NEWS IN BRIEF

THE NOBEL PRIZE IN MEDICINE 2017

The underdogs have won this year Nobel Prize for Medicine/ Physiology. The unanticipated winners were three American scientists who have shed light on the genetic underpinnings of the biological clock. It is being considered that The Nobel Committee is making a subtle point by awarding the prize to scientists working in areas of science that are not obviously of immediate commercial value. In a world that has become intensely practical, a world where funding of abstruse research questions is no longer easy, a world where dreamers are no longer so welcome; the prize has gone to scientists who have worked for the sake of pure science.

Jeffrey Hall and Michael Rosbash from Brandeis University and Michael Young from Rockefeller University shared the Nobel Prize this year for unraveling the mystery of our circadian rhythm. It was known that some fruit flies with mutations had a disordered circadian rhythm. Hall not only isolated the gene called '*period*', he along with Michael Robash identified the protein (PER) produced by the gene. They found that the PER protein accumulates in the cell during the night and is degraded in the day. The third scientist Young in a series of delightful experiments identified another gene with the beguiling name '*timeless*' whose protein combines with the PER protein to enter the nucleus and regulate the functioning of the *period* gene. He also discovered another gene named '*double time*' that delays the accumulation of the PER protein so that our biological clock is set to 24 hours in tune with the rotation of the earth and other rhythms of life on earth.

This is the sixth Nobel Prize going to work done on the ubiquitous fruit fly. The love affair between geneticists and the fruit fly (Drosophila) is easily explained. Drosophila has just 4 pairs of chromosomes, a life cycle of just 2 weeks, a high mutation rate, and 75% of human diseases (such as Down syndrome, Alzheimers, autism, diabetes) have a genetic counterpart in the fruit fly. No wonder this year winner Rosbash, dedicated his prize to the simple fruit fly. Big things start from humble beginnings. (*www.nobelprize.org/nobel_prizes/medicine/laureates/2017/press.html*)

NOBEL PRIZE IN CHEMISTRY

Three scientists Henderson, Frank and Dubochet; who have helped to develop the technique of cryo-electron microscopy have shared this year's Nobel Prize for chemistry. So far the 3D structure of most proteins has been characterized using *X*-ray crystallography. However, this method fails in many biomolecules because crystallization would distort the actual shape. Electron microscopy seemed the logical answer but there are many hiccups in the actual use of the technique. Joachim Frank of Columbia University, New York, developed a mathematical image-processing method that allowed a computer to merge several two-dimensional electron microscope images into a sharp 3D picture.

The technique was further improved by Jacques Dubochet from the University of Lausanne, Switzerland. Dubochet succeeded in vitrifying water – he cooled water so rapidly that it solidified around a biological sample, allowing the biomolecules to retain their natural shape even in a vacuum. Then in 1990, after 15 years' work of refining sample preparation and electron detection, Richard Henderson from Cambridge, UK, succeeded in using an electron microscope to create an image of a large bacterial cell membrane protein called bacteriorhodopsin, and do it at atomic resolution.

Cryo-electron microscopy will help us 'see' protein structure right down to the atomic level. It will transform research in biomolecules, and have far-reaching effects in understanding life processes at the nano level. (*https://www.nobelprize.org/nobel_prizes/chemistry/laureates/2017/press.html; Scientific American 4 October 2017*)

READABILITY OF SCIENTIFIC TEXTS: TRENDS OVER TIME?

Scientific writing should be clear and easy to read. Unnecessary use of jargon means that accurate messages do not reach the scientific community and the lay public. Concerns include both reproducibility and accessibility of information.

Plaven-Sigray, *et al*. from Karolinska Institute, Stockholm, analyzed 709,577 abstracts published between 1881 and 2015 from 123 scientific journals, and found that the readability of science is steadily decreasing. This journal list included, among others, Nature, Science, NEJM, The Lancet, and JAMA. The reading level of each abstract was tested using two established measures of readability: the Flesch Reading Ease (FRE) and the New Dale-Chall Readability Formula (NDC). The FRE is calculated using the number of syllables per word and the number of words in each sentence. The NDC is calculated using the number of words in each sentence and the percentage of 'difficult' words.

The average yearly trends combined with this statistical model reveal that the complexity of scientific writing is increasing with time. A FRE score of 100 is designed to reflect the reading level of a 10- to 11-year old. A score between 0 and 30 is considered understandable by college graduates. In 1960, 14% of the texts had a FRE below 0; in 2015, this number had risen to 22%. In other words, more than one-fifth of scientific abstracts now have a readability considered beyond college graduate level English. Lower readability implies less accessibility, particularly for non-specialists such as journalists, policy-makers and the wider public.

Word processors offer readability tests for authors to assess their writing before submission. Some journals also offer 'lay summaries' for the public to comprehend. Other suggestions include adding an r-index (readability index) in the peer review process.

Simplicity is not so simple after all! (*eLife. 2017;6:e27725. doi:10.7554/eLife.27725*)

GOURI RAO PASSI
gouripassi@gmail.com