasm of living cells and active in the synthesis of proteins.*<br>*29. A small, pear-shaped muscular sac, located under the right lobe of the liver, in which bile secreted by the liver is stored until needed by the body for digestion.*<br>*32. The chambered, muscular organ that pumps blood received from the veins into the arteries, thereby maintaining the flow of blood through the entire circulatory system.*<br>*35. Determined by conditions or circumstances that follow. cf. according to.*<br>*37. 1. the science which deals with the functions of the living organism and its parts, and of the physical and chemical factors and processes involved. 2. the basic processes underlying the functioning of a species or class of organism, or any of its parts or processes.*<br>*38. A large, membrane-bound, usually spherical protoplasmic structure, containing the cell's hereditary material and controlling its metabolism, growth, and reproduction.*<br>*40. A differentiated structure within a cell, such as a mitochondrion, vacuole, or chloroplast, that performs a specific function.*<br>*41. The portion of the nervous system consisting of the brain and spinal cord, to which sensory impulses are transmitted and from which motor impulses pass out, and which supervises and coordinates the activity of the entire nervous system.*<br>*42. The study of the structures of the body that can be seen with the naked eye.*<br>*43. A threadlike linear strand of DNA and associated proteins in the nucleus that carries the genes and functions in the transmission of hereditary information.* | *1. 1. Sugar in the form of glucose in the blood. 2. The concentration of glucose in the blood, measured in milligrams of glucose per 100 milliliters of blood.*<br>*2. A structure within the body bounding, limiting or enclosing a space, cavity, chamber, or other anatomical unit*<br>*3. A pair of organs in the dorsal region of the abdominal cavity, functioning to maintain proper water and electrolyte balance, regulate acid-base concentration, and filter the blood of metabolic wastes, which are then excreted as urine.*<br>*5. Union of male and female gametes to form the diploid zygote, leading to development of a new individual.*<br>*6. The narrow, winding, upper part of the intestine where digestion is completed and nutrients are absorbed by the blood. It extends from the pylorus to the cecum and consists of the duodenum, the jejunum, and the ileum.*<br>*9. A single complete pulsation of the heart.*<br>*11. Two spongy, saclike respiratory organs occupying the chest cavity together with the heart and functioning to remove carbon dioxide from the blood and provide it with oxygen.*<br>*12. A spherical or elongated organelle in the cytoplasm, containing genetic material and many enzymes important for cell metabolism, including those responsible for the conversion of food to usable energy.*<br>*14. The complex, semifluid, translucent substance outside the nucleus of a cell.*<br>*16. The smallest structural unit of an organism that is capable of independent functioning, consisting of one or more nuclei, cytoplasm, and various organelles, all surrounded by a semipermeable cell membrane.*<br>*17. A substance, usually a peptide or steroid, produced by one tissue and conveyed by the bloodstream to another to effect physiological activity, such as growth or metabolism.*<br>*18. A portion, piece, or segment that is representative of a whole; a specimen.*<br>*19. The transparent, convex, anterior portion of the outer fibrous coat of the eyeball that covers the iris and the pupil and is continuous with the sclera.*<br>*20. The act or an instance of cutting apart or separating tissue, especially for anatomical study.