

EQUAL Scitech DIGITAL BOOK



Project

**“EQUAL SciTech: promoting gender
equality in Science and Technology”**

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Guide to scientists

Ada Lovelace



Ada Lovelace, born Augusta Ada Byron on 10 December 1815 in London, UK, died on 27 November 1852 in the same city. She was the daughter of the Romantic poet Lord George Gordon Byron and Anne Isabella Byron. While her father was a literary icon, Ada was mainly influenced by her mother, who encouraged her to pursue studies in science and mathematics. This foundation proved fundamental to her future contributions to the burgeoning field of computer science.

Ada is famous for her collaboration with Charles Babbage, in particular for his studies on the Analytical Machine, considered a precursor to the modern computer. Although the machine was never completed, Ada imagined its potential in ways that exceeded Babbage's original conception. He wrote what is now recognised as the first computer algorithm designed to be executed by the analytical machine.

Her ability to fuse mathematical logic with imagination allowed her to foresee the possibility of computers doing much more than numerical calculations, such as creating music or graphics. For this reason, she is often considered a visionary and the world's first computer programmer.

Although her life was short, her work profoundly influenced later thinking on data processing and computer development. Her legacy is celebrated each year on Ada Lovelace Day, an occasion to honour the contributions of women in science, technology, engineering and mathematics.



Agnese Collino



Agnese Collino is an Italian molecular biologist and science communicator. After graduating in molecular biology from the University of Padua, she conducted research on cancer, contributing significantly to the understanding of the cellular mechanisms involved in cancer. Collino has published numerous scientific articles in prestigious international journals.

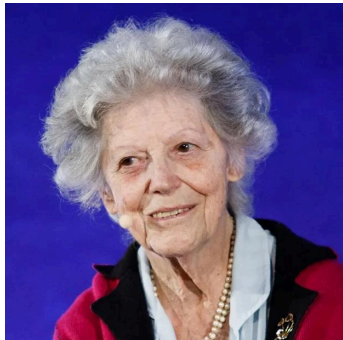
In addition to her research activities, she has established herself as a leading figure in Italian science communication. Through books, conferences and collaborations with important organisations such as the

Fondazione Umberto Veronesi, she has made complex topics such as genetics, innovative therapies and the ethical implications of new technologies accessible to the general public. She is the author of numerous popular science essays dealing with health and scientific topics.

Her dedication to science communication has earned her recognition and acclaim, helping to promote a more inclusive and informed scientific culture in Italy.



Amalia Ercoli Finzi



Amalia Ercoli Finzi is an Italian aerospace engineer, born on 20 April 1937 in Gallarate. She is considered a pioneer of Italian aeronautical and aerospace engineering and a role model for women in STEM fields. In 1962, she was the first Italian woman to graduate in aeronautical engineering from the Politecnico di Milano, where she later served as professor and director of the Department of Aerospace Engineering.

During her career, she contributed to numerous international space missions. She was one of the main consultants on the European Space Agency's Rosetta project, playing a key role in the design of the drill used to penetrate the surface of comet 67P/Churyumov-Gerasimenko. Her expertise was instrumental in the success of this historic mission.

Amalia has been the recipient of numerous awards, including the Gold Medal of the Italian Association of Aeronautics and Astronautics. She is often invited to speak at scientific and educational events, where she advocates the importance of scientific and technological careers, especially for young women.



Ana Aslan



Ana Aslan was a Romanian biologist and physician, born on 1 January 1897 in Brăila, Romania, and died on 20 May 1988 in Bucharest, Romania. She is recognised as a pioneer in geriatrics and for her significant contributions to the medicine of ageing. In 1952, she founded the National Institute of Geriatrics and Gerontology in Bucharest, the first of its kind in the world, which has become a centre of excellence for the study and treatment of aging.

Ana Aslan is famous for developing Gerovital H3, a procaine-based treatment that has shown beneficial properties in slowing down certain effects of aging. Used to improve the quality of life of the elderly, the treatment attracted the attention of influential personalities and international celebrities, including John F. Kennedy, Charlie Chaplin and Salvador Dalí. Later, he introduced another product, Aslavital, designed for skin and body treatment.

In addition to her scientific contributions, Aslan has been an advocate for the rights and dignity of the elderly, promoting public policies to improve their quality of life. Her work has earned her numerous international awards, including those from France, Germany, Italy and the United States.

Her pioneering approach to geriatric medicine has left a lasting legacy in the medical field. Today, the National Institute of Geriatrics and Gerontology in Bucharest remains a leading centre for research and treatment of aging.



Barbara Cominelli



Barbara Cominelli is an Italian manager, born in Milan. She graduated in Economics at Bocconi University in Milan and started her career as a strategic consultant at internationally renowned companies, gaining extensive experience in technology and management.

During her time at Vodafone, she led the company's digital transformation, developing innovative strategies to improve customer services. Later, she joined Microsoft Italia as Chief Operating Officer and Marketing Director, where she played a crucial role in the digitalisation of companies and public institutions.

In 2020, Barbara was appointed CEO of JLL Italia, a leading global real estate consultancy, where she focused her efforts on sustainability, innovation and diversity. She is recognised for her strategic approach, which combines deep technological knowledge with a strong focus on people and the environment.

Throughout her career, she has been included in the list of "Top 50 Most Inspirational Women in Technology" and has received numerous awards for her commitment to fostering female talent and inclusive leadership.



Chiara Montanari



Chiara Montanari is an Italian engineer, born on 23 September 1974 in Pisa. She is known for being the first Italian woman to lead an international expedition to Antarctica, a milestone in her career as a manager in extreme environments.

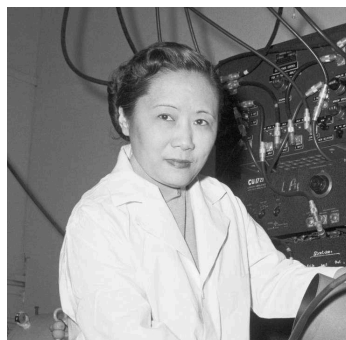
Montanari graduated in engineering from the Politecnico di Milano, specialising in project management and complex systems engineering. Her career has taken her to extreme environments, such as Antarctic research stations, where she led five international scientific missions, including the management of the Concordia station, located over 3,200 metres above sea level and exposed to extreme weather conditions.

Her experiences in Antarctica were the basis for the development of an innovative leadership model that she calls 'Antarctic Mindset'. This strategic approach focuses on managing complex and uncertain situations, using adaptability and critical thinking as key tools. In addition to her scientific and managerial work, Montanari is a motivational speaker and consultant for companies seeking to implement innovation and resilience strategies. She has worked with multinationals, institutions and universities, bringing her insights from the Antarctic environment to corporate contexts.

Montanari is the author of the book *Chronicles from the Ice*, in which she shares her Antarctic experiences, exploring issues of leadership, sustainability and innovation. She is also involved in the promotion of STEM disciplines, with a focus on women's involvement in science and technology.



Chien-Shiung Wu



Chien-Shiung Wu was a Chinese-American physicist, born on 31 May 1912 in Liuhe, Taicang, Jiangsu, China, and passed away on 16 February 1997 in New York, USA. She is recognised as one of the greatest scientists of the 20th century, often referred to as the 'Chinese Madame Curie' or 'the queen of modern physics'.

A 1934 graduate of the National Central University of China, Wu then moved to the US, where she received her PhD in physics from the University of California, Berkeley, in 1940. She worked under the supervision of Ernest Lawrence, a pioneer of nuclear physics.

During World War II, Wu contributed to the Manhattan Project, working on the separation of uranium isotopes and the properties of plutonium. After the war, he continued his academic career at Columbia University, conducting cutting-edge research in the field of particle physics and weak interactions.

His most famous contribution was the 1956 experiment that demonstrated the non-conservation of parity in weak interactions, overturning a fundamental principle of physics. This discovery revolutionised the field and earned Tsung-Dao Lee and Chen-Ning Yang the Nobel Prize in Physics in 1957, although Wu's role was crucial to the success of the experiment.

Wu received numerous awards, including the National Medal of Science and the inaugural Wolf Prize in Physics. She is remembered not only for her scientific contributions, but also for her efforts to promote women's participation in science.



Clara Immerwahr



Clara Immerwahr was a German chemist, born on 21 June 1870 in Polkendorf, Silesia (now part of Poland), and died on 2 May 1915 in Berlin-Dahlem, Germany. She is known as a pioneer in chemistry and for her defence of ethical science, strongly opposing the use of scientific discoveries for military purposes.

Immerwahr was among the first women to attend university in Germany, receiving her doctorate in chemistry from the University of Breslau (today Wrocław, Poland) in 1900. Her thesis, which focused on the solubility of metallic salts, was highly praised. This achievement was particularly significant at a time when women faced severe restrictions on access to higher education.

In 1901, she married Fritz Haber, a scientist famous for his work on the synthesis of ammonia, which had applications in both fertilisers and explosives. However, their marriage was fraught with personal and professional challenges. Clara, who aspired to collaborate with her husband, often found herself confined to the traditional roles of wife and mother, in line with the expectations of society at the time.

Her opposition to the military application of science became evident during the First World War, when Haber contributed to the development of chemical weapons, in particular chlorine gas. Clara described the use of chemical weapons as a 'perversion of science' and publicly opposed her husband's activities. This position left her isolated both personally and professionally.

The tragic death of Clara Immerwahr, who committed suicide with her husband's service weapon after a dispute over chemical warfare, is regarded as a symbol of the ethical struggle against the abuse of science. Her story has inspired peace movements and reflections on the responsibility of scientists towards humanity.



