

Animal Roles in Medical Discoveries

Nobel Prizes for Medicine & Physiology from 1904 to present. Research with animals must continue for similar medical advances to continue.

| Year | Scientist | Animal(s) Needed | Contribution to Modern Medicine |
|------|------------------------------------|--|---|
| 1904 | Pavlov | Dog | Animal responses to various stimuli |
| 1905 | Koch | Cow, Sheep | Studies of pathogenesis of tuberculosis |
| 1906 | Golgi, Cajal | Dog, Horse | Characterization of the central nervous |
| 1907 | Laveran | Bird | Role of protozoa as cause of disease |
| 1908 | Mechnikov, Ehrlich | Bird, Fish, Guinea pig | Immune reactions and functions of phagocytes |
| 1910 | Kossel | Bird | Knowledge of cell chemistry through work on proteins, including nuclear substances |
| 1912 | Carrel | Dog | Surgical advances in the suture and grafting of blood vessels |
| 1913 | Richet | Dog, Rabbit | Mechanisms of anaphylaxis |
| 1919 | Bordet | Guinea pig, Horse, Rabbit | Mechanisms of immunity |
| 1920 | Krogh | Frog | Discovery of capillary motor regulating mechanism |
| 1922 | Hill | Frog | Consumption of oxygen and lactic acid metabolism in muscle |
| 1923 | Banting, Macleod | Dog, Rabbit, Fish | Discovery of insulin and mechanism of diabetes |
| 1924 | Einthoven | Dog | Mechanism of the electrocardiogram |
| 1928 | Nicolle | Monkey, Guinea pig, Rat, Mouse | Pathogenesis of typhus |
| 1929 | Eijkman, Hopkins | Chicken | Discovery of antineuritic and growth stimulating |
| 1932 | Sherrington, Adrian | Dog, Cat | Functions of neurons |
| 1934 | Whipple, Murphy, Minot | Dog | Liver therapy for anemia |
| 1935 | Spemann | Newt, Frog | Organizer effect in embryonic development |
| 1936 | Dale, Loewi | Cat, Frog, Bird, Reptile | Chemical transmission of nerve impulses |
| 1938 | Heymans | Dog | Role of the sinus and aortic mechanisms in the regulation of respiration |
| 1939 | Domagk | Mouse, Rabbit | Antibacterial effects of prontosil |
| 1943 | Dam, Doisy | Rat, Dog, Chicken, Mouse | Discovery of function of Vitamin K |
| 1944 | Erlanger, Gasser | Cat | Specific functions of nerve cells |
| 1945 | Fleming, Chain, Florey | Mouse | Discovery of penicillin and its curative various infectious diseases |
| 1947 | Cori, Cori, Houssay | Frog, Toad, Dog | Catalytic conversion glycogen, role of pituitary in sugar metabolism |
| 1949 | Hess, Moniz | Cat | Functional organization of the brain as a coordinator of internal organs |
| 1950 | Kendall, Hench, Reichstein | Cow | Antiarthritic role of adrenal hormones |
| 1951 | Theiler | Monkey, Mouse | Development of yellow fever vaccine |
| 1952 | Waksman | Guinea Pig | Discovery of streptomycin, the first antibiotic effective against tuberculosis |
| 1953 | Krebs, Lipmann | Pigeon | Characterization of the citric acid cycle |
| 1954 | Enders, Weller, Robbins | Monkey, Mouse | Culture of poliovirus that led to development of vaccine |
| 1955 | Theorell | Horse | Nature and mode of action of oxidation enzymes |
| 1957 | Bovet | Dog, Rabbit | Production of synthetic compounds and their action on the vascular system and skeletal muscles |
| 1960 | Burnet, Medawar | Rabbit | Understanding of acquired immunological tolerance |
| 1961 | von Békésy | Guinea pig | Physical mechanism of stimulation in the cochlea |
| 1963 | Eccles, Hodgkin, Huxley | Cat, Frog, Squid, Crab | Mechanisms of control and the communication between nerve cells |
| 1964 | Block, Lynen | Rat | Regulation of cholesterol and fatty acid metabolism |
| 1966 | Rous, Huggins | Rat, Rabbit, Hen | Tumor-inducing viruses and hormonal treatment of cancer |
| 1967 | Hartline, Granit, Wald | Chicken, Rabbit, Fish, Crab | Primary physiological and chemical processes of vision |
| 1968 | Holley, Khorana, Nirenberg | Rat | Interpretation of genetic code and its role in protein synthesis |
| 1970 | Katz, von Euler, Axelrod | Cat, Rat | Mechanism of storage and release of nerve transmitters |
| 1971 | Sutherland | Mammalian liver | Mechanism of the actions of hormones |
| 1972 | Edelman, Porter | Guinea pig, Rabbit | Chemical structure of antibodies |
| 1973 | von Frisch, Lorenz, Tinbergen | Bee, Bird, Fish | Organization of social and behavior patterns in animals |
| 1974 | de Duve, Palade, Claude | Chicken, Guinea Pig, Rat | Structural and functional organization of cells |