*<br>*21. The enlarged, saclike portion of the alimentary canal, one of the principal organs of digestion, located between the esophagus and the small intestine.*<br>*23. The portion of the central nervous system that is enclosed within the cranium, continuous with the spinal cord, and composed of gray matter and white matter. It is the primary center for the regulation and control of bodily activities, receiving and interpreting sensory impulses, and transmitting information to the muscles and body organs.*<br>*30. The muscular, membranous tube for the passage of food from the pharynx to the stomach.*<br>*31. A transparent, biconvex body of the eye between the iris and the vitreous humor that focuses light rays entering through the pupil to form an image on the retina.*<br>*33. The science of the structure of living organisms.*<br>*34. An aggregation of morphologically similar cells and associated intercellular matter acting together to perform one or more specific functions in the body. There are four basic types : muscle, nerve, epidermal, and connective.*<br>*36. A female gamete; an ovum.*<br>*39. A large, reddish-brown, glandular organ located in the upper right portion of the abdominal cavity that secretes bile and is active in the formation of certain blood proteins and in the metabolism of carbohydrates, fats, and proteins.* |

- *bladder, (urinary) bladder / la vessie*
- *naked, (with the) naked eye / à l'œil nu*
- *accomplish / réaliser, mener à bien*
- *adulthood / l'âge adulte*
- *aging (or : ageing) / le vieillissement*
- *allow / permettre, autoriser*
- *alveolus (pl. alveoli), alveolar sac / une alvéole, un sac alvéolaire*
- *anatomy / l'anatomie*
- *aorta / l'aorte (f.)*
- *appendix / l'appendice (m.)*
- *basement membrane / la lame basale*
- *be made up of (to make up) / être constitué de*
- *bile / la bile*
- *bind (together) / (re)lier, attacher (aussi : (se) fixer)*
- *biochemical / biochimique*
- *biology / la biologie*
- *biopsy / une biopsie*
- *birth / la naissance*
- *blood / le sang*
- *blood sugar level / le taux de glucose, la glycémie*
- *body / le corps*
- *bone (osseous) tissue / le tissu osseux*
- *bone marrow / la moelle osseuse*
- *brain / le cerveau*
- *breast / le sein*
- *bronchiole / une bronchiole*
- *bronchus (pl. bronchi) / les bronches (f.)*
- *cardiac muscle / le muscle cardiaque*
- *cartilage / le cartilage*
- *cell / une cellule*
- *cell division / la multiplication cellulaire*
- *cell membrane / la membrane cellulaire*
- *central nervous system / le système nerveux central*
- *centriole / un centriole*
- *childhood / l'enfance*
- *chromosome / un chromosome*
- *compartment / un compartiment*
- *component / un composant, un constituant*
- *conduct / conduire*
- *connective tissue / le tissu conjonctif*
- *connective tissue / le tissu conjonctif*
- *consume / consommer*
- *contents (pl.) / le contenu*
- *cornea / la cornée*
- *cytoplasm / le cytoplasme*
- *depending on / suivant, selon…*
- *diaphragm / le diaphragme*
- *dissection / la dissection*
- *drug / 1. un médicament 2. une drogue*
- *during / lors de (NB. ne pas confondre "during" qui exprime la coïncidence ou la simultanéité, avec "for" qui donne la durée d'une action*
- *dye / une teinture, un colorant*
- *egg (cell) / un ovule*
- *endoplasmic reticulum / le réticulum endoplasmique, l'ergastoplasme*
- *ensure / assurer*
- *enzyme / un(e) enzyme*
- *epithelium / l'épithélium*
- *epithelium / l'épithélium*
- *esophagus / l'œsophage (m.)*
- *even / même…*
- *expel / expulser*
- *experience / connaître, ressentir, faire l'expérience de*
- *eye / l'œil*
- *fertilization / la fécondation*
- *firmly / fermement, bien (tenu, accroché etc.)*
- *free(ly) / libre(ment)*
- *gallbladder / la vésicule biliaire*
- *gallbladder / la vésicule biliaire*
- *gland / une glande*
- *glandular / glandulaire, glanduleux*
