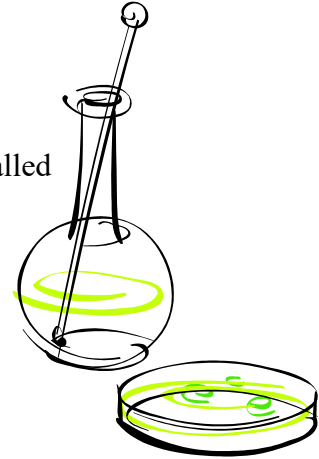


## French and Biology

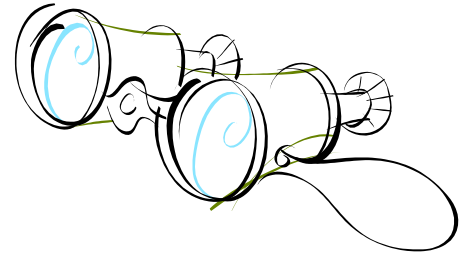
As in other sciences, France has played an outstanding role in the history of biology. See how much you know with the following items.

1. Which 18<sup>th</sup>-century naturalist wrote the 44 volumes of his *Histoire naturelle* while director of the king's garden, now called the Jardin des Plantes, in Paris?
  - a. D'Alembert
  - b. Buffon
  - c. Diderot
  - d. Voltaire



2. The 18<sup>th</sup>-19<sup>th</sup> century scientist Georges Cuvier is remarkable for all of the following feats, EXCEPT
  - a. Founding the science of vertebrate paleontology
  - b. Establishing that fossils represented extinct life forms
  - c. Reconstructing organisms from fragmentary fossils
  - d. Contributing to the theories of Lyell and Darwin

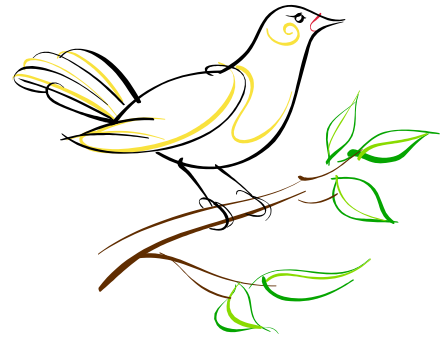
3. Which French physiologist, who finished near the bottom of the class in medical school, became the first French scientist to receive a state funeral?
  - a. Claude Bernard
  - b. Jean-Henri Casimir Fabre
  - c. Pierre-Antoine de Monet, chevalier de Lamarck
  - d. Etienne Geoffroy Saint-Hilaire



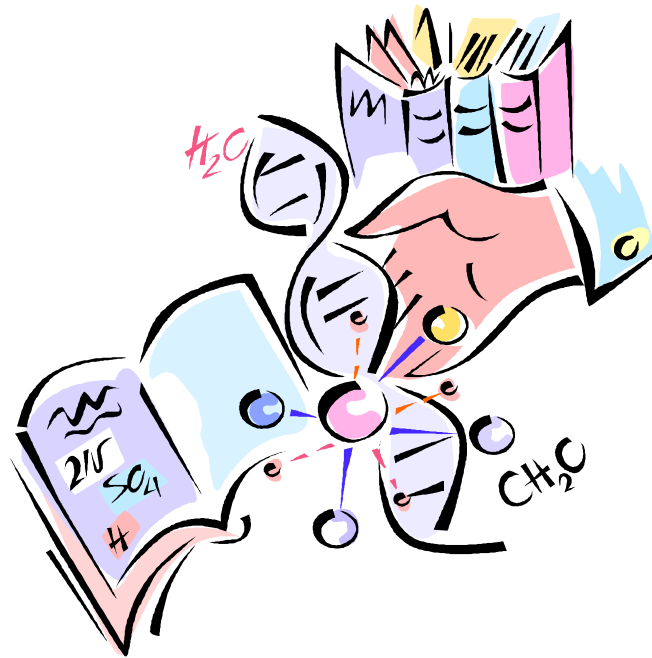
4. The most famous French biochemist, Louis Pasteur, was responsible for research relating to all of the following EXCEPT
  - a. Brewing beer and making wine
  - b. Inoculation against rabies
  - c. Sterilization to prevent infection
  - d. Humors causing sickness

French Advocacy Resource Bank  
American Association of Teachers of French

5. Which insect did Nobel laureate Charles Nicolle blame for an outbreak of typhus in Tunis in 1909?
- The bedbug
  - The flea
  - The body louse
  - The mosquito



6. For what discovery did François Jacob, André Lwoff, and Jacques Monod share the 1965 Nobel Prize in physiology or medicine?
- Structure of DNA
  - Chemistry of RNA
  - Human genome
  - Messenger RNA



## French and Biology

As in other sciences, France has played an outstanding role in the history of biology. See how much you and your students know with the following items.

The questions can be used as a "bell-ringer" activity—a short activity usually done at the beginning of class to help students focus on the subject of that class.

Correct answers are indicated by an asterisk. Brief explanations for the items, as well as source information, are given at the end of the document.

