

World's Female Scientists

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Abstract: The article discusses the world's female intelligence, intellectual differences between women and men, gender stereotypes, some famous women who have achieved great success in science and technology, and female scientists.

Keywords: Gender, stereotype, DNA, intelligence, science, Nobel, biology, genetics.

Women's intelligence is a complex and multifaceted phenomenon, which is formed under the influence of many factors, including biological, social, cultural and psychological factors. Research into the intellectual differences between women and men is ongoing, but according to current knowledge, in general, the intellectual potential of women and men is considered equal.

1. Biological factors

Women's intellectual ability may be affected by differences in brain structure and function. For example:

- **Brain structure:** Women may have smaller brains than men, but women may have better brain function and neurological systems.
- **Hormones:** Hormonal changes such as estrogen and progesterone in women can affect cognitive performance. For example, changes in intellectual performance have been observed during the menstrual cycle and pregnancy.

2. Cognitive differences

There are differences between women and men in some cognitive abilities. However, these differences are usually small and are often related to social factors.

- **Verbal abilities:** Women often have higher scores in speech and language comprehension. They may perform better than men in vocabulary and communication skills.
- **Mathematical and spatial abilities:** Some studies have shown that men are more successful in mathematical and spatial problems, but this may also depend on social education and opportunities in society.

3. Social and cultural influences

Women's intellectual development is directly related to social and cultural factors:

- **Education:** As women's educational opportunities increase, their intellectual potential and scientific achievements also increase. Today, many women are successfully working in science, technology and other fields.
- **Gender stereotypes:** Stereotypes that exist in society can limit women's intellectual potential. For example, in some regions, women are seen as more involved in family or childcare roles, which can prevent them from actively participating in scientific or technological fields.

4. Women and science

Women are making great strides in the fields of science and technology. For example, some famous female scientists are:

Marie Curie - won the Nobel Prize twice in chemistry and physics.

Ada Lovelace - is known as one of the founders of programming.

Rosalind Franklin - made important discoveries in studying the structure of DNA.

Women's intellectual potential can be as high as men's, but their opportunities and role in society can sometimes be limited. Biological, social and cultural factors together affect women's intellectual development. Women's intellectual potential can also be further improved by increasing education and social equality.

Marie Curie (1867–1934) was a world-famous Polish-French scientist, physicist, and chemist, the only person to have won the Nobel Prize twice. She is distinguished by her great achievements in science and, as a female scientist, overcame several limitations for her time.

1. Scientific achievements

- Discovery of radio: Curie, together with her husband Pierre Curie, conducted research on the study of radioactive elements. They discovered a new element - polonium (named after Poland) and radium. This discovery introduced the concept of radioactivity to the scientific world.
- Nobel Prizes: Marie Curie won the Nobel Prize in Physics in 1903, for her work on radioactivity, which she received with her husband and Henri Becquerel. In 1911, she won another Nobel Prize in Chemistry for the discovery of new elements, such as radium and polonium. This made her the first female scientist to win the Nobel Prize twice.

2. Women and Science

- Stereotypes and restrictions in society: At that time, it was difficult for women to actively participate in the field of science, but Curie overcame these obstacles with her extraordinary scientific ability and determination. Although her scientific work was not recognized by many male scientists, Curie eventually became one of the most respected and successful figures in the world of science.
- Challenges as a female scientist: While Marie Curie continued to work in science, many male scientists opposed her. She even faced difficulties in her personal life, such as experiencing social and professional criticism for continuing her scientific work after the death of her husband.

3. Personal life

Husband and death: Marie Curie married her scientific partner and husband Pierre Curie in 1895. In 1906, Pierre died in an unfortunate accident, a great personal and scientific loss for Marie Curie. However, she continued her work and devoted even more attention to scientific work.

Health and death: Curie's long-term exposure to radioactive substances damaged her health. She died of leukemia in 1934.

Legacy

Marie Curie's legacy in science and social equality continues to live on. The impact of her work is still felt today, especially in medicine and physics. She inspired women to find their place in science. Today, her name is associated with many scientific institutes, schools, and laboratories, and she is recognized as one of the greatest scientists in the history of science.

Marie Curie is a woman who demonstrated boundless determination, courage, and scientific intelligence in the field of science. Her achievements are important not only for science, but also for women, because she showed that it is not impossible for women to succeed in scientific activities.

Ada Lovelace (born December 10, 1815, London—died November 27, 1852, London) was an English mathematician and writer, the daughter of the famous poet Lord Byron. She is known as the first computer programmer in history.

Ada Lovelace is best known for her work on the Analytical Engine, invented by Charles Babbage. This machine is considered the first prototype of computers, but due to its mechanical structure, it did not work in practice. Ada Lovelace, having a deep understanding of the operation of Babbage's Analytical Engine, conducted a comprehensive analysis of its capabilities, and discovered the full potential of the machine.

Ada Lovelace's achievements:

Writing an algorithm: Ada Lovelace wrote the first algorithm for the Analytical Engine. This algorithm specifies the steps used by the machine to perform numerical calculations. For this reason, she is called the "first programmer" in history.