- *Golgi apparatus / l'appareil de Golgi*
- *gross anatomy / l'anatomie macroscopique*
- *growth / la croissance*
- *heart / le cœur*
- *heart / le cœur*
- *heartbeat / un battement du cœur, une pulsation*
- *highly / très, extrêmement, hautement*
- *hold… together / maintenir ensemble, unir*
- *hormone / une hormone*
- *identical / identique*
- *immune system / le système immunitaire*
- *impulse / 1. une impulsion 2. un influx nerveux*
- *instrument / un instrument, un outil*
- *insulin / l'insuline (f.)*
- *its own / son propre…*
- *kidney / le rein*
- *large intestine (a.k.a. large bowel) / le gros intestin*
- *layer / une couche, une épaisseur, une strate*
- *lens / le cristallin (aussi : une lentille)*
- *level / un niveau*
- *line / revêtir (l'intérieur), tapisser*
- *lining / un revêtement (intérieur)*
- *liver / le foie*
- *liver / le foie*
- *lung / le poumon*
- *lung / le poumon*
- *lymph / la lymphe*
- *lymph node / un ganglion lymphatique*
- *lysosome / un lysosome*
- *made up of / être composé de*
- *make up / constituer*
- *microscope / le microscope*
- *mitochondrion / une mitochondrie*
- *molecular biology / la biologie moléculaire*
- *mouth / la bouche*
- *mucous (membrane) / une muqueuse*
- *mucus / les mucosités, le mucus*
- *muscle fiber / une fibre musculaire*
- *muscle tissue / le tissu musculaire*
- *nerve / un nerf*
- *nervous tissue / le tissu nerveux*
- *neuroglial cell / une cellule gliale*
- *neuron (also called nerve cell) / un neurone*
- *neuron(e) / un neurone*
- *nucleolus / le nucléole*
- *nucleus / le noyau*
- *occur / se produire, avoir lieu*
- *organ / un organe*
- *organ / un organe*
- *organelle / un organite*
- *outer / extérieur, externe*
- *pancreas / le pancréas*
- *pancreas / le pancréas*
- *past / après, au-delà de*
- *perform / réaliser*
- *physiology / la physiologie*
- *plasma / le plasma*
- *platelet / une plaquette*
- *primary / principal, premier (en importance)*
- *provide / fournir*
- *pupil / la pupille*
- *quickly / rapidement, vite*
- *quite / 1. plutôt, assez 2. tout à fait*
- *rate / 1. un rythme, 2. un taux, un niveau*
- *rate / 1. un taux, un niveau 2. le rythme*
- *react / réagir, interagir*
- *receptor / un récepteur*
- *rectum / le rectum*
- *red blood cell (abbr. RBC) / un globule rouge*
- *refer to (as) / désigner, appeler (par le nom…)*
- *related / 1. apparenté 2. ayant un rapport, en rapport (avec)*
- *relationship / une relation, un rapport*
- *remarkably / remarquablement*
- *remove / enlever, retirer*
- *ribosome / un ribosome*
- *saliva / la salive*
- *sample / un échantillon, un prélèvement*
- *sense / (res)sentir, (a)percevoir*
- *size / la taille*
- *skeletal muscle / le muscle strié squelettique*
- *skeleton / le squelette*
- *skin / la peau*
- *slow / ralentir*
- *small intestine (a.k.a. small bowel) / l'intestin grêle*
- *smooth muscle / le muscle lisse*
- *spinal cord / la corde dorsale, le cordon médullaire, la moelle épinière*
- *spleen / la rate*
- *staining / la coloration*
- *still / encore (comme avant), quand même, néanmoins*
- *stomach / l'estomac*
- *stomach / l'estomac*
- *study / l'étude*
- *such as / tel que*
- *sustain / entretenir, maintenir*
- *take in(to) / absorber, assimiler, ingérer (un aliment)*
- *take place / avoir lieu*
- *tendon / un tendon*
- *though (even though) / même si, quoique*
- *throat / la gorge*
- *thyroid gland / la thyroïde*
- *tissue / le tissu*
- *tough / dur, résistant*
- *trachea / la trachée*
- *ureter / l'uretère (m.)*
- *urethra / l'urètre (m.)*
- *valve / une valve, une valvule*
- *vena cava (pl. venae cavae) / une veine cave*
- *wall / une paroi*
- *waste / des déchets, des excréments*
- *white blood cell (abbr. WBC) / un globule blanc*
- *within / à l'intérieur*
- *work / fonctionner, agir (travailler)*