1. Which 18<sup>th</sup>-century naturalist wrote the 44 volumes of his *Histoire naturelle* while director of the king's garden, now called the Jardin des Plantes, in Paris?
  - a. D'Alembert
  - b. Buffon\*
  - c. Diderot
  - d. Voltaire
2. The 18<sup>th</sup>-19<sup>th</sup> century scientist Georges Cuvier is remarkable for all of the following feats, EXCEPT
  - a. Founding the science of vertebrate paleontology
  - b. Establishing that fossils represented extinct life forms
  - c. Reconstructing organisms from fragmentary fossils
  - d. Contributing to the theories of Lyell and Darwin\*
3. Which French physiologist, who finished near the bottom of the class in med school, became the first French scientist to receive a state funeral?
  - a. Claude Bernard\*
  - b. Jean-Henri Casimir Fabre
  - c. Pierre-Antoine de Monet, chevalier de Lamarck
  - d. Etienne Geoffroy Saint-Hilaire
4. The most famous French biochemist, Louis Pasteur, was responsible for research relating to all of the following EXCEPT
  - a. Brewing beer and making wine
  - b. Inoculation against rabies
  - c. Sterilization to prevent infection
  - d. Humors causing sickness\*
5. Which insect did Nobel laureate Charles Nicolle blame for an outbreak of typhus in Tunis in 1909?
  - a. The bedbug
  - b. The flea
  - c. The body louse\*

French Advocacy Resource Bank  
American Association of Teachers of French

- d. The mosquito
  - 6. For what discovery did François Jacob, André Lwoff, and Jacques Monod share the 1965 Nobel Prize in physiology or medicine?
    - a. Structure of DNA
    - b. Chemistry of RNA
    - c. Human genome
    - d. Messenger RNA\*
- 

### Explanations:

1. D'Alembert (writer and mathematician), Diderot (writer and philosopher), and Voltaire (writer, philosopher, social critic, dramatist, etc.) were famous French writers of the 18<sup>th</sup> century, who contributed to the *Encyclopédie*. However, it was Georges-Louis Leclerc, Comte de Buffon who wrote the great work *Histoire naturelle, générale et particulière*, in which he included everything known about the natural world up until that time. Buffon was skilled with words, earning him the nickname from d'Alembert of "the great phrasemonger."  
[http://en.wikipedia.org/wiki/Georges-Louis\\_Leclerc,\\_Comte\\_de\\_Buffon](http://en.wikipedia.org/wiki/Georges-Louis_Leclerc,_Comte_de_Buffon)
2. Cuvier was an outstanding anatomist, who excelled in comparative anatomy and research on fossils. Although he recognized similarities and differences between, for example, extinct mammoths and different species of elephants, he was a believer in the fixity of species and opposed Lamarck and Saint-Hilaire. So strong was his influence that Darwin's evolutionary theory was virtually disregarded by French scientists in the late 19<sup>th</sup> century.  
<http://www.ucmp.berkeley.edu/history/cuvier.html>
3. After working for many years for François Magendie, one of France's most prominent and controversial physiologists, Bernard took his place as Professor of Experimental Medicine at the College de France in 1855. He famously said that "*the laboratory is the temple of the science of medicine.*" Claude Bernard was responsible for a major breakthrough in understanding the fundamental principles of organic life, particularly that the organs of the body function together, not separately. <http://www.mndb.com/people/033/000100730/> The others were all famous French biologists of the 19<sup>th</sup> century. Fabre was an entomologist who wrote many popular books. Lamarck and Saint-Hilaire were zoologists and early proponents of the idea of the variability of species, or evolution, and greatly criticized by Cuvier, who believed in the fixity of species.
4. Pasteurization (of beer and wine as well as milk), vaccination, and sterilization were all results of Pasteur's efforts. His discovery of microbes led to the

French Advocacy Resource Bank  
American Association of Teachers of French

identification of the bacilli that caused leprosy, typhus, tuberculosis, plague, etc., by the end of the 19<sup>th</sup> century. The science of microbiology put an end to the old belief (perhaps familiar from Molière and others) that an imbalance of the four humors in the body (black bile, yellow bile, phlegm, and blood) was the main cause of illness. <http://www.notablebiographies.com/Ni-Pe/Pasteur-Louis.html>

5. While the others can transmit diseases, it was the louse that caused the spread of typhus. Nicolle was a bacteriologist who was director of the Pasteur Institute in Tunis when, in 1909, there was a serious outbreak of typhus. Noting that the disease spread rapidly among the general population and among the laundry personnel of the city hospital, but not among the patients or medical staff, Nicolle developed a hypothesis: the disease was spread by lice, which were removed from the patients' bodies and clothing when they were cleaned upon admission. He proved his hypothesis experimentally and, when careful hygiene stopped the spread of typhus during World War I, Nicolle was awarded the Nobel Prize for Physiology or Medicine (there is no prize for biology) in 1921. [http://nobelprize.org/nobel\\_prizes/medicine/laureates/1928/nicolle-bio.html](http://nobelprize.org/nobel_prizes/medicine/laureates/1928/nicolle-bio.html)
6. In 1965 French scientists Monod, Jacob, and Andre Lwoff received the Nobel Prize in Physiology or Medicine for elucidating the nature of mRNA from their observation of protein synthesis by genes of mutated bacteria in the presence of lactose. <http://science.howstuffworks.com/french-biologists/francois-jacob-info.htm>