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Nobel Laureates and the American Cancer Society

William G. Kaelin Jr, MD

2019 Nobel Prize | Physiology or Medicine

Discovered the molecular “switch” that controls how cells respond to changing oxygen levels. Oxygen sensing is key to many diseases – for example, cancer cells hijack the oxygen process to increase their metabolism and fuel their growth. This discovery has had a significant impact on understanding cancer and has helped establish new treatment strategies. This prize was awarded jointly to William G. Kaelin, Jr., MD, Sir Peter J. Ratcliffe, MD, and Gregg L. Semenza, MD, PhD.

Gregg L. Semenza, MD, PhD

2019 Nobel Prize | Physiology or Medicine

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James E. Rothman, PhD

2013 Nobel Prize | Physiology or Medicine

Defined the control of the movement of membranes in cells, which contributes greatly to the understanding of cell functioning in numerous diseases, including cancer. These internal cell membranes are key to the function of cells and the ability of cells to move,

both of which are hallmarks of cancer cells.

Bruce Beutler, PhD

2011 Nobel Prize | Physiology or Medicine

Discovered receptor proteins that can recognize bacteria and other microorganisms as they enter the body, and activate innate immunity

Ralph Steinman, PhD

2011 Nobel Prize | Physiology or Medicine

Discovered a new cell type that he called the dendritic cell, which led to the first therapeutic vaccine for prostate cancer, Provenge

Thomas A. Steitz, PhD

2009 Nobel Prize | Chemistry

Studied the structure and function of the ribosome

Jack W. Szostak, PhD

2009 Nobel Prize | Physiology or Medicine

Helped discover how chromosomes are protected by telomeres and the enzyme telomerase

Mario R. Capecchi, PhD

2007 Nobel Prize | Physiology or Medicine

Developed techniques for manipulating individual genes using mouse embryonic stem cells. This allowed for a more precise understanding of how individual genes worked in the mouse and accelerated the use of the mouse as a model of human cancer. This work has led to the identification of genes that are targets of cancer therapies. This prize was awarded jointly to Mario R. Capecchi, PhD, Sir Martin J. Evans, PhD, and Oliver Smithies, PhD.

Oliver Smithies, PhD

2007 Nobel Prize | Physiology or Medicine

Developed techniques for manipulating individual genes, using mouse embryonic stem cells. This allowed for a more precise understanding of how individual genes worked in

the mouse and accelerated the use of the mouse as a model of human cancer. This work has led to the identification of genes that are targets of cancer therapies. Dr. Smithies was funded for earlier work on genetic control of protein structure and synthesis. This prize was awarded jointly to Mario R. Capecchi, PhD, Sir Martin J. Evans, PhD, and Oliver Smithies, PhD.

Roger D Kornberg, PhD

2006 Nobel Prize | Chemistry

Studied the molecular basis of eukaryotic transcription

Craig C. Mello, PhD

2006 Nobel Prize | Physiology or Medicine

Helped discover RNA interference - gene silencing by double-stranded RNA

Aaron Ciechanover, MD

2004 Nobel Prize | Chemistry

Helped discover ubiquitin-mediated protein degradation. This prize was awarded jointly to Aaron Ciechanover, MD, Avram Hershko, MD, PhD, and Irwin Rose, PhD.

Avram Hershko, MD, PhD

2004 Nobel Prize | Chemistry

Helped discover ubiquitin-mediated protein degradation. This prize was awarded jointly to Aaron Ciechanover, MD, Avram Hershko, MD, PhD, and Irwin Rose, PhD.

Irwin A. Rose, PhD

2004 Nobel Prize | Chemistry

Helped discover ubiquitin-mediated protein degradation. This prize was awarded jointly to Aaron Ciechanover, MD, Avram Hershko, MD, PhD, and Irwin Rose, PhD.