Cristina Fonseca



Cristina Fonseca is a Portuguese engineer and entrepreneur, born on 14 November 1987 in Cercal, Ourém, Portugal. She is best known as the co-founder of Talkdesk, a cloud-based contact centre platform that revolutionised the industry, turning it into one of the most important global start-ups.

Fonseca studied telecommunications engineering at the Instituto Superior Técnico in Lisbon, where she developed a strong interest in technological innovation and entrepreneurship. In 2011, together with his colleague Tiago Paiva, he founded Talkdesk during a Twilio hackathon. Their project, which allowed companies to create contact centres in a matter of minutes, quickly gained the attention of international investors, leading Talkdesk to 'unicorn' status (a start-up valued at over USD 1 billion).

After the success of Talkdesk, Cristina embarked on other ventures in technology and investment. She became a Venture Partner at Indico Capital Partners, a venture fund focused on European, particularly Portuguese, technology start-ups. In this role, Fonseca supports new entrepreneurs by providing capital and mentorship to develop innovative projects.

Cristina is actively involved in promoting STEM careers, especially among women, and encouraging greater diversity in the technology sector. She has been recognised as one of

the most influential women in technology innovation in Europe and continues to work to expand access to technology and entrepreneurship.



Cynthia Breazeal



Cynthia Breazeal is an American robotics and entrepreneur, born on 15 November 1967 in Albuquerque, New Mexico, USA. She is a pioneer in the field of social robotics, focusing on developing robots that interact with humans in intuitive and socially meaningful ways. Her innovative work has bridged the gap between robotics and human interaction.

Breazeal received her bachelor's degree in electrical and computer engineering from the University of California, Santa Barbara, and later graduated from the Massachusetts Institute of Technology (MIT). She received her PhD in 2000 under the guidance of Rodney Brooks, with a thesis on the development of robots that can interact with humans.

At MIT, he founded and leads the Personal Robots Group at the MIT Media Lab, where his team explores applications of social robotics in education, healthcare and emotional well-being. His most important creation, 'Kismet', was one of the first robots capable of recognising and responding to human emotions. Breazeal also founded Jibo, Inc. a company that developed one of the world's first social robots for the home.

Her work has won numerous awards and she is often invited to speak at international conferences on robotics, artificial intelligence and their social implications. Breazeal is also committed to making robotics accessible to a wider audience, particularly children, to inspire the next generation of innovators.



Dorothea Christiane Erxleben



Dorothea Christiane Erxleben was a German physician, born on 13 November 1715 in Quedlinburg, Germany, and died on 13 June 1762 in the same city. She is famous for being the first woman in Germany to earn a doctorate in medicine, breaking down social barriers at a time when education and professional careers were largely inaccessible to women.

Dorothea grew up in a progressive family; her father, a doctor, recognised her talent and encouraged her interest in medicine from an early age. Despite opposition from society, she continued her medical studies through private lessons and practical experience in her father's practice. In 1742, King Frederick II of Prussia issued a special decree allowing her to study medicine formally and defend her thesis at the University of Halle.

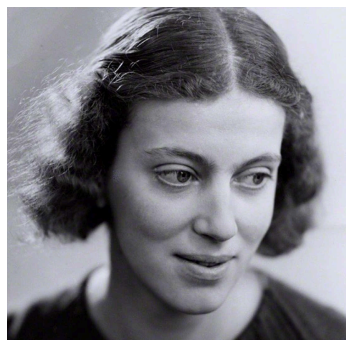
In 1754, Erxleben successfully defended her thesis, 'Academische Abhandlung von der gar zu geschwinden und angenehmen, aber deswegen öfters unsicheren Heilung der Krankheiten', which translates as 'Academic Dissertation on the rapid and pleasant, but often uncertain, treatment of diseases'. Her result marked a historical milestone, inspiring future generations of women to enter the medical profession.

In addition to her medical work, Dorothea wrote about women's education, advocating equal opportunities in academia and the professional world. She balanced her innovative career with her responsibilities as a mother, as she raised four children during her lifetime.

Dorothea Christiane Erxleben's legacy remains as a symbol of perseverance and the fight for gender equality in education and medicine.



Dorothy Crowfoot Hodgkin



Dorothy Crowfoot Hodgkin was a British chemist and crystallographer, born on 12 May 1910 in Cairo, Egypt, and died on 29 July 1994 in Ilmington, UK. She is famous for her pioneering work in the field of X-ray crystallography, which revolutionised the study of the three-dimensional structures of biomolecules.

Hodgkin graduated in chemistry from Somerville College, Oxford, in 1932. She then conducted her undergraduate research at Cambridge University under John Desmond Bernal, who introduced her to the application of X-ray crystallography to biological substances. Back in Oxford, she began innovative studies on complex biological molecules.

Among her most important achievements were the determination of the molecular structures of penicillin, vitamin B12 and insulin. In 1945, Hodgkin successfully described the structure of penicillin, a fundamental discovery for the understanding and improvement of the antibiotic. Her work on vitamin B12 earned her the Nobel Prize in Chemistry in 1964, making her the third woman to receive this prestigious award. Later in her career, she devoted almost 35 years to solving the structure of insulin, making a significant contribution to diabetes research.

In addition to her scientific contributions, Hodgkin was a strong advocate for peace and international collaboration in science. She mentored many prominent scientists and was deeply involved in educational initiatives, particularly in developing countries.

Hodgkin's legacy continues through her transformative contributions to chemistry and her pioneering role for women in science



Elvira Fortunato



Elvira Fortunato is a Portuguese scientist born on 22 July 1964 in Almada, Portugal. She is recognised worldwide for her innovative work in the field of sustainable electronics and for developing the world's first paper transistor. Her research has contributed significantly to the field of flexible and environmentally friendly electronic devices.

Fortunato graduated in materials engineering from NOVA University in Lisbon, where she also received her PhD in 1995. She is currently a full professor at the same institution and director of the Centre for Materials Research (CENIMAT). His work focuses on the

exploration of innovative materials, particularly in transparent electronics and paper-based electronic devices.

His most famous achievement is the invention of the paper transistor, which uses cellulose as its base material. This innovation paved the way for more sustainable electronic solutions, reducing environmental impact and paving the way for biodegradable devices. Fortunato's research was instrumental in advancing the concept of green electronics.

He has received numerous awards for his contributions, including the European Research Council (ERC) Advanced Grant and the Blaise Pascal Medal for Materials Science. Ms Fortunato is also a member of several scientific academies and advisory boards, a testament to her influence in the global scientific community.

Elvira Fortunato continues to inspire the next generation of scientists through her commitment to sustainability and innovation in materials science.



Emilia Garito



Emilia Garito is a software engineer and technology transfer expert born on 19 January 1974 in Catanzaro, Italy. She is widely recognised for her work in the field of intellectual property and innovation, in particular as founder and CEO of Quantum Leap IP, a company specialising in patent brokerage and technology transfer.

Garito graduated in Computer Engineering from the University of Calabria, where she developed a solid foundation in systems analysis and technological innovation. Her professional career started in the field of software development and IT consulting, where she honed her skills in managing complex technological projects.

In 2011, he founded Quantum Leap IP, which focuses on connecting research institutes, start-ups and industries to promote the commercialisation of innovative technologies. His work has facilitated the transfer of innovative patents in various fields, including renewable energy, artificial intelligence and biomedicine. Garito's efforts have contributed significantly to bridging the gap between academia and industry, promoting innovation on a global scale.

Beyond her business successes, Garito is an advocate for women in STEM disciplines and actively participates in initiatives that promote diversity and inclusion in the technology sector. She frequently speaks at conferences and mentors aspiring entrepreneurs, sharing her knowledge on intellectual property and innovation management.

Her contributions to technology transfer and intellectual property have earned her numerous awards, making her a prominent figure in the Italian innovation ecosystem.



Emmy Noether



Emmy Noether, born Amalie Emmy Noether on 23 March 1882 in Erlangen, Germany, and died on 14 April 1935 in Bryn Mawr, Pennsylvania, USA, was a pioneering mathematician whose work laid the foundations of modern abstract algebra and theoretical physics. She is widely regarded as one of the most influential mathematicians of the 20th century.

Noether initially faced social barriers, as women were not allowed to formally enrol at German universities during her early years. She managed to attend lectures at the University of Erlangen, where her father, Max Noether, was a professor. In 1904, after a change in policy, he officially enrolled and later completed his doctoral thesis on invariants in algebra, graduating summa cum laude in 1907.

His innovative contributions began when he joined the University of Göttingen, despite initial resistance due to his gender. There, he developed Noether's theorem, a principle linking symmetries and conservation laws in physics. This theorem is fundamental to theoretical physics, in particular to the understanding of quantum mechanics and general relativity.

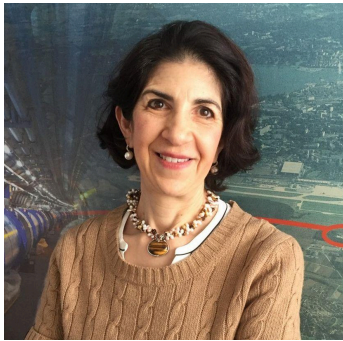
In addition to his contributions to physics, Noether revolutionised abstract algebra by developing theories on rings, fields and modules. His work on algebraic structures provided a new language and framework for modern mathematics, influencing countless areas, including topology and number theory.

Despite her immense contributions, Noether faced persistent discrimination as a woman in academia. She worked for many years without pay or formal recognition, until political upheavals in Nazi Germany forced her to emigrate to the United States in 1933. She joined Bryn Mawr College, where she continued her research and inspired a new generation of mathematicians.

