In this issue

Enhancing blood shelf life

'*With increasing life expectancy and the subsequent increase in the number of age-related, chronic diseases, including cancers, that require blood and blood products for treatment, we increasingly need more blood donors to meet these demands*.'

— Neelam Dhingra
World Health Organization (WHO)

Every year, according to the WHO, 108 million units of blood are collected around the world. And, quite surprisingly, half of the 108 million units of blood collected comes from developed countries, which are home to only a mere 20% of the world's population. In other words, only about 50% of the 108 million units of blood comes from developing countries – home to 80% of the world's population. Indeed, in high income countries 40 out of every 1000 people donate blood. On the other hand, in low income countries, only about 4 out of every 1000 people donate blood. No wonder such a disparity between the demand and the supply of blood exists in the developing world, particularly in middle to low income countries. In India, for instance, according to the WHO, every year about twelve million units of blood, about six million litres of blood, are required. Unfortunately, however, blood banks can only provide about nine million units – a whole three million units lesser than the demand. This is most disconcerting.

But what further exacerbates the problem of deficiency in blood supply in developing countries is that blood has a certain shelf life. Blood cannot be stored indefinitely. It can only be stored for about 42 days before it spoils and turns toxic. And of the many ways to alleviate the disparity between the demand and supply of blood, one practicable way would be to enhance the shelf life of the stored blood.

Considering the aforesaid, over the last few years, several blood treatment strategies have been proposed to enhance the shelf life of stored blood. For instance, the addition of trilazd mesylate (TM), a powerful antioxidant, to stored blood protects the RBCs in the blood against the oxidative damage of gamma irradiation. This decreases the osmotic fragility of the RBCs, and thus improves shelf life. In another treatment strategy, stored blood is exposed to a magnetic field – of 0.15 T – for about 30 minutes. Owing to this treatment, the RBC osmosis fragility is decreased, and the shelf life is increased by about 15%.

A Research Communication in this issue delineates one other strategy. One that enhances shelf life by a whole 50% – from 42 days to 63 days. In this strategy, researchers irradiate stored blood samples with a He–Ne LASER... Turn to **page 1151** for a more detailed account.

FUNGEN

The government of India, over the last few decades, has made great strides in enforcing several conservation programmes to safeguard flora and fauna in India. The Project Tiger, for instance, launched in 1973 is one of the more famous wildlife conservation programmes launched in India. Surprisingly, however, conservation of fungi has never really been a priority in India, or anywhere else in the world. Indeed, even in the historic 1992 Rio Convention on Biological Diversity none of the member states of the convention emphasized the need to conserve fungi (hence the fungi were christened, by mycologist David Hawksworth, the sobriquet 'the orphans of Rio').

But why conserve fungi?

Fungi are known to breakdown recalcitrant substances, and hence aid in the recycling of nutrients in the environment. Furthermore, certain species are also known to possess anti-cancerous and anti-malarial properties. Fungi, therefore, are crucial not only to maintain the integrity of the environments they live in, but also, if conserved, can be harvested for anthropogenic purposes. But still, no one seems to be bothered about these microscopic organisms.

Considering the above, a General Article, **page 1033**, emphasizes the need to create FUNGEN: Fungal Genetic Resource of India. 'We present a roadmap for creating a national genetic resource for fungi, whose diversity reflects their remarkable fitness for the rich and varied habitats and environments in India. In addition to offering fine prospects for research-based higher education, this national asset will accelerate technology development and the bioeconomy.'

Ranking Malaysian universities

Every year, university rankings are released by several different organizations world over. Such organizations include the Academic Ranking of World Universities, the Shanghai ARWU ranking, the Leiden rankings, and the Taiwan Higher Education Accreditation Evaluation Council University ranking. All of these systems are based upon a rigorous end to end analysis (input–output–excellence–outcome–productivity) to measure the research productivity, the quality of research, and hence the rank of the university in question as compared with other universities.

A Research Communication in this issue, using a very similar end-to-end methodology, ranks the leading institutions of Malaysia, and also tracks their 'evolution' as research institutions during the period 2009–2014.

'We carried out a research performance analysis of leading higher education institutions in Malaysia using bibliometric data from the latest (2014) release of the Scimago Institutions Rankings (SIR). We tracked the complete performance chain: input–output–excellence–outcome–productivity using indicators that represent quantity, quality, and productivity dimensions.' In other words, by using bibliometric tools, this study answers, including many other, the following important questions.

Has the number of scientists in these 22 research institutions increased during 2009–2014? Has the research output of these research institutions increased during 2009–2014? How do these research institutions compare against one another, which ranks higher, which ranks lower? And most important, is the quality of research improving or not? As one may have already guessed, during the period 2009 to 2014, the input of the research institutions – i.e. the number of scientists – grew at a steady rate. And not surprisingly, so did the output – i.e. the number of publications from each research institutions. However, for some reason not dealt with in this research study, the quality of the scientific publications from most of these research institutions, in 16 out of 22 research institutions to be precise, declined during the same period.

To delve into a more detailed presentation of these results, turn to **page 1159**.

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