

The Synapse: Intercollegiate science magazine

Volume 7 | Issue 1

Article 5

2015

2015 Nobel Laureates

Nora Newcomb

Follow this and additional works at: <https://digitalcommons.denison.edu/synapse>



Part of the [Life Sciences Commons](#), and the [Physical Sciences and Mathematics Commons](#)

Recommended Citation

Newcomb, Nora (2015) "2015 Nobel Laureates," *The Synapse: Intercollegiate science magazine*: Vol. 7: Iss. 1, Article 5.

Available at: <https://digitalcommons.denison.edu/synapse/vol7/iss1/5>

This Article is brought to you for free and open access by Denison Digital Commons. It has been accepted for inclusion in The Synapse: Intercollegiate science magazine by an authorized editor of Denison Digital Commons. For more information, please contact eresources@denison.edu.



The Super-Kamiokande Neutrino Observatory, Tokyo

2015 Nobel Laureates



By Nora Newcomb

Every December, the eyes of the world turn to Oslo, Norway for the awarding of the Nobel Prize. Founded by Alfred Nobel, this prestigious award, consisting of a medal, diploma and a financial certificate, is awarded to people that have made significant contributions over their lifetimes to the fields of Physics, Chemistry, Physiology or Medicine, Literature, Economic Sciences, and/or Peace. The Nobel Committee was established in the will of Alfred Nobel, a scientist perhaps most well known for his discovery of dynamite. This action was famously spurred on by an event in Nobel's life wherein a newspaper prematurely printed his obituary, titling it "The Merchant of Death is Dead." Upon reading this, he became so overcome with concern about how history would remember his contributions to the world, that he created the Nobel Prize. Each year the recipients, known as Nobel Laureates, are selected from a list of nominated individuals, all of whom have been recommended by important people, such as heads of state and previous Nobel Prize recipients. Throughout the year, the vast number of nominations are whittled down to a short-list, and from there the final recipient(s) are chosen for each award.

Since the advent of the award, three Oberlin alumni have been recipients. They are Robert Milikan, OC 1891, Physics, 1923; Roger Wolcott Sperry, OC '35, Medicine, 1981; and Stanley Cohen, OC '45, Physiology or Medicine, 1986.

“When the brain is whole, the unified consciousness of the left and right hemispheres adds up to more than the individual properties of the separate hemispheres.”

- Nobel Laureate Roger Wolcott Sperry, OC '35

PHYSICS:

Arthur B. McDonald, Takaaki Kajita



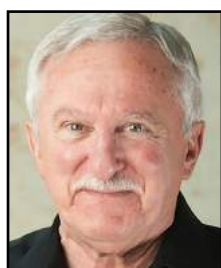
Drs. Arthur B. McDonald and Takaaki Kajita, from Queen's University in Ontario and University of Tokyo respectively, were jointly awarded the Nobel Prize in Physics for demonstrating that neutrinos have mass. Neutrinos, a type of subatomic particle, were thought to be massless. Drs. McDonald and Kajita proved otherwise by showing that neutrinos could oscillate, change their identities, and therefore must have mass. The mass of a neutrino is given as $0.320 \pm 0.081 \text{ eV}/c^2$ for the sum of the three types, electron, muon and tau neutrinos. eV (electronvolts) is a unit of energy roughly equal to 1.6×10^{-19} Joules, with eV/c² being used as a non-SI unit of mass with a value of 1.782662×10^{-36} kg. That means that the mass of the sum of the neutrinos, in kilograms, is $5.7013152 \times 10^{-37} \pm 1.44314622 \times 10^{-37}$ kg. For comparison, the mass of a hydrogen atom is $1.67353276 \times 10^{-27}$ kg.



PHYSIOLOGY OR MEDICINE:

William C. Campbell, Satoshi Ōmura, Tu Youyou

Drs. Paul L. Modrich, Thomas Lindahl, and Aziz Sancar were awarded the Nobel Prize in Chemistry for their work in understanding how cells repair DNA. This is incredibly important because damaged DNA can lead to dysfunctional proteins, which can lead to a wide range of health problems. Each of these researchers had a different, yet related, focus. Dr. Modrich, of Duke University School of Medicine and the Howard Hughes Medical Institute, studied how mistakes made in DNA replication were corrected by cells. Dr. Lindahl, of the Francis Crick and Claire Hall Laboratory, determined how cells repaired damaged DNA. Dr. Sancar, of the University of North Carolina, Chapel Hill, studied how cells repaired DNA that was damaged by ultraviolet light.



CHEMISTRY:

Paul L. Modrich, Tomas Lindahl, Aziz Sancar

Drs. William C. Campbell, Sotoshi Ōmura, and Tu Youyou were awarded the Nobel Prize in Physiology or Medicine for their work in developing anti-parasitic drugs. Drs. Campbell and Ōmura collaborated to develop the drug Avermectin, which is used to combat the parasitic worms that cause river blindness and filariasis by producing an environment that is toxic to the parasite but not the host. This is done by increasing the affects of glutamate, a neurotransmitter, at a specific type of ion channel, leading to a heightened level of chlorine beyond which the worm can sustain. Dr. Tu, the chief professor at the China Academy of Traditional Chinese Medicine, discovered Artemisinin, an anti-malarial drug. Artemisinin is a derivative of sweet wormwood, or qīnghāo, which has been used to treat malarial symptoms since the sixteenth century and has been known in China for its medicinal properties for at least the past two-thousand years. She is the first person from China to be awarded a Nobel Prize in the sciences. ●



*Laureates are pictured left to right