News from here and there

2017 Nobel prize in medicine awarded to trio working on circadian rhythym; Ig Nobels go to research on big ears in older men and radiological evaluation of dislike for cheese

American scientists Jeffrey C. Hall, Michael Rosbash and Michael W. Young were awarded the 108th Nobel Prize in physiology or medicine for their work on the molecular mechanisms controlling circadian rhythms, including genes that adapt biological rhythm with the Earth's and Sun's revolutions. A mismatch between these internal mechanisms and the external surroundings can affect a creature's well-being. In humans, these disruptions are termed as 'jet lag'. The researchers first identified the 'period gene' in fruit flies, a gene which was responsible for maintaining the daily rhythm by encoding an intracellular protein at night that would degrade through the day via a negative feedback loop. Additionally, Young discovered a second critical gene dubbed 'timeless' that encoded proteins which combined with the proteins produced by the period gene to enable the latter to enter a cell's nucleus and halt further activity of the period gene.

The £825 000 prize will be shared between the three researchers who first reported the period gene in 1984 and who will now also receive a medal engraved with their name for their efforts as well. Jeffrey C. Hall and Michael Rosbash are both associated with Brandeis University in Waltham, Massachusetts, although Hall is now retired. Young works at Rockefeller University in New York.

Meanwhile, the Ig Nobel Prize for Improbable Research in Anatomy 2017 was received by James A. Heathcote, in person, for his 1995 *British Medical Journal* study 'Why do old men have big ears?' The study, conducted by four general practitioners, had 206 patients between 30 and 93 years of age volunteering to have their pinna measured with a transparent ruler. It showed that the size of a person's ear increased in direct proportion to his age, on an average of 0.22 mm per year. The study could not explain why such a finding was noticed.

The Ig Nobel Prize for Improbable Research in Medicine 2017 was a shared UK–France venture between Jean-Pierre Royet, David Meunier, Nicolas Torquet, Anne-Marie Mouly and Tao Jiang, for their paper 'The neural bases of disgust for cheese: An fMRI study', published in *Frontiers in Human Neuroscience*, in 2016. The study used functional MRI to measure the extent to which some people dislike cheese. The premise supported the theory that advanced brain-scanning technology could be used to study the cerebral processes of food disgust and aversion by mapping the activation/deactivation of the internal and external globus pallidus and the substantia nigra, since these parts of the basal ganglia are known to be commonly involved in reward and aversive motivated behaviours. The results showed a deactivation of the ventral pallidum in people who disliked cheese. The ventral pallidum is postulated to be a core constituent of the reward circuitry. The awardees, though unable to receive their prizes in person, delivered their acceptance speech via recorded video.

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PubMed: Some shine lost?

The reputation of PubMed Central (PMC), a repository of the National Library of Medicine (NLM), Bethesda, USA, of being a reliable source of information appears to have been questioned by researchers. PMC/Medline are considered worldwide the most important resources in medical literature—these are free and hence, easily available to all researchers. For a biomedical journal to attract good articles from authors, it is essential for the journal to be indexed by Medline/PMC. Medline/PMC (and the Science Citation Index) are the only two indexing services that most serious researchers pay attention to. Promotions in many institutions all over the world are dependent on whether the researcher's work has been published in a journal indexed by one of these indexing services.

Predatory journals, or pseudojournals, to use the new term, have been around for some time, and offer opportunities to publish research papers. However, the papers often do not go through the rigorous peer-review process that indexed journals offer. These journals charge a fee, which make people believe that such journals publish unimportant science. However, of late, some pseudojournals have been indexed by PMC, thereby giving them false respectability.

Manca *et al*. evaluated papers in different aspects of neurosciences on Medline.[1] They showed that a surprisingly high number (over 20%) of the neurology journals in PMC were predatory journals. Further, this number was growing. India and the USA had the most number of such journals. In a related article, David Moher and colleagues showed—to everybody's surprise—that over 50% of corresponding authors in pseudo-journals are from the high- and upper middle-income countries.[2]

Because quoted papers are, unfortunately, quoted again by authors who do not check the original source, it is feared that these papers will get more entrenched in the literature. Predatory journals have inadequate checks and balances from the point of view of peer review. Thus, poorly performed science may get the stamp of approval and may lead to further research of poorer quality. This can endanger the lives of patients besides harming science.

The NLM needs to address some other issues too. It is unclear why articles on physics and astronomy—topics not even remotely related to healthcare—are present on PMC/Medline. On the other hand, some general science journals of a high standard have not been indexed despite publishing excellent articles on medicine, because medicine forms only a small proportion of the articles in those journal. The editor of *Current Science*, Professor R. Srinivasan told this correspondent, '*Current Science* which is a respected journal published from India for the past 85 years and which is indexed in Web of Science, Current Contents, Geobase, Chemical Abstracts, IndMed and Scopus, has not been chosen for inclusion by Medline for indexing. This is in spite of the fact that it often publishes articles in the medical field and has brought out special sections on selected topics in medical sciences, e.g. cancer biology, diabetes, transgenic medicines, etc.' (Conflict of interest: SAP is on the editorial board of *Current Science*).