Noether's legacy endures through her transformative contributions to mathematics and physics. Her work remains a cornerstone of modern scientific thought and she is celebrated as a pioneer of women in science and mathematics.



Fabiola Gigliotti



Fabiola Gianotti is an Italian particle physicist, born on 29 October 1960 in Rome, Italy. She is widely recognised for her role as Director General of CERN, the European Organisation for Nuclear Research, and for her contribution to the discovery of the Higgs boson. Gianotti received her PhD in experimental particle physics from the University of Milan. His early research focused on the study of high-energy particle collisions. In 1987, he joined CERN, where he participated in numerous experiments, including the ATLAS project at the Large Hadron Collider (LHC).

As spokesperson for the ATLAS experiment, Gianotti led the international team that confirmed the existence of the Higgs boson in 2012, one of the most significant scientific discoveries of the 21st century. This achievement was recognised with the 2013 Nobel Prize in Physics, awarded to Peter Higgs and François Englert for the theoretical work that predicted the particle's existence.

In 2016, Gianotti made history as the first woman to hold the position of Director General of CERN. During her tenure, she promoted diversity in science, strengthened international collaboration and oversaw major upgrades at the LHC, ensuring her central role in particle physics.

Gianotti has received numerous awards for her work, including honorary degrees from prestigious universities around the world and inclusion in the Forbes list of the world's most powerful women. She is a strong advocate of science education and outreach, inspiring young people to pursue careers in physics.



Hedy Lamarr



Hedy Lamarr, born Hedwig Eva Maria Kiesler on 9 November 1914 in Vienna, Austria, and passed away on 19 January 2000 in Casselberry, Florida, USA, was an Austrian-American actress and inventor. Although she became famous as a Hollywood star during the Golden Age of Film, her innovative

contributions to technology made her an important figure in the history of science.

Lamarr began her acting career in Europe, appearing in films that highlighted her beauty and talent. She achieved international notoriety for her controversial role in the 1933 film *Ecstasy*. In the late 1930s, she fled Europe to escape her tumultuous marriage to an arms dealer and settled in the United States, where she became one of Hollywood's most glamorous and sought-after actresses. Her films include *Algiers* (1938), *Samson and Delilah* (1949) and *The Strange Woman* (1946).

In addition to her acting career, Lamarr had a brilliant and inventive mind. During the Second World War, she and composer George Antheil developed a frequency-hopping communication system. This system was designed to prevent enemy interception of radio-controlled torpedoes by rapidly changing frequency during transmission. Although the technology was not widely adopted during the war, it laid the foundation for modern spread spectrum communication technologies used in Wi-Fi, Bluetooth and GPS.

In 1997, Lamarr and Antheil received the Electronic Frontier Foundation's Pioneer Award in recognition of their invention. Despite her contributions, Lamarr's scientific work remained largely unrecognised during her lifetime, overshadowed by her acting career and by her image as a Hollywood star.

Hedy Lamarr's legacy remains as a symbol of beauty and genius. Her life exemplifies the power of intellect and creativity, showing that innovation can come from unexpected places.



Hilde Mangold



Hilde Mangold, born Hilde Proescholdt on 20 October 1898 in Gotha, Germany, and died on 4 September 1924 in Freiburg, Germany, was a German embryologist. Despite her short life, her revolutionary work on embryonic development had a profound and lasting impact on developmental biology.

Mangold studied biology at the University of Jena and later at the University of Freiburg. Working under the supervision of Hans Spemann, he conducted experiments that formed the basis of his doctoral thesis. His most important contribution was the discovery of the 'organiser' phenomenon in embryonic development.

In his experiments, Mangold transplanted a region of tissue from one amphibian embryo to another, demonstrating that this tissue could induce the formation of a secondary body axis in the host embryo. This region, known as the Spemann-Mangold organiser, plays a crucial role in guiding the development of surrounding cells into specific tissues and organs.

His work, published in 1924, represented a milestone in the field of developmental biology and earned Hans Spemann the Nobel Prize in Physiology or Medicine in 1935. However, Mangold's contribution was not recognised by the Nobel Committee, as she tragically passed away at the age of 26 due to a domestic accident.

Today, Hilde Mangold is remembered as a pioneering scientist whose meticulous work laid the foundation for understanding embryonic development and cell differentiation.



Ida Noddack



Ida Noddack, born Ida Tacke on 25 February 1896 in Lackhausen, Germany, and died on 24 September 1978 in Bad Neuenahr-Ahrweiler, Germany, was a German chemist and physicist. She is best known for her co-discovery of rhenium and her groundbreaking hypothesis on nuclear fission.

Noddack was one of the first women in Germany to study chemistry, graduating from the Technical University of Berlin in 1919. Together with her husband, Walter Noddack, she conducted extensive research on elements and isotopes. In 1925, the couple discovered rhenium, element 75 of the periodic table, named after the Rhine River. This achievement brought them international recognition.

In 1934, Noddack published a seminal paper that challenged the prevailing interpretations of the experiments conducted by Enrico Fermi. She suggested that bombarding uranium with neutrons could cause the nucleus to split into smaller parts, an idea discarded at the time but later confirmed as nuclear fission. His insight was a remarkable precursor to the discovery of fission by Otto Hahn and Fritz Strassmann in 1938.

Despite her contribution, Noddack faced significant challenges as a woman in science and her role in predicting nuclear fission was largely overlooked during her lifetime. However, her work has since been recognised as a visionary contribution to physics and chemistry.

Ida Noddack's legacy remains as a testament to her intellectual rigour and her determination to challenge scientific orthodoxy.



Inge Lehman



Inge Lehmann, born on 13 May 1888 in Copenhagen, Denmark, and passed away on 21 February 1993 in Copenhagen, was a pioneering Danish seismologist. She is best known for her discovery of the Earth's inner core, a monumental contribution to the understanding of geophysics.

Lehmann grew up in an academically challenging environment and attended a progressive school where boys and girls were treated as equals. She later studied mathematics, physics and astronomy at the University of Copenhagen and the University of Cambridge. After working in actuarial science, he shifted his focus to seismology, a field that would define his career.

In 1936, Lehmann analysed the seismic waves of earthquakes and noticed discrepancies in their behaviour. He proposed that the Earth's core was not a single liquid sphere, but consisted of a solid inner core surrounded by a liquid outer core. His hypothesis was later confirmed by more advanced seismological techniques, radically changing the scientific understanding of the Earth's interior.

Lehmann continued his innovative work in geophysics, studying the Earth's mantle and contributing to the understanding of seismic wave propagation. Despite considerable gender discrimination in her field, she persevered and earned global recognition for her achievements.

Her contributions have been honoured with numerous awards, including the Bowie Medal of the American Geophysical Union in 1971. The boundary between the Earth's inner and outer core is now known as the Lehmann discontinuity, immortalising his legacy in the field of seismology.



Ipazia



Hypatia, born around 360 AD in Alexandria and tragically murdered in 415 AD in the same city, was a philosopher, mathematician and astronomer of the late Roman Empire. As a leading scholar and teacher in the Neo-Platonic school of Alexandria, she became one of the most renowned intellectuals of her time.

The daughter of Theon, a respected mathematician and astronomer, Hypatia received a mathematical and philosophical education from an early age. She took up her father's work and became an expert in geometry, algebra and astronomy. Hypatia is credited with commentaries on several important mathematical and astronomical texts,

including Ptolemy's *Almagest* and Diophantine's *Arithmetica*. She also designed astrolabes and hydrometers, further contributing to scientific progress.

Hypatia's public lectures on Neo-Platonic philosophy attracted students from all over the Roman Empire. She was a symbol of intellectual freedom and scientific enquiry at a time of growing religious and political unrest. Unfortunately, her prominence made her a target of the religious and political factions in Alexandria. In 415 AD, in the midst of growing tensions between Christians and pagans, Hypatia was brutally murdered by a mob incited by false accusations against her.

Hypatia's legacy remains as a symbol of the quest for knowledge and the dangers of ignorance and intolerance. Her life and tragic death have inspired countless works of art, literature and philosophy, underlining her role as one of history's most influential women in science and thought.



Irene Joliot-Curie



Irène Joliot-Curie, born on 12 September 1897 in Paris and died on 17 March 1956 in the same city, was a French physicist and chemist. The daughter of Nobel Prize winners Marie and Pierre Curie, she followed in their footsteps and became one of the most important scientists of her time.

Irène studied at the University of Paris and joined her parents' research institute, where she gained extensive experience in the field of radioactivity. During the First World War, she worked alongside her mother, providing mobile radiological units for battlefield hospitals. This experience deepened her interest in the practical applications of science.

In 1926, Irène married Frédéric Joliot, a fellow scientist with whom she formed a highly successful research partnership. Together, they discovered artificial radioactivity in 1934 by bombarding aluminium with alpha particles to produce radioactive phosphorous isotopes. This revolutionary work had significant implications for medicine and nuclear science. For this discovery received the Nobel Prize in Chemistry in 1935.

Irène Joliot-Curie also played an important role in promoting science education and gender equality. She was a professor at the University of Paris and held key positions in various scientific organisations. Her research paved the way for advances in the fields of nuclear energy and cancer treatment.

Irène's life was tragically cut short by leukaemia, probably caused by prolonged exposure to radioactive materials during her research. Her legacy remains through her scientific contributions and her role as a pioneer of women in science.



