# Marie Skłodowska-Curie 1867 - 1934

#### **Physics (1903) – Chemistry (1911)**

Polish-born physicist and chemist. With Henri Becquerel and her husband, Pierre Curie, she was awarded the 1903 Nobel prize in physics (spontaneous radiation). She was the sole winner of the 1911 Nobel prize in Chemistry (discovery of the elements polonium and radium). She is the only woman to win the award in two different fields. During World War I, she left her lab behind, inventing a mobile X-ray unit that could travel to the battlefront.

https://www.nobelprize.org/womenwhochangedscience/stories/ marie-curie

# Irène Joliot-Curie

# 1897 - 1957



#### Chemistry (1935)

French chemist and physicist, the elder daughter of Pierre and Marie Skłodowska–Curie. Along with her husband Frédéric Joliot-Curie, she discovered the first-ever artificially created radioactive atoms. They received the Nobel prize in Chemistry in 1935. She was also one of the first three women to be a member of a French government and she was one of the six commissioners of the new French Atomic Energy Commission (CEA).

https://www.nobelprize.org/womenwhochangedscience/stories/i rene-joliot-curie

### Gerty T. Radnitz-Cori

# 1896 - 1957



#### Physiology/Medicine (1947)

Czech and American biochemist who elucidated with her husband, Carl Cori, the basic biochemical mechanisms involved in the utilization of energy by muscle and liver. They elucidated the "Cori cycle," the process by which the body reversibly converts glucose and glycogen and received the Nobel Prize in Physiology or Medicine in 1947; she was the first woman to do so.

https://www.nobelprize.org/womenwhochangedscience/stories/ gerty-cori

### **Maria Goeppert Mayer**

# 1906 - 1972



#### Physics (1963)

German-born American physicist who contributed discoveries to multiple scientific fields, despite spending most of her career without a faculty appointment. She developed a new model of the atomic nucleus that explained why some isotopes were more stable than others (nuclear shell model) and was awarded the Nobel prize in Physics in 1963, the second woman to receive the Nobel Prize in Physics - 60 years after Marie Curie.

https://www.nobelprize.org/womenwhochangedscience/stories/ maria-goeppert-mayer

# Dorothy Crowfoot Hodgkin 1910 - 1994



#### Chemistry (1964)

English chemist, leading practitioner of the use of X-ray crystallography In the late 1930s in determining the threedimensional structure of complex organic molecules such as penicillin, vitamin B12 and insulin. She won the Nobel Prize in Chemistry in 1964 (the first and only British woman to receive a Nobel Prize in Science). Hodgkin reinvented crystallography, transforming it into an indispensable scientific tool.

https://www.nobelprize.org/womenwhochangedscience/stories/ dorothy-hodgkin



# Rosalyn Sussman Yalow 1921 - 2011



#### Physiology/Medicine (1977)

American medical physicist, and a co-winner of the 1977 Nobel Prize in Physiology or Medicine (together with Roger Guillemin and Andrew Schally) for development of the radioimmunoassay (RIA) technique (a method for measuring concentrations of substances in the blood). She was the second American woman to be awarded the Nobel Prize Physiology or Medicine after Gerty Cori in 1947.

https://www.nobelprize.org/womenwhochangedscience/stories/ rosalyn-yalow

### **Barbara McClintock**

# 1902 - 1992



#### Physiology/Medicine (1983)

American geneticist whose work was ignored for more than a decade. In 1953, she decided to stop publishing her research results. But in the 1960s and 1970s, discoveries brought McClintock's work back to the forefront, to the point that in 1983 she was awarded the Nobel Prize in Medicine for her work on transposable elements. She is the first woman to receive an unshared Nobel Prize in that category.

https://www.nobelprize.org/womenwhochangedscience/stories/ barbara-mcclintock

### **Rita Levi-Montalcini**

# 1909 - 2012



#### Physiology/Medicine (1986)

Italian-born neurologist who devoted her life to the study of the development of the nervous system, which she perfected in the United States, where she lived for thirty years. Winner of the Nobel Prize in Medicine in 1986 for the discovery and identification of the Nerve Growth Factor. She became a senator for life in 2001 and she spent much of the latter part of her career supporting many scientists (the Rita Levi-Montalcini Foundation.