| 1975 | Baltimore, Dulbecco, Temin | Monkey, Horse, Chicken, Mouse | Interaction between tumor viruses and genetic material |
| 1976 | Blumberg, Gajdusek | Chimpanzee | New mechanisms for the origin and dissemination of diseases |
| 1977 | Gullemin, Schally, Yalow | Sheep, Pig | Discoveries concerning the peptide hormone production of the brain |
| 1979 | Cormack, Hounsfield | Pig | Development of computer assisted tomography (CAT scan) |
| 1980 | Benacerraf, Dausset, Snell | Mouse, Guinea Pig | Identification of histocompatibility antigens and mechanism of action |
| 1981 | Sperry, Hubell, Wiesel | Cat, Monkey | Processing of visual information by the brain |
| 1982 | Bergstrom, Samuelsson, Vane | Rat, Rabbit, Guinea Pig | Discovery of prostaglandins |
| 1984 | Millstone, Kochler, Jerne | Mouse | Techniques of monoclonal antibody formation |
| 1985 | Brown, Goldstein | Rats, Mice | Discoveries concerning the regulation of cholesterol metabolism |
| 1986 | Levi-Montalcini | Mouse, Chicken, Snake | Nerve growth factor and epidermal growth factor |
| 1987 | Tonegawa | Mouse embryo | Discovery of the genetic principle for generation of antibody diversity |
| 1988 | Black, Elion | Mice, Dog, Rabbit, Monkey | Discoveries of important principles for drug treatment |
| 1989 | Varmus, Bishop | Chicken | Cellular origin of retroviral oncogenes |
| 1990 | Murray, Thomas | Dog | Organ transplantation techniques |
| 1991 | Neher, Sakmann | Frog | Chemical communication between cells |
| 1992 | Fisher, Krebs | Rat, Rabbit | Discoveries concerning reversible protein phosphorylation as a biological regulatory mechanism |
| 1993 | Roberts, Sharp | Rats, Mice | Discoveries of split genes |
| 1994 | Gilman, Rodbell | Rat, Cow, Rabbit, Turkey, Guinea Pig | Discovery of G-proteins and the role of these proteins in signal transduction in cells |
| 1995 | Lewis, Nüsslein-Volhard, Wieschaus | Fruit fly | Genetic control of early embryonic development |
| 1996 | Doherty, Zinkernagel | Mouse | Recognition of virus-infected cells by the immune system |
| 1997 | Prusiner | Mouse, Hamster | Discovery of prions, a new biological principle of infection |
| 1998 | Fuchsgott, Ignarro, Murad | Rabbit | Regulation of blood pressure with nitric oxide (NO) |
| 1999 | Blobel | Mouse, Rat, Dog | Discovery that proteins have intrinsic signals that govern their transport and localization in the cell |
| 2000 | Carlsson, Greengard, Kandel | Sea slug, Mouse | Discoveries in signal transduction in the nervous system |
| 2001 | Hartwell, Hunt, Nurse | Sea urchin, Frog | Discoveries of key regulators of the cell cycle |
| 2002 | Brenner, Horvitz, Sulston | Roundworm | Genetic regulation of organ development and programmed cell death |
| 2003 | Lauterbur, Mansfield | Clam, Mouse, Dog, Rat, Chimpanzee, Pig, Rabbit, Frog | Discoveries concerning magnetic resonance imaging (MRI) |
| 2004 | Axel, Buck | Mouse, Fruit Flies | Discoveries of odorant receptors and the organization of the olfactory system |
| 2005 | Marshall, Warren | Piglet | Discovery of the bacterium Helicobacter pylori and its role in mouse, gerbil gastritis and peptic ulcer disease |
| 2006 | Fire, Mello | Roundworm | Discovery of RNA interference — gene silencing by double-stranded RNA |
| 2007 | Capecchi, Evans, Smithies | Mouse, Chick | Development of knock-out mice |
| 2008 | zur Hausen | Hamster, Mouse, Cow | Discovery of human papilloma viruses (HPV) causing cervical cancer |
| 2008 | Barre-Sinoussi, Montagnier | Monkey, Chimpanzee, Mouse | Discovery of human immunodeficiency virus (HIV) |
| 2009 | Blackburn, Greider, Szostak | Frog, Mouse | Discovery of a key mechanism in the genetic operations of cells |
| 2010 | Edwards | Rabbits, Rats, Mice, Hamsters | Development of in vitro fertilization |
| 2011 | Beutler, Hoffmann, Steinman | Mouse, Fruit Fly | Discoveries concerning adaptive and innate immunity |
| 2012 | Gurdon, Yamanaka | Frog, Mouse | Discoveries that mature cells can be reprogrammed and how mature cells can be transformed into stem cells |
| 2013 | Rothman, Schekman, Südhof | Chinese Hamster | Machinery regulating vesicle traffic, a major transport system in our cells |
| 2014 | O'Keefe, Moser, Moser | Rat | Discovery of the brain's "inner GPS" |
| 2015 | Campbell, Omura, Tu | Mouse, Monkey | Development of drugs used to treat malaria and roundworm parasites |