Janaki Ammal



Janaki Ammal Edavalath Kakkat, born on 4 November 1897 in Tellicherry, Kerala, India, and passed away on 7 February 1984 in Madras (now Chennai), Tamil Nadu, India, was a pioneering Indian botanist and cytogeneticist. She is famous for her pioneering work in plant genetics and her contribution to the development of sugarcane hybrids.

Janaki Ammal was one of the first women in India to pursue a degree in botany, earning a Bachelor's degree from Queen Mary's College, Madras and later a Master's degree from Presidency College. She continued her studies in the United States, where she earned a doctorate in cytogenetics from the University of Michigan in 1931, becoming one of the first Indian women to earn a doctorate in science.

Her most important work involved research on the genetics of sugar cane and aubergines. At the Sugar Cane Breeding Institute in Coimbatore, Ammal developed sugar cane varieties that thrived in the Indian climate, significantly increasing agricultural productivity. He also contributed to the understanding of polyploidy in plants, advancing the field of cytogenetics.

In addition to her scientific work, Ammal was an advocate of biodiversity and environmental conservation. She opposed the destruction of forests for commercial purposes and worked to preserve India's native flora. Her efforts are remembered in the name of the magnolia flower variety *Magnolia kobus* Janaki Ammal.

For her contribution Janaki Ammal received numerous awards, including the Padma Shri, one of India's highest civilian awards, in 1977. Her legacy remains as a pioneer of women in science and as a champion of ecological conservation.



Katharine Burr Blodgett



Katharine Burr Blodgett, born 10 January 1898 in Schenectady, New York, USA, and died 12 October 1979 in Schenectady, was

an American physicist and chemist. She is best known for her invention of 'invisible' non-reflecting glass and for her pioneering contributions to surface chemistry.

Blodgett was the first woman to receive a PhD in physics from the University of Cambridge in 1926. Her doctoral research focused on the behaviour of monomolecular films, laying the foundation for her future innovations. Returning to the US, she joined the research laboratory of General Electric, where she became a pioneer in the application of science to practical industrial problems.

In 1938, Blodgett developed a method to create thin, transparent coatings of organic molecules, known as monomolecular films. This discovery led to the invention of non-reflective glass, widely used in cameras, microscopes and other optical devices. His work revolutionised the field of optics and remains a milestone in modern technology.

During her career, Blodgett held eight patents and published numerous articles on molecular films and surface chemistry. For her contributions, she received several awards, including the prestigious Garvan Medal from the American Chemical Society in 1951, which recognised her as a leader in industrial chemistry.

Blodgett's work not only advanced scientific knowledge, but also demonstrated the practical applications of fundamental research. Her achievements continue to inspire scientists and engineers, particularly women entering the STEM fields.



Katherine Johnson



Katherine Johnson, born Creola Katherine Coleman on 26 August 1918 in White Sulphur Springs, West Virginia, USA, and died on 24 February 2020 in Newport News, Virginia, was an American mathematician and scientist with NASA. She is famous for her central role in the US space programme and for breaking racial and gender barriers in science. From a young age, Johnson showed extraordinary mathematical talent. She graduated from high school at the age of 14 and graduated in mathematics and French at the age of 18 from West Virginia State College (now West Virginia State University), where she

was mentored by the prominent mathematician W. W. Schieffelin Claytor. In 1939, she was one of the first African-American women admitted to graduate school at West Virginia University, but left school to devote herself to her family and career.

In 1953, Johnson joined the National Advisory Committee for Aeronautics (NACA), which later became NASA. As a 'human computer', he performed complex calculations that were crucial to the success of numerous missions. His work on trajectory analysis ensured the safe orbit and re-entry of astronaut John Glenn during the Mercury-Atlas 6 mission in 1962, a milestone in American space exploration. Glenn famously insisted: "Have the girl check the numbers" before the flight, a testament to his accuracy and competence.

Johnson also contributed to the Apollo missions, including calculating the trajectory for the Apollo 11 moon landing in 1969, and worked on the Space Shuttle programme before retiring in 1986. Throughout her career, Johnson overcame systemic racism and sexism, paving the way for future generations of women and minorities in STEM fields. Her contributions were highlighted in the 2016 film *Hidden Figures*, which brought her extraordinary story to a wider audience.

Katherine Johnson has received numerous awards, including the Presidential Medal of Freedom in 2015, presented to her by President Barack Obama. Katherine Johnson remains an enduring symbol of perseverance, intelligence and the power to break barriers.



Katherine Louise Bouman



Katherine Louise Bouman, born 9 May 1989 in West Lafayette, Indiana, USA, is an American computer scientist and electrical engineer. She is widely recognised for her pivotal role in the development of the imaging algorithm that captured the first-ever image of a black hole, presented by the Event Horizon Telescope (EHT) collaboration in April 2019.

Bouman received a bachelor's degree in electrical engineering from the University of Michigan in 2011, followed by a master's and doctorate from the Massachusetts Institute of Technology (MIT) in 2017. During her time at MIT, she worked on computational imaging, focusing on innovative techniques to capture images in extreme and harsh environments. Her PhD research contributed to the EHT project, where she developed algorithms capable of synthesising data from multiple telescopes to produce coherent images.

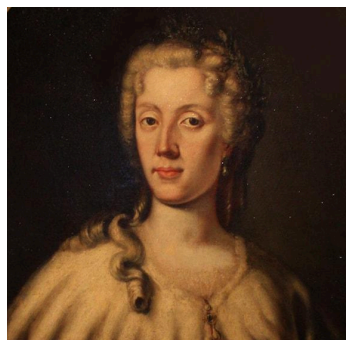
His work culminated in the historic photograph of the black hole at the centre of the galaxy M87, an achievement that captured worldwide attention. Bouman has become an emblem of collaboration and his contributions have highlighted the importance of interdisciplinary teamwork in tackling complex scientific challenges.

Currently, Bouman is an Assistant Professor of Computer Science and Mathematical Sciences at the California Institute of Technology (Caltech). He continues to work on computational imaging and machine learning, with the goal of improving techniques for high-resolution imaging of celestial phenomena.

Bouman has received numerous awards for her contributions to science and for her efforts to inspire more women to pursue careers in STEM fields. Bouman's commitment is always to promote scientific discovery and diversity in technology and engineering.



Laura Bassi



Laura Bassi, born on 29 October 1711 in Bologna and died on 20 February 1778 in the same city, was an Italian physicist and academic. She is considered one of the first women to obtain a university teaching position in Europe and a trailblazer for women in science.

Bassi demonstrated exceptional intellectual abilities from an early age, receiving private lessons in mathematics, philosophy and the natural sciences. In 1732, at the age of 21, she became the first woman to receive a doctorate in philosophy from the University of Bologna. In the same year, she was appointed professor at the university, becoming the first woman in Europe to hold an academic position in the field of physics.

Specialising in Newtonian physics, Bassi was an advocate of experimental science. She conducted public lectures and private research, contributing to fields such as mechanics, hydrodynamics and electricity. Her experiments were highly regarded and she maintained a correspondence with the leading scientists of her time, including Voltaire.

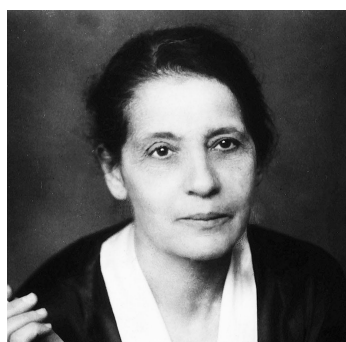
Despite the constraints of society, Bassi managed to reconcile her professional life with her role as wife and mother. She married Giuseppe Veratti, a physician, and together they collaborated on scientific research, particularly in the fields of electricity and medicine.

In 1776, Bassi was appointed to the chair of experimental physics at the Institute of Science in Bologna, a position she held until her death. Her influence extended beyond her work, as she paved the way for future generations of women in academia.

Laura Bassi remains a symbol of perseverance and intellectual success, inspiring women to pursue careers in science and education.



Lise Meitner



Lise Meitner, born on 7 November 1878 in Vienna, Austria-Hungary, and died on 27 October 1968 in Cambridge, England, was an Austrian-Swedish physicist. She is famous for her pioneering work in nuclear physics and her role in the discovery of nuclear fission, one of the most significant scientific achievements of the 20th century.

Meitner was one of the first women to receive a doctorate in physics from the University of Vienna in 1905. In 1907, she moved to Berlin to work with chemist Otto Hahn, starting a collaboration that lasted over 30 years. Despite gender discrimination, Meitner made significant contributions to the study of radioactivity and nuclear processes.

In 1938, Meitner, a Jewish scientist, fled Nazi Germany and took refuge in Sweden. From there, she continued to collaborate with Hahn. In the same year, their experiments led to the discovery of nuclear fission, the splitting of an atomic nucleus into smaller parts that releases enormous amounts of energy. Although Hahn was awarded the Nobel Prize in Chemistry in 1944 for this discovery, Meitner's critical contributions were overlooked, leading to widespread criticism of the Nobel Committee.

Meitner remained an advocate of ethical science and refused to participate in the development of nuclear weapons during World War II. She was later the recipient of numerous awards, including the Enrico Fermi Prize in 1966, which she shared with Otto Hahn and Fritz Strassmann.

Lise Meitner's legacy remains as a pioneer of women in science and a symbol of perseverance in the face of adversity. Element 109, Meitnerium (Mt), was named in her honour to commemorate her contributions to physics and chemistry.



Lucia Votano



Lucia Votano, born on 17 November 1947 in Villa San Giovanni, Calabria, Italy, is an Italian physicist known for her innovative work in particle physics and neutrino research. She is the first woman to serve as director of the Gran Sasso National Laboratory (LNGS), one of the world's largest underground research centres for astroparticle physics.