Joyce E.B. Backus (Associate Director for Library Operations, NLM, Bethesda) in an email, told the *NMJI*, 'One of NLM's important functions is to select journals for its collection. The journal guidelines from the NLM Collection Development Manual call for journals that demonstrate good editorial quality and elements that contribute to the objectivity, credibility and scientific quality of its content. NLM expects journals and journal publishers to conform with guidelines and best practices promoted by professional scholarly publishing organizations, such as the recommendations of the International Committee of Medical Journal Editors and the joint statement of principles of the Committee on Publication Ethics, Directory of Open Access Journals, Open Access Scholarly Publishers Association and World Association of Medical Editors.

'Criteria for accepting journals for Medline or PMC are even more selective, reflecting the considerable resources associated with indexing the literature and providing long-term preservation and public access to full-text literature. Medline currently indexes some 5600 journals. PMC has about 2000 journals that submit their full content. PMC is also the repository for the articles resulting from NIH (National Institutes of Health)-funded research.

'On 3 November 2017, NIH released a Guide notice (NOT-OD-18-011) to encourage authors to publish in journals that do not undermine the credibility, impact, and accuracy of their research findings. This notice aims to raise awareness about practices like charging publication fees without notice, lacking transparency in publication procedures, misrepresenting editorial boards, and/or using suspicious peer review. For the most part, NIH-funded researchers do a good job of publishing in high-quality journals. More than 820 000 journal articles reporting on NIH-funded research have been made publicly accessible in PMC since the NIH Public Access policy became mandatory in 2008. More than 90% of these articles are published in journals currently indexed in Medline. The remainder are distributed across thousands of journals, some 3000 of which have only a single article in PMC. While many are quality journals with sound editorial practices, effective peer review, and scientific merit, it can often be difficult for a researcher-author to evaluate these factors.

'Since 2005, PMC has been the designated repository for papers submitted in accordance with the NIH Public Access Policy. Today, PMC serves as the full-text repository for papers across a variety of scientific disciplines that fall under a number of funding agency public access policies. NIH and other funders—including non-biomedical funders such as the Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA), and the National Institute of Standards and Technology (NIST)—do not dictate in which journals their funded authors may publish. Consequently, author manuscripts in PMC, and subsequently PubMed, may be from journals that have not yet undergone scientific review by NLM, are traditionally out of scope for the NLM collection, or have not met NLM's standards for PMC.

'PubMed searches include records from Medline, PMC participating journals and articles/manuscripts submitted in compliance with the public access policy of NIH or any of these other US Federal science funding agencies that partner with us.'

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Increasing air pollution in Delhi during Diwali: A constant threat to public health

Increasing and life-threatening air pollution is a global concern. Year after year, the pollution in Delhi during Diwali and the Delhi smog due to fire crackers, crop burning and ever-increasing industrial and vehicular emissions is crossing dangerous levels as per the Central Pollution Control Board air quality index bulletin.

New Delhi is the eleventh worst polluted city in the world, with an annual average PM 2.5 measurement of 122 (PM 2.5 refers to atmospheric particulate matter which has a diameter of less than 2.5 microns). WHO recommends PM 2.5 to be below 10 as an annual average. Exposure to average annual concentrations of PM 2.5 of 35 or above is associated with a 15% higher long-term mortality risk. Winter months (October–January) have the worst air pollution as particles remain suspended in the air for longer durations owing to the lower temperature, wind speed and higher relative humidity. India's environment ministry also attributed burning of solid waste and crops, vehicular emissions and dust from construction sites as major contributors to the city's smog.

Children are particularly susceptible to air pollution due to their physiology as they breathe twice as fast as adults, inhaling more air and pollutants which can adversely affect their growth and immune system. The United Nations Children's Fund in a report entitled 'Clean the air for children', said that nearly 20% of the world's children who live in India risked developing life-long health complications due to air pollution even leading to death at times. The report stated that outdoor air pollution in India exceeds nearly six times that of internationally accepted safety limits.

Air pollution is the largest environmental cause of morbidity and mortality. The issue has been neglected for decades and now poses unsurmountable threat to the planet and is responsible for an estimated 9 million premature deaths in 2015; 92% of all pollution-related mortality occurs in low- and middle-income countries.

The Lancet Commission on Pollution and Health published in October 2017 (*Lancet* 2018;**391:**462–512. Erratum in: *Lancet* 2018;**391:**430) aims 'to raise global awareness of pollution, end neglect of pollution-related disease, and mobilize resources and the political will needed to effectively confront pollution.' The report has pointed at the linkages between pollution, climate and planetary health.

The causes and nature of air pollution are changing. Burning of crackers is not the only cause in New Delhi. The role of chemicals, pesticides, combustion of fossil fuels, toxic wastes etc. also need to be evaluated.

Temporary or time limited controls and efforts give incomplete and ineffective results. Concrete, long-term planning is essential to curb the impending crisis. The health and the economic issues arising from air pollution cannot be overlooked anymore.

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