https://www.nobelprize.org/womenwhochangedscience/stories/ rita-levi-montalcini

### **Gertrude B. Elion**

# 1918 - 1999



#### Physiology/Medicine (1988)

American pharmacologist, which has contributed to the development of new treatments. She developed two new leukemia, synthesized the first treatments for effective immunosuppressant used in transplantation and Allopurinol, which was used for the treatment of uricemia, gout and Chagas she disease. In 1988, received the Nobel Prize in Physiology/Medicine with G. Hitchings and J. Black for their new scientific approach to drug development.

https://www.nobelprize.org/womenwhochangedscience/stories/ gertrude-elion

# **Christiane Nüsslein-Volhard**



1942

#### Physiology/Medicine (1995)

German geneticist, pioneer of Drosophila embryology. Having systematically researched the mutations affecting the embryonic development of this organism, she discovered the molecular mechanisms that regulate the establishment of the main structures of the embryo. She founded the Christiane Nüsslein-Volhard Foundation for the Advancement of Science and Research to help young women scientists. In 1995, she received the Nobel Prize in Physiology/Medicine with E. Wieschaus.

https://www.nobelprize.org/womenwhochangedscience/stories/ christiane-nusslein-volhard

### Linda Brown Buck



1947

#### Physiology/Medicine (2004)

American biologist, best known for her work on the olfactory process to trace how smells travel through the cells of our nose into the brain. Linda Buck and her colleague, Richard Axel, worked with rat genes and identified a family of genes that code for more than 1000 odor receptors (G protein-coupled receptors). She was awarded the 2004 Nobel Prize in Physiology or Medicine, along with Richard Axel, for their work.

https://www.nobelprize.org/womenwhochangedscience/stories/l inda-buck

### Françoise Barré-Sinoussi



1947

#### Physiology/Medicine (2008)

French virologist, who has been involved in retrovirology research since the early 1970's. She is recognized for her major contributions to HIV/AIDS research with the discovery in 1983 of the cause of AIDS, a retrovirus, named HIV. She was awarded in 2008 the Nobel Prize in Physiology or Medicine for this discovery, together with Luc Montagnier.

https://www.nobelprize.org/womenwhochangedscience/stories/f rancoise-barre-sinoussi

# Elizabeth H. Blackburn



#### Physiology/Medicine (2009)

Australian-born biologist who studies the telomere, a structure at the end of chromosomes that protects the chromosome. She codiscovered telomerase, the enzyme that replenishes the telomere. For this work, she was awarded the 2009 Nobel Prize in Physiology or Medicine, sharing it with Carol W. Greider and Jack W. Szostak.

https://www.nobelprize.org/womenwhochangedscience/stories/ elizabeth-blackburn



1948

# **Carol W. Greider**



1961

#### Physiology/Medicine (2009)

American molecular biologist. At the age of 23, before she had even got her PhD, Carol Greider pioneered research on the structure of telomeres and discovered with Elizabeth Blackburn how chromosomes are protected by the enzyme telomerase (in 1984). This discovery would earn them the 2009 Nobel Prize in Physiology or Medicine (the hundredth Nobel prize in Physiology or Medicine to be awarded).

https://www.nobelprize.org/womenwhochangedscience/stories/ carol-greider

# Ada Yonath

# 1939

x



#### Chemistry (2009)

Biochemist, the first Israeli woman to win the Nobel Prize and the first woman in 45 years to win the Chemistry prize (since Dorothy Hodgkin in 1964). In 2009, she received the Nobel Prize in Chemistry along with V. Ramakrishnan and T. Steitz for her studies on the structure and function of the ribosome. In 1971 she established the first bio-crystallography-laboratory in Israel, which was the only one in the country for almost a decade.

https://www.nobelprize.org/womenwhochangedscience/stories/ ada-yonath

# **May-Britt Moser**



1963

#### Physiology/Medicine (2014)

Norwegian neuroscientist who contributed to the discovery of grid cells (a type of neuron) in the brain and the elucidation of their role in generating a system of mental coordinates by which animals are able to navigate their environment. Together with Edvard Moser she established the Moser research environment in Norway and they were awarded the 2014 Nobel Prize for Physiology or Medicine.

https://www.nobelprize.org/womenwhochangedscience/stories/ may-britt-moser



1930



#### Physiology/Medicine (2015)

Chinese pharmaceutical chemist who discovered artemisinin, used to treat malaria, saving millions of lives in South China, Southeast Asia, Africa, and South America. She is the first mainland Chinese scientist to have received a Nobel Prize in a scientific category (Physiology or Medicine in 2015), and she did so without a doctorate, a medical degree, or training abroad.