Votano graduated in physics from the University of Rome 'La Sapienza' in 1971. Her early career focused on experimental physics, with a particular interest in neutrinos, subatomic particles with extremely low mass and no electric charge. She joined the National Institute of Nuclear Physics (INFN) and participated in numerous international collaborations, including experiments at CERN and the Gran Sasso Laboratory.

In 2009, Votano became director of the LNGS, where she supervised crucial projects such as the OPERA experiment, aimed at detecting neutrino oscillations. Her leadership has contributed to revolutionary discoveries that have improved our understanding of neutrinos and their role in the universe.

Votano has also been an advocate for increasing the representation of women in science and promoting sustainable scientific development. She is the author of numerous publications, including books on neutrinos and their importance in understanding the cosmos.

Her work has earned her numerous awards, including prizes for scientific achievements and contributions to science communication. Lucia Votano continues to inspire future generations of physicists and remains a leading voice in the global scientific community.



Marcia Barbosa



Marcia Barbosa, born on 14 January 1960 in Porto Alegre, Brazil, is a Brazilian physicist known for her groundbreaking research on water anomalies and her contributions to the understanding of complex systems. She is also a prominent advocate for women in science, working to address gender inequalities in STEM fields.

Barbosa holds a PhD in physics from the Federal University of Rio Grande do Sul (UFRGS), where she is currently a lecturer and researcher. Her work focuses on the behaviour of water at the molecular level, particularly its unique properties under various conditions. She has developed models to explain the anomalous behaviour of water, which are fundamental to the understanding of biological processes and materials science.

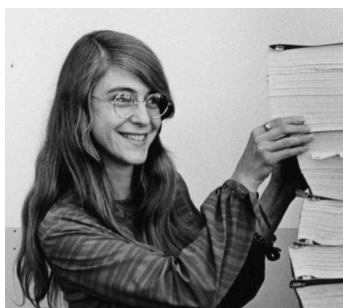
His research has practical applications in fields such as nanotechnology and environmental science. For example, his studies have contributed to advances in water purification and desalination technologies, offering solutions to global water scarcity problems.

In addition to her scientific achievements, Barbosa is a tireless advocate for diversity and inclusion in science. She has collaborated with organisations such as the Brazilian Academy of Sciences and UNESCO to promote gender equality in science subjects. In 2013, she was awarded the prestigious L'Oréal-UNESCO For Women in Science award for her contributions to physics and her efforts to support women in science.

Marcia Barbosa continues to inspire scientists around the world through her innovative research and her dedication to creating a more inclusive scientific community.



Margareth Hamilton



Margaret Hamilton, born 17 August 1936 in Paoli, Indiana, USA, is an American computer scientist, systems engineer and entrepreneur. She is best known for her pioneering work in

software engineering and for leading the development of on-board software for NASA's Apollo missions, including the historic Apollo 11 moon landing in 1969.

Hamilton graduated in mathematics from Earlham College in 1958. Initially intending to pursue graduate studies, she instead took a job at the Massachusetts Institute of Technology (MIT) to work on meteorology and later on Project SAGE, one of the first computer-based air defence systems. These experiences laid the foundation for his pioneering work in software engineering.

In the 1960s, Hamilton joined the MIT Instrumentation Laboratory, which was commissioned by NASA to develop software for the Apollo spacecraft. As director of the Software Engineering Division, he led the development of the error control and recovery software that ensured the safety and success of the Apollo missions. His team's work was crucial during the Apollo 11 landing, when the guidance computer faced several alarms, but continued to function flawlessly thanks to Hamilton's robust coding and system design.

Hamilton is credited with coining the term 'software engineering', advocating the recognition of software development as a formal engineering discipline. His contributions have had a lasting impact on software reliability and safety-critical systems.

In 2016, he received the Presidential Medal of Freedom, the highest civilian honour in the United States, for his contributions to space exploration and computer science. Hamilton remains a symbol of innovation and perseverance, inspiring generations of scientists and engineers.



Margherita Hack



Margherita Hack, born on 12 June 1922 in Florence, Italy, and died on 29 June 2013 in Trieste, Italy, was a famous Italian astrophysicist, author and populariser of science. Known as the 'Lady of the Stars', she made significant contributions to the study of stellar spectra and was a fervent advocate of science education and rational thought.

Hack studied physics at the University of Florence, where she graduated in 1945 with a thesis on Cepheid variables. Her research focused on the classification of stars based on their spectra, which provide information on the composition, temperature and other properties of stars. During her career, Hack worked at several prestigious observatories, including those in Florence, Merate and Trieste.

In 1964, she became the first woman to direct the Trieste Astronomical Observatory, transforming it into an international centre of excellence in astrophysics. Hack also contributed to NASA and European Space Agency (ESA) projects, analysing satellite data to study the structure and evolution of stars.

In addition to her scientific work, Hack was a prolific author and a great populariser of science. She wrote numerous popularisation books, appeared frequently on television and gave lectures to make complex scientific topics accessible to the general public. She was also a fervent supporter of secularism, human rights and animal welfare, and became one of Italy's best-loved intellectuals.

She received numerous awards for her work, including honorary degrees and prizes for popularising science. Margherita Hack remains a symbol of intellectual curiosity, scientific rigour and commitment to the public understanding of science.



Maria Elena Bottazzi



Maria Elena Bottazzi, born in 1966 in Genoa and raised in Tegucigalpa, Honduras, is a renowned microbiologist and immunologist. She is internationally recognised for her work in vaccine development, particularly for neglected tropical diseases and emerging infectious diseases.

Bottazzi graduated in microbiology and clinical chemistry from the National Autonomous University of Honduras. She later graduated in the US, receiving her PhD in molecular immunology and experimental pathology from the University of Florida, in 1995. She completed postdoctoral training in cell biology at the University of Miami and the University of Pennsylvania.

Currently, Bottazzi is associate dean of the National School of Tropical Medicine at Baylor College of Medicine and professor at Baylor University in Texas. She is co-director of the Texas Children's Hospital Center for Vaccine Development, where her work focuses on developing affordable vaccines for diseases such as hookworm, schistosomiasis, and Chagas disease.

During the COVID-19 pandemic, Bottazzi and his team gained global recognition for developing Corbevax, a low-cost, patent-free COVID-19 vaccine designed for equitable distribution, particularly in low- and middle-income countries. Corbevax uses recombinant protein technology, making it affordable and easy to produce at scale.

Bottazzi has received numerous awards for her scientific contributions, including a nomination for the 2022 Nobel Peace Prize for her efforts to make vaccines accessible worldwide. She is also a strong advocate for science diplomacy and the empowerment of women in STEM fields.



Maria Gaetana Agnesi



Maria Gaetana Agnesi, born on 16 May 1718 in Milan and died on 9 January 1799 in the same city, was an Italian mathematician, philosopher and linguist. She is famous for her contributions to mathematical calculation and analysis, as well as for her pioneering role as one of the first women to write a mathematics textbook.

A child prodigy, by the age of 11 Agnesi had mastered several languages, including Latin, Greek, Hebrew and modern European languages. Encouraged by her father, a wealthy silk merchant, she pursued advanced studies in mathematics and philosophy. Even as a teenager, she hosted intellectual salons, impressing scholars with her erudition.

In 1748, Agnesi published *Istituzioni Analitiche ad Uso della Gioventù Italiana*, a comprehensive two-volume work on calculus and analysis. Written in Italian rather than Latin, it aimed to make advanced mathematics more accessible. The book introduced what later became known as Agnesi's 'Strega', a curve studied in calculus, although the term 'strega' originated from a mistranslation of the Italian word *versiera*.

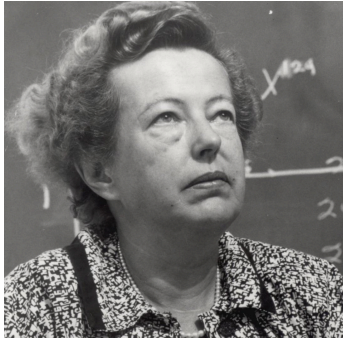
Pope Benedict XIV appointed Agnesi professor of mathematics at the University of Bologna, making her one of the first women in Europe to hold this position. However, she chose not to pursue an academic career, devoting herself to charity instead.

In her later years, Agnesi withdrew from public life to concentrate on religious devotion and helping the poor. She devoted much of her time to running a hospice in Milan. Her

legacy remains as a pioneer of women in science and mathematics and as an advocate of accessible education.



Maria Göppert



Maria Göppert Mayer, born on 28 June 1906 in Kattowitz, Germany (now Katowice, Poland), and died on 20 February 1972 in San Diego, California, was a German-American theoretical physicist. She is best known for the development of the nuclear shell model, for which she became the second woman in history to receive the Nobel Prize in Physics, after Marie Curie.

Göppert Mayer received her PhD in physics in 1930 from the University of Göttingen, where she studied under such renowned scientists as Max Born and James Franck. His early work focused on quantum mechanics, in particular on the two-photon absorption theory, which was later confirmed experimentally and became a fundamental principle in laser spectroscopy.

In 1930, she married Joseph Mayer, a chemist, and moved to the United States. Despite her qualifications, Göppert Mayer encountered considerable obstacles to employment due to the rules of nepotism and gender bias. For years, she worked in unpaid or part-time positions at institutions such as Johns Hopkins University and Columbia University.

