

THE NOBEL PRIZE



Crowned as the most prestigious prize for achievement in sciences or humanities, the **Nobel Prize** was established through the will of **Alfred Nobel**, a prominent inventor, in 1895. The Nobel Prize is awarded to individuals for the “*the greatest benefit to humankind*”, across the disciplines of **physics, chemistry, physiology or medicine, literature** and for **work in peace**, at ceremonies on 10 December - the anniversary of Nobel’s death.

Interested in exploring the works that were awarded the 2023 Nobel Prizes in Physics & Medicine? A brief summary of each is included below.

2023 NOBEL PRIZE IN PHYSICS: ATTOPHYSICS



Hunzala Shahid

This year’s Nobel Prize in Physics was awarded to Dr. Anne L’Huillier, Dr. Pierre Agostini, and Dr. Ferenc Krausz, who have had a significant role in achieving the breakthrough that is **attosecond pulses of light**. **An attosecond is 10^{-18} seconds long, a pulse duration that had never been achieved prior to the work of the 2023 Nobel Laureates.** Dr. L’Huillier is a researcher and professor in Lund University, Dr. Agostini is a retired professor at the Ohio State University, while Dr. Krausz is a professor of experimental physics at the Ludwig Maximilian University as well as a director at the Max Planck Institute of Quantum Optics.

Why is this such a big deal? To understand this, we need to give an analogy. When photographing a fast-moving object, such as a running horse or a flying hummingbird, if the shutter speed of the camera is too slow, the wings of the hummingbird or the legs of the horse appear as a blur. This is because there is far too much light (and therefore information) that is being detected. As you reduce the shutter speed the information is more instantaneous and the image quality gets better. We can use the same concept and apply it to electrons; we know that electrons move between atoms at speeds that are to the magnitude of 10^{-18} s. Therefore, if we send pulses of light at magnitudes of 10^{-18} s, we can accurately determine the behaviour of electrons during processes such folding and forming of proteins. This has the potential to change or refine existing processes in all areas of science.

Simply, attophysics (Physics involving attosecond pulses of light) is an important up-and-coming area of study that could lead to potential breakthroughs in all fields of study, and further aid us in understanding the universe.

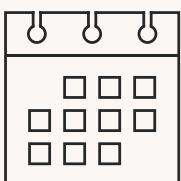


“Remember, that the Promised Messiah (as) has said that people of true intellect and wisdom are those who never forget God Almighty and always remember Him. ... Hence, there should always be a clear distinction between Ahmadi scientists and researchers and others who pursue similar fields of study. And the difference ought to be that the pursuit of knowledge of an Ahmadi must be based upon Taqwa—righteousness.”

Ahmadi Muslim Researchers –
Restoring Islam’s Golden Age

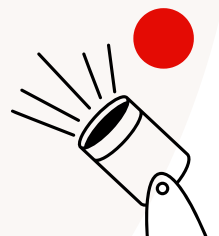
Dec 14, 2019

SAVE THE DATE!



The **Abdus Salam QuEST**
(Qur’an, Education, Science & Technology) **Conference**
Saturday, May 25th 2024

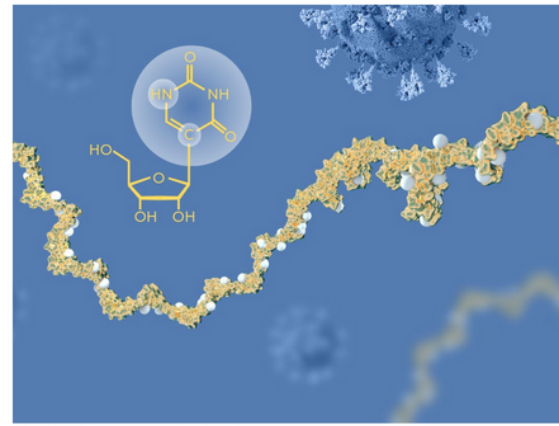
By the Grace of Allah Almighty, the inaugural conference was held in August earlier this year. Watch the MTA news report [here!](#)