https://www.nobelprize.org/womenwhochangedscience/stories/ tu-youyou

# **Donna Strickland**



#### Physics (2018)

Canadian Physicist known for her work on ultrafast lasers. She worked with G. Mourou, where she developed the chirped pulse amplification technique, which allowed her to create what was, at the time, the most intense laser light ever generated. They were jointly awarded the Nobel Prize in Physics in 2018. Strickland was the third female in history to win the prize and the first in 55 years, after M. Curie in 1903 and M. Goeppert Mayer in 1963.

https://www.nobelprize.org/womenwhochangedscience/stories/ donna-strickland



1959

### **Frances H. Arnold**

### Chemistry (2018)

American chemical engineer who pioneered methods to direct the evolution of enzymes, and developed new approaches to protein engineering with applications from pharmaceuticals to renewable fuels. Frances Arnold is the first American woman to receive the Nobel Prize in Chemistry (2018).

1956

https://www.nobelprize.org/womenwhochangedscience/stories/f rances-arnold http://fhalab.caltech.edu/

### **Emmanuelle Charpentier**



1968

#### Chemistry (2020)

French microbiologist who studies the fundamental mechanisms of bacterial pathogens in the processes of infection and immunity. At the origin of the CRISPR revolution with J. Doudna. Since 2018, she is director of the Max Planck Research Center for Pathogen Science in Berlin. Winner of numerous scientific awards including the Nobel Prize in Chemistry in 2020.

<u>https://www.emmanuelle-charpentier-pr.org/</u> <u>https://aninfinityofhypotheses.wordpress.com/2014/09/01/crispr</u> <u>cas9-emmanuelle-charpentier-futur-prix-nobel/</u>

### Jennifer A. Doudna



1964

#### Chemistry (2020)

American biochemist who has done pioneering work in CRISPR gene editing with Emmanuelle Charpentier. She co-founded and serves on the advisory panel of several companies that use CRISPR technology in unique ways. J. Doudna is a leader in public discussion of the ethical implications of genome editing for human biology and societies She received the 2020 Nobel Prize in Chemistry, with Emmanuelle Charpentier.

https://www.nobelprize.org/prizes/chemistry/2020/doudna/facts

### **Andrea Mia Ghez**



1965

#### Physics (2020)

American astrophysicist and professor in the Department of Physics and Astronomy and the Lauren B. Leichtman & Arthur E. Levine chair in Astrophysics, at the University of California. Her research focuses on the center of the Milky Way galaxy. She has developed and refined techniques for studying the movement of stars. In 2020, she became the fourth woman to be awarded the Nobel Prize in Physics.

https://www.nobelprize.org/prizes/physics/2020/ghez/facts/

### Carolyn R. Bertozzi



1966

#### Chemistry (2022)

American chemist, Professor of Chemistry at Stanford University. Prof. Bertozzi's research interests span the disciplines of chemistry and biology with an emphasis on studies of cell surface glycosylation pertinent to disease states. She was awarded the Nobel Prize in chemistry in 2022 for the development of bioorthogonal reactions, which allow scientists to track biological processes without disrupting the normal chemistry of the cell. A strong advocate for diversity, equity and inclusion.

https://bertozzigroup.stanford.edu/

### Katalin Karikó

#### Physiology/Medicine (2023)

Hungarian biochemist. For four decades, her research has focused on the use of messenger RNA for therapeutics and vaccines. Her foundational discoveries with Drew Weissman (how to overcome the potentially lethal inflammatory response caused by synthetic mRNA) laid the groundwork for the rapid development of mRNA vaccines during the COVID-19 pandemic. This discovery would earn them the 2023 Nobel Prize in Physiology or Medicine.

1955

https://www.nobelprize.org/prizes/medicine/2023/pressrelease/

### **Anne L'Huillier**





#### Physics (2023)

French physicist working on the interaction between short and intense laser fields with atoms. She pioneered attosecond physics (the generation of brief laser pulses that enable the rapid movement of electrons inside atoms and molecules to be tracked). She is the fifth woman to receive the Nobel Prize in Physics.

https://www.lunduniversity.lu.se/article/anne-lhuillier-awardednobel-prize-physics













Chinese pharmaceutical chemist who discovered artemisinin, used to treat malaria, saving millions of lives in South China, Southeast Asia, Africa, and South America. She is the first mainland Chinese scientist to have received a Nobel Prize in a scientific category (Physiology or Medicine in 2015), and she did so without a doctorate, a medical degree, or training abroad.

https://www.nobelprize.org/womenwhochangedscience/stories/ tu-youyou



https://www.nobelprize.org/womenwhochangedscience/stories/ donna-strickland



