

Key Discoveries in Biology

Only a limited selection over 2000 years are given.

A.D.1-A.D.499

About A.D. 50 Roman naturalist Pliny the Elder compiles an encyclopedia of natural history.

About 150 Galen, a Greco-Roman physician, contributes medical theories based on the dissection of apes.

500-1499

About 900 Persian physician Rhazes authors an encyclopedia of practical medicine.

About 1030 Avicenna (Ibn Sina), a Persian philosopher-physician, completes the Cannon of Medicine, which codifies medical knowledge for 500 years.

1500-1699

1543 Flemish physician Andreas Vesalius publishes the first scientific textbook on human anatomy.

1628 English scientist William Harvey accurately describes the human circulatory system.

1665 English scientist Robert Hooke observes cell structure in the bark of the cork oak.

1676 Dutch microscopist Anton van Leeuwenhoek first sees one-celled organisms.

1700s

1753-58 Swedish naturalist Carolus Linnaeus establishes a modern taxonomy.

1779 Dutch naturalist Jan Ingenhousz shows that sunlight is the source of energy in photosynthesis.

1796 English physician Edward Jenner introduces vaccination.

1817 French scientist Georges Cuvier pioneers the field of comparative anatomy.

1838-1839 German biologists Matthias Schleiden and Theodor Schwann establish cell theory.

1859 British naturalist Charles Darwin proposes his theory of evolution.

1862 French scientist Louis Pasteur disproves abiogenesis.

1865 Austrian monk Gregor Mendel establishes the basic laws of heredity.

1892 German biologist August Weismann proposes the germ-plasm (gamete) theory of inheritance.

1900-1919

1900 Austrian-American scientist Karl Landsteiner discovers ABO-blood types in humans.

1900 Mendel's work is independently rediscovered by three scientists — Erich Tschermak von Seysenegg, Hugo de Vries, and Carl Correns.

1902 American cytologist Walter Sutton proposes that genes are carried on the chromosome.

1910-15 American geneticist T. H. Morgan discovers linkage and crossing over, establishing that genes exist as linear units on the chromosomes.

1920-1939

1928 British biologist Alexander Fleming discovers penicillin.

1937 German biochemist Sir Hans Krebs discovers the citric acid cycle, the key events in cellular respiration.

1937 American geneticist Theodosius Dobzhansky initiates the synthesis of genetic and evolutionary theory.

1940s

1941 American researchers Gorge Beadle and Edward Tatum propose the one gene one enzyme theory.

1944-52 Experiments by Americans Oswald Avery (1944) and Alfred Hershey and Martha Chase (1952) prove that DNA is the genetic chemical.

1946-61 American biochemist Melvin Calvin elucidates the process of carbon fixation during photosynthesis.

1947 American geneticist Barbara McClintock proposes that genes can move between chromosomes sites.

1950s

1953 American James Watson and Briton Francis Crick discover the molecular structure of DNA.

1956 American molecular biologists Arthur Kornberg synthesizes DNA in the laboratory.

1960s

1961 Americans Marshall Nirenberg and Severo Ochoa break the genetic code of DNA and messenger RNA.

1970s

1973 American molecular biologists Stanley Cohen and Herbert Boyer discover how to induce gene splicing.

1977 American scientists Rosalyn Yalow, Roger Guillemin, and Andrew Schally win the Nobel prize for tracking radioactive hormone in the body.

1980s

1982 American molecular biologist Robert A. Weinberg discovers an oncogene — a dormant gene capable of causing cancer when activated — in human cells.

1984 Three immunologists share the Nobel prize: Niels Herne, in England, for his theories on how the immune system works; and Briton Cesar Milstein and Swiss Georges Kohler for their creation of monoclonal antibodies.