2023 NOBEL PRIZE IN MEDICINE: mRNA RESEARCH

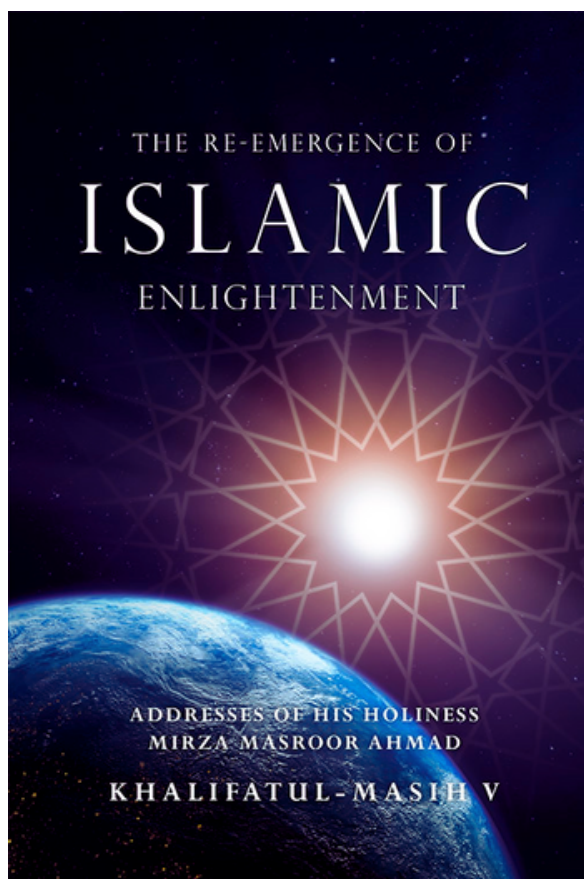
Ayeza Ikramullah

Katalin Kariko and Drew Weissman, who are part of the Penn's Historic mRNA vaccine research, made significant contributions to the **mRNA (messenger RNA) research, which led to the development of COVID-19 vaccines**. Their groundbreaking work focused on controlling the potential of mRNA (a molecule that carries genetic instruction from DNA to the ribosomes, where proteins are synthesized), to transform and create a new perspective of medicine. Their playing started in the early 2000s, when Katalin and Drew demonstrated that modified mRNA molecules could be used to produce protein in cells without causing an immune reaction. However, finding this was one of the most major obstacles they faced. The immune systems response to foreign mRNA molecules can trigger inflammation and obstruct the effectiveness of mRNA-based therapies. They discovered a way to modify the chemical structure of mRNA by incorporating modified nucleosides (which made it more stable). Katalin Kariko and Drew Weissman's work laid the foundation of the development of mRNA vaccines, such as Moderna COVID-19 vaccines and Pfizer-BioNTech vaccine. These vaccines use the mRNA technology which makes the cells produce a harmless piece of the SARS-CoV-2 virus as it triggers an immune response, causing it to provide protection against COVID-19. The research about the mRNA technology helps a wide range of diseases such as, cancer and infection diseases. The mRNA technology offers many advantages, such as faster development timelines and the ability to easily adapt to new variants. Overall, Katalin Kariko and Drew Weissman's revolutionary work in the mRNA research has changed the field of medicine and led to the development of mRNA-based COVID-19 vaccines. Their dedicated work has had a tremendous impact on public health, especially during the COVID-19 pandemic. In recognition of their work, Katalin and Drew were awarded with the Nobel Prize in Physiology or Medicine in 2023.



“As important as the vaccine is, if you don't take it, it doesn't work!”

Drew Weissman, 2023 medicine laureate



“With the Grace of Allah, the very first Muslim Nobel Laureate was an Ahmadi Muslim, Professor Dr Abdus Salam, an eminent physicist who won the Nobel Prize for Physics in 1979 for his contribution to the development of electroweak unification theory. Throughout his life, Professor Salam spoke of how Islam, and the Holy Quran in particular, was the inspiration and guiding light behind his work. In fact, he used to say that there were around 750 verses in the Holy Quran directly related to science and which enhanced our understanding of nature and the universe.”

Read *The Re-emergence of Islamic Enlightenment* at: <https://www.alislam.org/book/re-emergence-of-islamic-enlightenment/>