In the 1940s, while working at the University of Chicago and Argonne National Laboratory, he developed the nuclear shell model, which explains how protons and neutrons are arranged in atomic nuclei. His model showed that nucleons form 'shells' within the nucleus, similar to the electron shells around an atom. This discovery revolutionised nuclear physics and earned her the Nobel Prize in Physics in 1963, shared with J. Hans D. Jensen and Eugene Wigner. Maria Göppert Mayer is remembered not only for her revolutionary contributions to physics, but also as a pioneer of women in science. Her work continues to influence nuclear physics and quantum mechanics to this day.



Maria Winkelmann



Maria Margaretha Winkelmann Kirch, born on 25 February 1670 in Panitzsch, Saxony, Germany, and died on 29 December 1720 in Berlin, Germany, was a pioneering German astronomer. She is best known for her discovery of a comet in 1702, which made her one of the first women to make a significant contribution to observational astronomy.

Born into a family that valued education, Maria received early training in astronomy from a local astronomer, Christoph Arnold. She later married the astronomer Gottfried Kirch, Germany's leading astronomer at the time. Together, they collaborated on numerous astronomical observations and calculations.

In 1702, Maria discovered a previously unknown comet, although the discovery was initially attributed to her husband. She also contributed significantly to their joint work, which included detailed star catalogues and calendars for navigation and agriculture. Despite her achievements at , Maria faced considerable obstacles due to her gender.

After Gottfried Kirch's death in 1710, Maria applied to take up his position as astronomer of the Berlin Academy of Sciences, but her application was rejected due to her gender. Despite this setback, she continued her observations and worked alongside her son, Christfried Kirch, who followed in his parents' footsteps as an astronomer.

Maria Winkelmann Kirch is remembered as a pioneer of female astronomy and her work laid the foundations for future generations of female scientists. Her determination and contributions continue to inspire those who strive to break the barriers of science.



Maria de Sousa



Maria de Sousa, born on 30 October 1939 in Lisbon and died on 14 April 2020 in Porto, Portugal, was a famous Portuguese immunologist and poet. She is famous for her groundbreaking research in immunology, particularly in the field of T-cell behaviour and the organisation of the immune system.

De Sousa received her medical degree from the University of Lisbon and later pursued advanced studies in immunology in London and New York. She joined the National Institute for Medical Research in London and then moved to Memorial Sloan Kettering Cancer Center in New York. Her work focused on the migration and distribution of T-cells in lymphoid tissues, a fundamental discovery for understanding immune responses.

He coined the term 'ecotaxis' to describe the movement of immune cells to specific microenvironments within lymphoid organs. Her research provided fundamental insights into the functioning of the immune system, influencing both basic science and clinical approaches to autoimmune diseases and cancer.

Returning to Portugal in the 1980s, de Sousa became a professor at the University of Porto. She played a key role in the development of biomedical research in the country, mentoring numerous students and promoting the integration of Portuguese science into international networks.

In addition to her scientific work, de Sousa published poetry, combining her scientific curiosity with a deep appreciation for art and literature. Her contributions earned her numerous honours, including the Order of St James of the Sword, one of Portugal's highest honours.

Maria de Sousa's legacy lives on as a pioneer of immunology and as a symbol of intellectual versatility, straddling science and the humanities.



Marica Branchesi



Marica Branchesi, born 7 September 1977 in Urbino, Italy, is an Italian astrophysicist known for her revolutionary work in multimessenger astronomy, which combines observations from gravitational waves, electromagnetic signals and particle detectors to study the universe.

Branchesi studied astronomy and astrophysics at the University of Bologna, receiving his PhD in 2006. Her doctoral research focused on galaxy clusters, but she later shifted her interest to gravitational waves, one of the most exciting

frontiers of modern astrophysics. She is currently a professor at the Gran Sasso Science Institute (GSSI) and an active member of the Virgo Collaboration, part of the global effort to detect and analyse gravitational waves.

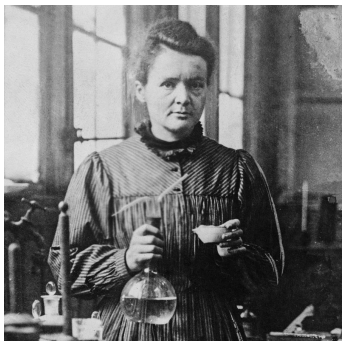
Branchesi played a key role in the historic detection of gravitational waves caused by the collision of two neutron stars in 2017. This event represented the first time gravitational waves were observed together with electromagnetic signals, allowing scientists to obtain unprecedented information about the origin of heavy elements, such as gold and platinum, and the mechanisms behind gamma rays.

Her work has been essential in bridging the gap between gravitational wave astronomy and traditional observational astronomy, promoting collaboration between international research teams. He is widely regarded as a key figure in the development of multi-messenger astrophysics.

Branchesi has received numerous accolades for his contributions, including inclusion in Time's 2018 list of the 100 most influential people in the world. He continues to inspire scientists and students around the world with his dedication to unravelling the mysteries of the cosmos.



Marie Curie



Marie Curie, born Maria Skłodowska on 7 November 1867 in Warsaw, Poland, and who died on 4 July 1934 in Passy, France, was a physicist and chemist whose pioneering research into radioactivity earned her worldwide recognition.

She remains the first woman to win a Nobel Prize, the first person to win a Nobel Prize in two different sciences and a pioneer for women in academia.

Curie moved to Paris in 1891 to pursue her studies at the Sorbonne, where she graduated in physics and mathematics.

In 1895 she married Pierre Curie, a physicist with whom she formed a legendary scientific partnership. Together they discovered the radioactive elements polonium and radium in 1898. Their work introduced the term 'radioactivity' and laid the foundation for important advances in medicine, physics and chemistry.

In 1903, Marie and Pierre Curie, together with Henri Becquerel, received the Nobel Prize in Physics for their joint research on radioactivity. After Pierre's tragic death in 1906, Marie continued their work, becoming the first woman to hold a chair at the University of Paris.

In 1911, she received the Nobel Prize in Chemistry for the discovery of radium and polonium, cementing her place in the history of science.

Curie also applied her discoveries to practical uses. During the First World War, she developed mobile X-ray units to assist doctors on the battlefield, nicknamed 'Little Curies'. Her work exposed her to significant levels of radiation, which led to her death from aplastic anemia in 1934.

Marie Curie's legacy goes far beyond her scientific achievements. Her perseverance in overcoming social barriers, her dedication to science and her contribution to humanity continue to inspire generations of scientists and advocates for gender equality in STEM fields.



Marie-Sophie Germain



Marie-Sophie Germain, born 1 April 1776 in Paris and died 27 June 1831 in Paris, was a French mathematician, physicist and philosopher. She is best known for her pioneering work in number theory and elasticity, contributing significantly to fields in which women were rarely recognised in her time.

Born into a wealthy family during the turbulent years of the French Revolution, Germain was educated by reading her father's mathematical books. She adopted the pseudonym 'M. LeBlanc' to correspond with important mathematicians, including Carl Friedrich Gauss, who later recognised her talent.

In mathematics, Germain made significant contributions to number theory, in particular Fermat's Last Theorem. She developed what became known as 'Sophie Germain's primes', which played a key role in advancing the understanding of the theorem. Despite her pioneering work, Germain struggled to gain formal recognition from the male-dominated mathematical community.

In physics, Germain made significant progress in the theory of elasticity, particularly in explaining the behaviour of vibrating surfaces. Her paper on this topic won the Grand Prix of the Paris Academy of Sciences in 1816, making her the first woman to receive this honour.

Despite the considerable obstacles she encountered, Germain pursued her passion for science and mathematics, supporting the intellectual abilities of women in traditionally foreclosed fields. Her legacy continues to inspire and her name is remembered through the concept of Sophie Germain's firsts and several institutions that bear her name.



Mary Anderson



Mary Anderson, born 19 February 1866 in Greene County, Alabama, USA, and died 27 June 1953 in Monteagle, Tennessee, USA, was an American inventor and real estate developer. She is best known for the invention of the windshield wiper, a simple but revolutionary innovation that has become a standard feature of automobiles around the world.

Anderson grew up in Alabama and later moved to Birmingham, where he ran a vineyard and cattle farm. On a trip to New York in 1902, she observed trolley bus drivers struggling to see through the windscreen in bad weather. This inspired her to design a device that would allow drivers to wipe rain or snow off their windshields without leaving their seats.

In 1903 she patented her invention, describing it as a 'window cleaning device for electric cars and other vehicles'. The system used a lever inside the vehicle to control a rubber blade that cleaned the windscreen. Although revolutionary, Anderson's invention was initially met with scepticism, as many felt it would distract drivers. As cars became more popular, his concept was universally adopted, even though the patent had already expired.

Beyond her invention, Anderson was an accomplished businesswoman who ran real estate and agricultural businesses. Despite her few lifetime achievements, her contribution to automobile safety and convenience remains significant.

Mary Anderson's windscreen wiper has become a symbol of practical innovation, proving that simple ideas can have a profound impact on everyday life.



Mary Kenneth Keller



Mary Kenneth Keller, born 17 December 1913 in Cleveland, Ohio, USA, and died 10 January 1985 in Dubuque, Iowa, USA, was an

American nun, educator and computer scientist. She is considered a pioneer in computer science and one of the first women in the United States to earn a doctorate in this field.

Keller entered the Sisters of Charity of the Blessed Virgin Mary in 1932, taking her vows in 1940. She pursued higher education with an emphasis in mathematics and received her bachelor's and master's degrees from DePaul University in Chicago. In 1965, he received his PhD in Computer Science from the University of Wisconsin-Madison, where his thesis focused on the construction of algorithms to simplify symbolic calculations.

