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The Nobel Prizes have widely become regarded as the most influential award a person can achieve for lifetime accomplishments within the sciences.

Looking at the award's history, S Reid-Collins investigates the lack of diversity and what the Nobel Institute can do moving forward...

- 54 women and 865 men have been awarded Nobel Prizes.
- Only 22 women have been awarded prizes in Chemistry, Medicine and Physics.
- **6 women** have jointly won awards with their husbands in the sciences, while only 3 women have won individually.



here is an alarming lack of diversity within the Nobel Laureates—not just a lack of women, but also a lack of people from ethnic minorities. At the same time, we're

seeing the number of women in scientific communities increasing significantly, with 28.8% of the world's researchers now comprising of women (UNESCO Institute of Statistics). This increased diversity within science is not being represented by the Nobel Laureates.

The Nobel Prizes are one of the most visible awards within the media. As the prizes shape the public perception of the scientific communities, representing women and ethnic minorities becomes essential.

The Nobel Prizes are not alone in their gender biases. The Royal Society's Hughes Medal has been awarded since 1902 to an outstanding researcher in the field of energy. It has only been awarded to two women. The first, Hertha Ayrton in 1906, wasn't able to collect her award as women weren't allowed to enter the Royal Society. Thankfully, this policy has changed. Through various programmes, The Royal Society has made great steps to campaign for diversity, including breaking down barriers for and celebrating scientists with disabilities. Despite these positive changes, only one other woman, Imperial College London's Michelle Dougherty, has won the award, in 2008.

# WHAT CAN BE DONE TO INCREASE DIVERSITY?

There are many ways that the Nobel committee can improve diversity, which other organisations already recognise. The American Geophysical Union is a scientific nonprofit organisation of Earth and space sciences that understands the importance of diversity in science: "Having more diverse voices at the table leads to new perspectives and unique ways of thinking which in turn

leads to better science and novel solutions." One of the many ways they are working to increase diversity within

science is through a global team that creates nomination packages for people from underrepresented groups. "Science isn't just done by one guy sit

Another way in which diversity of prize winners can be increased is through diversity within the awarding panels. When panels lack this, a bias (unconscious or

"If you've published a list of who's on the shortlisting committee, it **can** really change who thinks to apply and also change the

outcome."

Science has changed, and perhaps it is time for the

of Edinburgh.

capturing gravitational

waves. This was made

possible through

the collaboration of

over 1000 scientists

countries. Many of

working in 15 different

those researchers have

been awarded medals

for their contribution,

including 16 scientists in

Scotland who received

from the Royal Academy

the President's Medal

"Science isn't just done by one guy sitting in front of a blackboard with chalk. It's done by huge extensive teams of people around the world. Giving your prize to three old men really doesn't reflect that," says Wade.

otherwise) is built, as people are more likely

to give awards to those who look and thin

Jess Wade is a postdoctoral resear

associate in the Faculty of Natur

Sciences at Imperial College, w

public engagement work has ch

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The way in which science happens

has also evolved. Large international

teams collaborate, and this should be

celebrated. In 2017 the Nobel Prize in

Physics was awarded to three LIGO

(Laser Interferometer Gravitational

Wave Observatory) researchers for

like them.



# **A NOBEL HISTORY?**

# -1896

Alfred Nobel dies and leaves the majority of his estate to a fund that would award "prizes to those who, during the preceding year, have conferred the greatest benefit to humankind".

# -1901

First Nobel Prizes awarded in Stockholm on December 10.

# -1903

Marie Curie becomes the first woman to win an award. Together with her husband, Pierre, she wins the Nobel Prize for Physics for their study into spontaneous radiation discovered by Becquerel (who was awarded the other half of the Prize). She is awarded a quarter of the prize share.

# -1905

Baroness Bertha von Suttner is awarded the Nobel Peace Prize.

# -1911

Marie Curie is awarded the Nobel Prize for Chemistry for her work on radiation. She remains the only Laureate to be awarded prizes in two separate science disciplines.

# -1935

☐ Marie Curie's daughter, Irène Joliot-Curie, is awarded the Prize in Chemistry, shared with her husband.

Gerty Cori is awarded Nobel Prize in Physics with her husband Carl Cori.

# -1962

Francis Crick, James Watson and Maurice Williams are awarded the Nobel Prize in Physiology or Medicine for their discovery of the structure of DNA. Rosalind Franklin had studied, learned different x-ray techniques, and used this to produce an image of DNA. Shared with Crick and Watson without her knowledge, this was essential to their work. She died four years prior, but her omission has caused great controversy, despite the fact that Nobel Prizes are never awarded posthumously.

# -1964

Dorothy Crowfoot Hodgkin is awarded the Nobel Prize in Chemistry. She is the first woman to win a Nobel Prize in science without a husband as a Nobel Laureate.

## 1969

First prize in Economic Science is awarded. To date, only two women have won

# L1974

Antony Hewish is awarded the Nobel Prize in Physics for discovering pulsars (rotating neutron stars that emit high levels of radiation and have potential applications across many fields of physics). These were codiscovered by Jocelyn Bell Burnell, who was working towards her PhD at the time. Controversially she was never awarded the Nobel Prize, despite her significant contribution. She has remained vocally gracious about this

# L1983

Barbara McClintock is the last woman to date to win 100% share of an award in science

## -2009

Across the six awards, five women are awarded Nobel Prizes, the highest number of women in a single year. These are shared with eight men.

# -2014

Aged 17, Malala Yousafzai becomes the youngest Nobel Laureate.

Donna Strickland is awarded the Nobel Prize in Physics for her PhD work leading to the creation of chirped laser pulses, utilised in laser eye surgery.

# -2019

Thirteen men are awarded Nobel Prizes. One woman, Esther Duflo, is awarded the Prize for Economics, alongside her husband, Abhijit Banerjee.