Leland Hartwell, PhD

2001 Nobel Prize | Physiology or Medicine

Discovered key regulators of the cell cycle

Günter Blobel, MD, PhD

1999 Nobel Prize | Physiology or Medicine

Discovered how proteins find their proper location in the cell

Edward B. Lewis, PhD

1995 Nobel Prize | Physiology or Medicine

Found evidence that certain patterns in development apply to human cancers

Alfred Gilman, MD, PhD

1994 Nobel Prize | Physiology or Medicine

Helped to understand how cells talk to one another

Phillip A. Sharp, PhD

1993 Nobel Prize | Physiology or Medicine

Showed that readable regions on DNA are separated by some regions that cannot be read

E. Donnall Thomas, MD

1990 Nobel Prize | Physiology or Medicine

Pioneered bone marrow transplantation

Sidney Altman, PhD

1989 Nobel Prize | Chemistry

Discovered that RNA can sometimes act as an enzyme

Thomas R. Cech, PhD

1989 Nobel Prize | Chemistry

Found evidence that RNA may have enzymatic properties in cells

J. Michael Bishop, MD

1989 Nobel Prize | Physiology or Medicine

Discovered latent cancer genes, oncogenes, in normal cells

Harold E. Varmus, MD

1989 Nobel Prize | Physiology or Medicine

Showed that defects in normal genes can cause cancer

Susumu Tonegawa, PhD

1987 Nobel Prize | Physiology or Medicine

Discovered how antibodies are made by cells of the immune system

Stanley Cohen, PhD

1986 Nobel Prize | Physiology or Medicine

Showed that some growth factors influence cancer development

Paul Berg, PhD

1980 Nobel Prize | Chemistry

Was the first to create a recombinant DNA molecule

Walter Gilbert, MD

1980 Nobel Prize | Chemistry

Developed a method important for sequencing DNA

Baruj Benacerraf, MD

1980 Nobel Prize | Physiology or Medicine

Contributed to the understanding of the genetic basis of immunology

Daniel Nathans, MD

1978 Nobel Prize | Physiology or Medicine

Discovered enzymes that modify DNA, facilitating the study of genes

Hamilton O. Smith, MD

1978 Nobel Prize | Physiology or Medicine

Discovered DNA splicing enzymes important for genetic engineering

Renato Dulbecco, MD

1975 Nobel Prize | Physiology or Medicine

Found that certain animal cancer viruses can insert themselves into a cell's DNA

Howard M. Temin, PhD

1975 Nobel Prize | Physiology or Medicine

Discovered the reverse transcriptase that translates RNA into DNA

David Baltimore, PhD

1975 Nobel Prize | Physiology or Medicine

Found that some RNA viruses can transfer their information to DNA

Christian B. Anfinsen, PhD

1972 Nobel Prize | Chemistry

Discovered how enzymes assume their active shapes within the living cell

Salvador E. Luria, MD

1969 Nobel Prize | Physiology or Medicine

Did important work on phages to provide basic knowledge of viruses

Max Delbruck, PhD

1969 Nobel Prize | Physiology or Medicine

Showed how DNA replicates itself and the genetic structure of viruses

Robert Holley, PhD

1968 Nobel Prize | Physiology or Medicine

Determined the structure of transfer RNA, which is important in protein synthesis

Marshall Nirenberg, PhD

1968 Nobel Prize | Physiology or Medicine

Interpretation of the genetic code and its function in protein synthesis

Charles B. Huggins, MD

1966 Nobel Prize | Physiology or Medicine

Demonstrated hormonal dependence of breast and prostate cancer cells

Francis P. Rous, MD

1966 Nobel Prize | Physiology or Medicine

Discovered that cancer can be induced by injecting a tumor extract

Robert Burns Woodward, PhD

1965 Nobel Prize | Chemistry

Determined how the body uses small compounds to build organic molecules for life's functions

James D. Watson, PhD

1962 Nobel Prize | Physiology or Medicine

Discovered the double helix structure of DNA

Severo Ochoa, MD

1959 Nobel Prize | Physiology or Medicine

Discovered RNA polymerase, an enzyme that synthesizes RNA

Edward L. Tatum, PhD

1958 Nobel Prize | Physiology or Medicine

Reported that mutations can alter nutritional requirements of cells

George W. Beadle, PhD

1958 Nobel Prize | Physiology or Medicine

Provided evidence that for every enzyme there is one gene

Vincent du Vigneaud, PhD

1955 Nobel Prize | Chemistry

Isolated and synthesized two sulfurous pituitary hormones. The element sulfur plays an important role in the chemical processes that are the basis of all life.

Fritz Lipmann, MD, PhD

1953 Nobel Prize | Physiology or Medicine

Discovered an enzyme that helps to convert food into energy

Hermann Joseph Muller, PhD

1946 Nobel Prize | Physiology or Medicine

Discovered that x-ray irradiation can produce cell mutations

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