Machines and mathematical thinking: Ada Lovelace showed that Babbage's Analytical Engine could be used to perform a variety of operations, not just for mathematical calculations. She even imagined that the machine could be used to create music and images, which was far ahead of her time.

Awakening Knowledge and Imagination: Ada Lovelace is known as a visionary about the future of science and technology. In her writings, she believed in the possibilities and unlimited potential of science, moving beyond mathematics to just performing mathematical operations.

Ada Lovelace's main works:

In 1843, Ada Lovelace translated Charles Babbage's paper on the Analytical Engine and added her own comments to it. This paper not only explained how the machine worked, but also showed how it would play a significant role in shaping the future of human digital technology.

These observations by Ada Lovelace, highlighting the machine's capabilities beyond basic mathematical calculations, provided the first approach to using these machines as "computers".

Personal life:

Ada Lovelace was the daughter of the poet Lord Byron and Anne Isabella Milbanke. Her mother, who was very involved in Ada Lovelace's education, encouraged her interest in mathematics and science. She was first introduced to mathematics at a very young age and began to show great talent in this field.

Ada Lovelace and Charles Babbage had a long scientific collaboration. Ada wrote reviews of Babbage's work and helped to develop it further.

Death and legacy:

Ada Lovelace died in 1852 at the age of 36. Her work has received widespread attention in the following centuries. In 1953, her works were collected and reexamined by the scientific community. Today, Ada Lovelace is recognized as a symbol of the great contributions of women in technology and computer science, and her name is honored in many modern computer and scientific competitions.

Ada Lovelace's scientific legacy is remembered as one of the world's most important achievements, not only in mathematics, but also in computer science.

Rosalind Franklin (born July 25, 1920, London - died April 16, 1958, London) was an English biologist, physicist, and chemist, best known for her significant contribution to the study of the structure of DNA. Franklin's work contributed to the understanding of the double helix structure of DNA, one of the most important scientific discoveries of the 20th century. Her discovery paved the way for James Watson, Francis Crick, and Maurice Wilkins to win the Nobel Prize in Chemistry.

Franklin's important data, especially an image obtained using the X-ray crystallography method (i.e., Photograph 51), helped to discover the double helix structure of the genome. This discovery was central to understanding the structure of the genome and the development of genetic science.

1. Personal life and education:

Rosalind Franklin was born on July 25, 1920, in London, into a large family. She received a good education and in 1938 entered Newnham College, Cambridge University. She received a high level of scientific education in the fields of biology and chemistry. In 1945, she took a job at the Laboratoire de Cristallographie in Paris to conduct scientific research on the technique of X-ray crystallography. This technique was very important for her later work.

2. X-ray crystallography and the structure of DNA:

The most important work of Franklin's scientific career was in the study of the structure of DNA. While working in Paris, she made great progress in developing the technique of X-ray crystallography. Using this method, she was able to study the internal structure of molecules with high precision.

In 1951, Franklin played a key role in the discovery of the B-form (double helix) structure of DNA. She studied X-ray diffraction images, which became a key element in understanding the structure of the DNA molecule. Photograph 51, an X-ray image taken by Rosalind Franklin, was one of the key pieces of information that James Watson and Francis Crick used to determine the structure of DNA.

3. DNA Structure and Recognition:

James Watson and Francis Crick used Rosalind Franklin's research to determine the structure of the DNA molecule. They based their work on Franklin's photograph 51 and developed the double helix structure of DNA. However, Franklin was not fully credited for these works. Watson and Crick did not specifically ask for Franklin's permission when they incorporated Franklin's information into their work and did not properly acknowledge her name.

In 1953, Watson, Crick, and Wilkins presented their discovery of the structure of DNA to the scientific world and received the Nobel Prize that year. Despite Rosalind Franklin's significant contribution to this work, her name was not included in the Nobel Prize, as she died in 1958, before the award was presented.

4. Personal characteristics and scientific legacy:

Franklin's scientific work was always characterized by determination, diligence, and a desire for perfection. She was a very determined and dedicated researcher, but was sometimes not recognized by her male colleagues. Her work also raised questions about the place of women and their roles in science within the scientific community.

After Franklin's death, her scientific work was highly regarded, and she is now recognized as the central figure in the discovery of the double helix structure of DNA. Her scientific legacy is not only of great importance in biology, but also in the fields of genetics, biochemistry, and molecular biology.

5. Legacy:

Rosalind Franklin has become an inspiration for promoting the recognition of women's achievements in science and their importance in scientific discoveries. Her discoveries and scientific achievements are now honored by many scientific and educational organizations. She is also remembered as a person who contributed to ensuring equality between men and women in science.

Rosalind Franklin's scientific discoveries and work on the structure of DNA occupy an unforgettable place in the history of science. Although she was often not recognized enough in the scientific community, her name is recognized in every scientific research today. In conclusion, it can be said that intelligent women are women who not only have knowledge and skills in their field,

but also have made significant contributions to the development of society, in science, art, politics and social spheres. Such women have demonstrated their intellectual potential at a high level and have left their mark in many areas. As shown above, the life, work, and scientific discoveries of some women who have immortalized their names in intellectual fields in history and modern society have been considered.

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