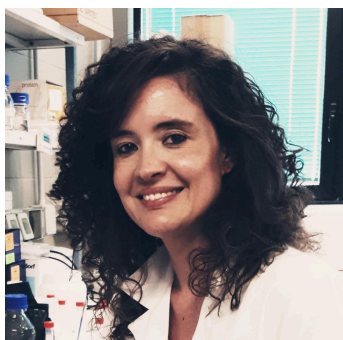
During his studies, Keller worked on the development of the BASIC programming language, which made computer science more accessible to a wider audience, including students and non-specialists. This contribution was instrumental in democratising access to computers at a time when programming was highly specialised.

Keller founded the computer science department at Clarke College (now Clarke University) in Dubuque, Iowa, where she was a lecturer and advocate for women in technology. She firmly believed in the potential of information technology to transform education and foster human growth. Keller was instrumental in integrating computer science into liberal arts curricula, emphasising its interdisciplinary applications.

Mary Kenneth Keller's legacy remains as a computer science pioneer and advocate for the ethical and educational use of technology. Her work continues to inspire generations of women in STEM fields.



Paola Tognini



Paola Tognini is an Italian neuroscientist known for her pioneering research on the mechanisms of brain plasticity and the role of environmental factors in shaping neural development. She has made significant contributions to the understanding of how experiences influence brain function and connectivity, particularly during critical periods of development.

Tognini completed his studies in biology and neuroscience at the University of Pisa, where he received his PhD. Her research focuses on synaptic plasticity, the process by which connections between neurons strengthen or weaken in response to activity. Her work has shed light on how external stimuli, such as sensory experiences and environmental enrichment, affect brain circuits.

His contributions have practical implications for the development of therapies for neurodevelopmental disorders and for rehabilitation after brain injury. Tognini's studies have highlighted the importance of timing and environmental inputs to optimise brain health and recovery .

Currently, Tognini leads a research group and collaborates internationally on projects aimed at understanding how lifestyle and environmental factors can influence the brain's ability to change. She is also involved in science outreach, promoting public understanding of neuroscience and its implications for education and health.

Tognini's work continues to inspire advances in neuroscience and emphasises the dynamic interplay between biology and experience in the formation of the human brain.



Patrizia Caraveo



Patrizia Caraveo, born 24 February 1954 in Milan, Italy, is an internationally renowned Italian astrophysicist. She is famous for her pioneering work on neutron stars, gamma-ray astronomy and the study of cosmic phenomena. Throughout her illustrious career, she has made significant contributions to the understanding of the high-energy universe.

A physics graduate from the University of Milan in 1977, Caraveo began her career at the Istituto Nazionale di Astrofisica (INAF). Her research focused on compact objects, particularly neutron stars, and their role in the evolution of galaxies. He has participated in important space missions, including ESA's Integral and NASA's Swift, where he contributed to the detection and analysis of gamma-ray bursts.

One of his most significant achievements was the study of Geminga, a neutron star that does not emit radio waves but is visible in gamma rays and X-rays. His work on Geminga helped establish the existence of a neutron star that does not emit radio waves. His work on Geminga helped establish the existence of 'radio-quiet' neutron stars, opening up new avenues for astrophysics.

Caraveo has received numerous awards, including the Bruno Rossi Prize of the American Astronomical Society and the Enrico Fermi Prize of the Italian Physical Society. He is also a member of prestigious scientific organisations, such as the Accademia dei Lincei.

In addition to her research, Caraveo is an advocate of science communication, actively engaging with the public through articles, books and lectures. Her dedication to making science accessible has inspired many young scientists, particularly women, to pursue careers in astrophysics.



Raquel Seruca



Raquel Seruca, born in 1963 in Porto, Portugal, is a renowned Portuguese scientist specialising in oncology and molecular biology. She is best known for her groundbreaking research on gastric cancer, in particular for her studies on the genetic and molecular mechanisms underlying the disease.

Seruca graduated in biology from the University of Porto, where she went on to obtain a PhD in molecular biology. Her doctoral research focused on genetic mutations associated with gastric cancer, laying the foundation for her future contribution to cancer research. He has held important academic and research positions, including principal investigator at the Institute of Molecular Pathology and Immunology at the University of Porto (IPATIMUP).

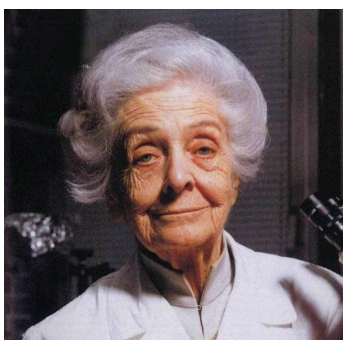
His work has been instrumental in understanding the role of cell adhesion molecules, such as E-cadherin, in the development and progression of gastric cancer. Seruca's studies have shown how mutations in these molecules contribute to tumour growth and metastasis. This research has provided valuable insights into potential therapeutic targets for the treatment of gastric cancer and other related diseases.

In addition to her scientific achievements, Seruca has been a strong advocate of personalised medicine, emphasising the importance of tailoring treatments to the genetic profile of individual patients. She has published widely in leading scientific journals and received numerous awards for her contribution to cancer research.

Raquel Seruca continues to be a leading figure in oncology, inspiring the next generation of scientists with her dedication to understanding and fighting cancer.



Rita Levi-Montalcini



Rita Levi-Montalcini, born on 22 April 1909 in Turin and died on 30 December 2012 in Rome, was an Italian neurologist and Nobel laureate. She is best known for the discovery of nerve growth factor (NGF), a groundbreaking contribution to neuroscience that earned her the 1986 Nobel Prize in Physiology or Medicine.

Levi-Montalcini studied medicine at the University of Turin, where she specialised in neurology and psychiatry. Her academic career was interrupted by the promulgation of anti-Semitic laws in 1938, which prohibited Jews from holding academic and professional positions in Fascist Italy. Undaunted, she set up a laboratory in her home and continued her research in secret during the Second World War.

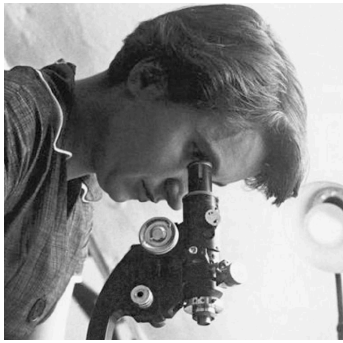
After the war, Levi-Montalcini moved to the United States, where she enrolled at Washington University in St. Louis. There she collaborated with Stanley Cohen, which led to the discovery of NGF. This protein plays a fundamental role in the growth, maintenance and survival of nerve cells. Their work not only advanced the understanding of cell growth, but also had profound implications for the treatment of neurological disorders and tumours.

Returning to Italy in the 1960s, Levi-Montalcini founded and directed several institutes and research initiatives, focusing on neurobiology and the role of women in science. She was a strong advocate of education and scientific collaboration and served as a life senator in the Italian Parliament, using her position to promote research and social progress.

Rita Levi-Montalcini received numerous awards, including the National Medal of Science, and remains an inspirational figure for her resilience, scientific achievements and commitment to advancing human knowledge.



Rosalinda Franklin



Rosalind Elsie Franklin, born 25 July 1920 in London and died 16 April 1958 in London, was a British chemist and crystallographer. She is best known for her central role in the discovery of the double helix structure of DNA, a milestone in molecular biology.

Franklin received her PhD in physical chemistry from the University of Cambridge in 1945. She specialised in X-ray crystallography, a technique used to determine the three-dimensional structure of molecules. After conducting research on coal and graphite at the British Coal Utilisation Research Association, she joined King's College London in 1951 to study the structure of DNA.

Using X-ray diffraction techniques, Franklin captured high-resolution images of DNA fibres, including the famous 'Photo 51', which provided fundamental evidence of DNA's helical structure. Her meticulous work and analysis laid the foundation for understanding the role of DNA as a molecule of heredity. However, her data were shared with James Watson and Francis Crick without her consent, leading to the publication of the DNA model in 1953.

Franklin later moved to Birkbeck College, where she studied the structure of viruses, contributing significantly to their architecture. Despite her revolutionary contributions, she received little recognition during her lifetime. Tragically, Franklin died of ovarian cancer at the age of 37, before her role in the discovery of DNA was fully recognised.

Posthumously, Franklin's contributions to science have been widely recognised and she is celebrated as a pioneer of women in science. Her legacy remains as an inspiration for the pursuit of knowledge and the fight for equality in scientific research.



Sabine Klinkner



Sabine Klinkner, born in 1971 in Germany, is a renowned German aerospace engineer and professor specialising in satellite systems and space exploration technology. Her contributions to the development of small satellite platforms and interdisciplinary research in space technology have made her a leading figure in modern aerospace engineering.

Klinkner studied mechanical engineering with a specialisation in aerospace technology at the Technical University of Munich. He subsequently obtained a PhD in aerospace engineering, where his research focused on satellite dynamics and orbital mechanics. He has worked

extensively in academia and the aerospace industry, combining theoretical knowledge and practical applications.

Currently, Klinkner is a professor at the Institute for Space Systems at the University of Stuttgart, where he conducts research on satellite design, space exploration technologies and sustainable space systems. His work on CubeSats and small satellite platforms has been instrumental in advancing low-cost, high-impact missions, enabling smaller universities and organisations to access space.

In addition to research and teaching, Klinkner is involved in international collaborations, contributing to projects addressing challenges such as orbital debris mitigation and autonomous satellite operations. She has published widely in academic journals and is a frequent speaker at international aerospace conferences.

