

Nobel Prizes: Explained

The 2018 Nobel Prizes are being announced this week, with Physics, Chemistry and Physiology winners already revealed, and the Peace and Economics prize to be announced by Friday (October 5) and Monday (October 8) respectively.

The Literature Prize has been temporarily cancelled this year, owing to the sexual misconduct allegations against Jean-Claude Arnault, a leading cultural figure of Sweden and husband of Academy member, Katarina Frostenson, an academy member and author. Frostenson has since quit the Academy. The Academy hopes to award the Literature prizes for both 2018 and 2019 the next year.

Even though the controversies are recent, the Nobel Prizes as an institution have had quite an interesting start. As is common knowledge, Alfred Nobel (who the prizes are named after) is also the inventor of dynamite. So how did a man who invented something that led to so much tragedy also set up prizes that award (amongst other things) peace initiatives?

Alfred Nobel was born in Stockholm to an inventor father. With eight children, the family was not particularly well off – only four of the children, including Alfred, survived past childhood. Alfred was paternally related to Swedish scientist Olaus Redbeuck. This, coupled with the fact that his father was an alumnus of the Royal Institute of Technology in Sweden, facilitated Alfred taking up an interest in science at an early age.

Alfred studied with chemist Nikolai Zinkin, and collaborated with the inventor of nitroglycerin, Ascanio Sobrero. He was not a huge fan of nitroglycerin and wanted to reengineer it into something more commercially viable. Nobel would later devote himself to the study of nitroglycerin and filed several patents relating to explosives and objects related to them, along with his family factory.

On 3 September 1864, a shed used for the preparation of nitroglycerin exploded in Stockholm, killing five people. Amongst the dead was Emil, Alfred's younger brother. He was greatly affected by this and worked hard to reinforce the stability of his explosives. In 1875 Nobel invented gelignite, more stable and powerful than dynamite. In 1887, he patented ballistite, a predecessor of cordite. Alfred was elected a member of the Royal Swedish Academy of Sciences in 1884. The Royal Society would go on to become the institute that selected (and continues to select) the laureates for the scientific Nobel Prizes. Alfred continued to be technically prolific, issuing 355 patents internationally. His business had established more than 90 armaments factories.

It was the death of Ludvig Nobel, another of Alfred's brothers that proves crucial to our story. In 1888, on the occasion of his death, several newspapers mistakenly published an obituary for Alfred instead. A French newspaper went so far as to title Alfred's false obituary, "Le marchand de la mort est mort", literally translated to "The merchant of death has died". Alfred was greatly depressed by this. He did not want to be remembered as a man of death, as he had so far considered himself a pacifist.

It was to remedy this problem of public perception that Alfred set up the prizes that are the subject of this article. Alfred and his brothers had amassed quite an impressive amount of wealth by investing in oilfields across the Caspian Sea. Alfred used all this wealth to set up the institution we know as the Nobel Prizes today.

The story of how the Nobel Prizes were established is a beautiful slice of the human condition. You can be glib and talk about how it was ultimately some bad journalism that led to the Nobel Prizes, but you would be wrong. The reason we have Nobel Prizes and the reason they're an institution is because of the human desire to be remembered. To be celebrated. The Nobel Prizes remind us how

important our social connections are. How important it is for us to be remembered. They remind us that there will be people around after we are gone, and reminds us to live our best lives – so people remember the best versions of us.

A few people who have cemented such a legacy for themselves are the 2018 Nobel Prize winners.

The Nobel Prize for Physics 2018 was awarded to Arthur Ashkin of America, Donna Strickland of Canada, and Gérard Mourou of France. Half of the prize went to Ashkin for his invention of “optical tweezers”, an instrument that grabs tiny particles like viruses without damaging them, using the radiation pressure of light. At 96, Ashkin has the distinction of being the oldest laureate ever. The other half was jointly awarded to Strickland and Mourou for their work on laser pulses. Strickland is the first woman in 55 years to receive the prize in Physics, and is only the third woman ever to receive the prize.

The Nobel Prize for Chemistry 2018 was awarded to Frances H. Arnold of America, George Smith of America, and Gregory Winter of England, with Arnold receiving one half, and Smith and Winter receiving the other. All three have done work that harnessed the power of evolution, according to the Academy. They have helped fuel the pharmaceutical and biofuel industries, with Arnold working on antibodies and the other two on enzymes. Frances Arnold has the distinction of being the fifth ever female Nobel laureate in Chemistry.

The Nobel Prize for Medicine 2018 was awarded to Jim Allison of America and Tasuku Honjo of Japan for their work on cancer therapy. They demonstrated how the human immune systems could potentially fight cancer cells. The work done by both men have helped advance cancer treatments.

At the end of the day, whether you are a Nobel Laureate or Alfred Nobel himself, all you can really wish for is that you are able to project your best self to people. That you are remembered fondly.