Klinkner is also dedicated to inspiring the next generation of aerospace engineers by advocating for greater diversity in STEM fields and encouraging young women to pursue careers in engineering and space exploration.



Samantha Cristoforetti



Samantha Cristoforetti, born 26 April 1977 in Milan, Italy, is an Italian astronaut of the European Space Agency (ESA), an engineer and former pilot of the Italian Air Force. She is considered the first Italian woman in space and holds the record for the longest uninterrupted space flight by a European astronaut.

Raised in Trento, Italy, Cristoforetti showed a passion for science and aviation from an early age. She graduated in mechanical engineering with a specialisation in aerospace propulsion systems from the Technical University of Munich in Germany. She also studied at the École Nationale Supérieure de l'Aéronautique et de l'Espace in France and the Mendelev University of Chemical Technology in Moscow.

Before joining ESA, Cristoforetti served as a fighter pilot in the Italian Air Force, where she reached the rank of captain. In 2009, she was selected as an ESA astronaut and underwent rigorous training for her space missions.

In 2014-2015, Cristoforetti participated in Expedition 42/43 aboard the International Space Station (ISS), spending 199 days in space. During the mission, she conducted numerous scientific experiments in different disciplines, including biology, physics and technology, and engaged in extensive public outreach activities to inspire interest in science and space exploration.

In 2022, Cristoforetti returned to space as commander of Expedition 67, becoming the first European woman to command the ISS. Her leadership and dedication to international collaboration have made her a role model for aspiring scientists and astronauts around the world.

In addition to her scientific and aeronautical achievements, Cristoforetti is known for her commitment to STEM education, particularly for encouraging young women to pursue careers in science, engineering and space exploration.



Simonetta Cheli



Simonetta Cheli, born in 1963 in Siena, Italy, is an Italian space scientist and a leading executive of the European Space Agency (ESA). In 2021, she made history by becoming the first woman to head ESA's Earth Observation Programmes Directorate, which oversees critical initiatives related to satellite Earth monitoring and climate research.

Cheli graduated in law from the University of Florence and specialised in European law at the College of Europe in Bruges, Belgium. Her academic training has provided her with a unique perspective on the intersection of politics, law and science, making her an influential figure in space policy and management.

Joining ESA in 1988, Cheli has progressively progressed in her career, contributing to the strategic planning and development of Earth observation programmes. She played a key role in promoting the Copernicus Programme, a flagship European Earth observation initiative that uses satellites to monitor environmental and climate change. His leadership has been instrumental in ensuring the success of the programme and its integration into global environmental policies.

In his current role, Cheli oversees ESA's Earth observation satellite activities, including the development and deployment of cutting-edge technologies for monitoring climate, natural disasters and resource management. Her work has profound implications for addressing global challenges such as climate change and environmental sustainability.

Cheli is also a strong advocate for international collaboration in space exploration and innovation. She is committed to inspiring young professionals, particularly women, to pursue careers in STEM and space sciences, emphasising the importance of diversity in solving complex global problems.



Simonetta Di Pippo



Simonetta Di Pippo, born on 29 June 1959 in Rome, is an Italian astrophysicist and a global leader in space exploration and policy. With a ten-year career in international space organisations, she is widely recognised for her work in promoting global cooperation in space science and technology.

Di Pippo graduated in astrophysics from the University of Rome 'La Sapienza'. She began her career at the Italian Space Agency (ASI), where she held several leadership roles, including Director of Observation of the Universe. During her tenure, she played a key role in developing Italy's participation in major international missions, including collaborations with the European Space Agency (ESA) and NASA.

In 2008, Di Pippo joined ESA as Director of Human Spaceflight, becoming the first woman to hold this position. She oversaw crucial programmes, including the operations of the International Space Station (ISS) and the development of European contributions to human space exploration.

From 2014 to 2022, Di Pippo served as director of the United Nations Office for Outer Space Affairs (UNOOSA). In this role, she advocated the peaceful use of outer space and worked to ensure that space technologies benefit all humanity, particularly developing countries. She has been instrumental in promoting international agreements on the sustainability of space and fostering global dialogue on space governance.

Di Pippo is also co-founder of Women in Aerospace Europe, an organisation dedicated to increasing the participation of women in aerospace. She has received numerous awards, including the Order of Merit of the Italian Republic, for her contribution to science, space exploration and gender equality.

Her leadership and vision continue to inspire global efforts in space science, sustainability and inclusion.



Tabitha Babbitt



Tabitha Babbitt, born in 1779 in Hardwick, Massachusetts, USA, and died in 1853, was an American inventor, weaver and member of the Shaker religious community. She is best known for inventing the first circular saw, a revolutionary tool that greatly improved the efficiency of cutting wood.

Babbitt grew up in a Shaker community that emphasised simplicity, hard work and innovation. A skilled weaver and toolmaker, she often applied her practical ingenuity to solve everyday problems. In 1810, observing the inefficiency of the traditional miter saw - in which two workers pulled a saw back and forth, wasting energy in the return stroke - Babbitt devised a circular blade that could rotate continuously, cutting wood more efficiently.

To demonstrate its usefulness, he attached his prototype circular blade to a spinning wheel. His invention was quickly recognised and became a standard tool in sawmills, revolutionising the wood industry. However, as a Shaker, Babbitt did not patent his invention, as the community believed in collective ownership rather than individual profit.

In addition to the circular saw, Babbitt is credited with the development of other practical tools, including an improved arching head. His work reflects the Shaker tradition of combining innovation and functional design.

Tabitha Babbitt's legacy remains as a testament to how ingenuity and practicality can lead to transformative inventions. Despite the lack of personal recognition during her lifetime, her contributions have had a lasting impact on industry and technology.



Tu Youyou



Tu Youyou, born on 30 December 1930 in Ningbo, Zhejiang Province, China, is a Chinese pharmaceutical chemist and Nobel laureate. She is famous for her discovery of artemisinin, an innovative anti-malarial drug derived from the sweet wormwood plant (*Artemisia annua*). Her work has saved millions of lives around the world, especially in regions plagued by malaria.

Tu studied pharmacology at the Beijing Medical College (now Peking University Health Science Centre), graduating in 1955.

She later joined the Chinese Academy of Traditional Chinese Medicine, where she began her career integrating traditional Chinese medicine with modern pharmacological techniques.

In the 1960s, during the Vietnam War, malaria was a major health crisis affecting soldiers and civilians in tropical regions. As part of Project 523, a secret Chinese government initiative to combat malaria, Tu and his team examined ancient Chinese medical texts and identified *Artemisia annua* as a potential treatment. Tu developed a method to extract artemisinin in its pure form, ensuring its effectiveness in treating malaria. His discovery, published in 1972, marked a turning point in the fight against the disease.

Despite his critical contributions, Tu received limited recognition for decades. In 2015, she received the Nobel Prize in Physiology or Medicine, becoming the first Chinese woman to receive this honour. The prize recognised her innovative blend of traditional knowledge and modern science.

Tu's discovery of artemisinin was hailed as one of the most important advances in tropical medicine and remains a milestone in global malaria control efforts. Tu continues to inspire scientists around the world, demonstrating the value of interdisciplinary and culturally-rooted approaches to solving global health challenges.



Vera Rubin



Vera Cooper Rubin, born on 23 July 1928 in Philadelphia, Pennsylvania, USA, and passed away on 25 December 2016 in Princeton, New Jersey, USA, was an American astronomer whose work provided fundamental evidence for the existence of dark matter. Her pioneering studies on the rotation rates of galaxies reshaped modern astrophysics and our understanding of the universe.

Rubin graduated from Vassar College in 1948, where she was the only astronomy graduate in her class. She earned a master's degree from Cornell University and then completed her PhD at Georgetown University in 1954, where she studied galaxy clustering.

In the 1970s, Rubin and his collaborator Kent Ford used spectrographic techniques to measure the rotation curves of spiral galaxies. They discovered that stars in the outer regions of galaxies rotated at the same speed as those closer to the centre. This discovery contradicted Newtonian physics, which predicted lower rotation speeds at greater distances from the galactic core. Rubin's observations provided irrefutable proof of the existence of dark matter, a mysterious and invisible substance that exerts a gravitational force but does not emit light.

Despite her monumental contributions, Rubin faced significant gender discrimination throughout her career. She was often excluded from academic opportunities and professional networks, but her perseverance paved the way for future generations of women in astronomy.

Rubin received numerous awards, including the National Medal of Science in 1993 and the Gold Medal of the Royal Astronomical Society in 1996, the latter making her only the second woman to receive the award after Caroline Herschel in 1828.

Vera Rubin's legacy continues in the field of dark matter research and in her commitment to women in science. The Large Synoptic Survey Telescope in Chile has been renamed the Vera C. Rubin Observatory in her honour, cementing her place as a pioneer in understanding the cosmos.





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Video Festival

Ada Lovelace

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Chiara Montanari

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Clara Immerwahr

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Dorothea Erxleben

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**Dorothy Crowfoot
Hodgkin**

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Maria Winkelmann

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Marica Branchesi

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Marie Curie

<https://www.youtube.com/watch?v=PTdiKQEM58Q>



**Marie Skłodowska
Curie**

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Rita Levi Montalcini

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Rosalind Franklin

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Sabine Klinker

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**Samantha
Cristoforetti**

<https://www.youtube.com/watch?v=uYwTvsgs7fw>



Simonetta Cheli

<https://youtu.be/BadBw7lMrBo?si=fqAoh2zeJpuFT200>



Simonetta Di Pippo

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