

In this issue

Harvesting caterpillar gold

A certain parasitic fungus – native to the Central Himalaya – reproduces in an extraordinarily strange way: by hijacking the organ systems of underground dwelling caterpillars. The spores of this fungus, *C. sinensis*, sabotage the caterpillar's nervous system and seize control of the caterpillar's movements. Servile to the sway of the spores, this ghost caterpillar obeys them and hibernates rather close to the soil's surface. Through winter, the spores devour the caterpillar from within and immobilize it dead. Come summer, the brown stalk of the fungus pierces the caterpillar's head and mushrooms through the soil. The caterpillar as its sole food source, the stalk grows to a length of a few centimetres, before disseminating millions of reproductive spores into the wind. As a testament to such a taxidermal splice of 'worm' and 'grass', the Tibetans call this fungus Yar tsa Gunbu, 'winter worm, summer grass'. Unlike ordinary worm or grass, however, this rare fungus has a wide range of applications, particularly in Chinese medicine. From being known as the Himalayan Viagra, to being touted as having anti-tumour and anti-metastatic effects, it is priced at twice its weight in gold.

Presently valued at US\$ 20,000 per kg, the price of this fungus, commensurate with its demand, has risen exponentially over the last few decades. No doubt, fungus harvesting has throbbled blood into the lives of the locals, allowing them to sustain a steady source of primary income in an otherwise inhospitable terrain. But the ill efficient harvesting practices by the locals has degraded the Yar tsa Gunbu's habitat, endangering the viability of this fungus as a profitable natural resource. A Research Communication, **page 882**, discusses the prospects of sustainable harvesting practices by delving into the socio-economic lifestyles of around 2000 harvesters living in the Central Himalayan Pithoragarh district.

Boom! Collides the meteor

The craters of the Moon comprise a library of ancient scrolls that speak of Earth's creation.

Millions of years ago, the Earth and the Moon were continually bombarded

with meteors which smashed into their crusts, melted the soil and spewed a blanket of *ejecta* over large areas. With time, the violence ceased. The Earth cooled, and the impact craters were covered with water, snow or were simply eroded by the winds. The craters of the Moon, however, owing to the absence of an atmosphere and other weathering agents, remained. By studying the *ejecta* of the Moon's impact craters, scientists can learn a lot about the geological history of the Earth. Therefore, each one of these impact craters is like a time capsule, and by understanding the spread of their *ejecta* one could 're-live' a time point in Earth's history.

In a Research Article, **page 824**, researchers from the Physical Research Laboratory, Ahmedabad, quantify the distribution of *ejecta* around several craters and ascertain which one of the two – optical or radar imaging sensors – is a superior imaging tool. Further, they also strive to understand the crater geometry parameters by answering questions such as what is the relationship between crater diameter and the *ejecta* distribution? Is the *ejecta* distributed uniformly around the crater? Does a greater depth of crater imply a more widespread scatter of *ejecta*? To get a feel of the answers to these questions, drop a heavy stone on sand, and observe the spew of sand *ejecta*.

Semen irony

Of the many sensual pleasures that 'man' is familiar with, little does he know about the medical potency of his semen. Only recently have studies established that the human semen is armed with antifungal and antibacterial proteins. Several of these proteins are multifunctional, playing the roles of both housekeepers and sentinels. Such a barrage of seminal defences against foreign bodies, gets researchers thinking: could the semen serve as a treatment for that one singular 21st century malady, HIV? Could the human semen, which is the primary vehicle for the transmission of this virus, actually be endowed with proteins that could destroy it? According to a Research Communication, **page 853**, it is an ironical yes!

This study tests for two therapeutic effects of a seminal protein, hSPI: (a) its

anti-HIV potency when pitted against the retrovirus and (b) its effectiveness as an agent that prevents the binding of the virus with its target CD4 cells. The results of this study are promising. In fact, the results allude to more firepower in the arsenal of the human male, in the form of other unknown anti-HIV proteins whose activity was serendipitously observed in one of the experiments. Some time will pass before these proteins are identified, but for now, the scorecard after the preliminary bout reads: 'hSPI: 1; HIV: 0'.

Science award with a sweet tooth

Choosing scientists to confer awards, like deciding on a particular sweet at a sweetmeat vendor's, is a sticky affair. Picking one sweet over another, as one would between scientists, is not a mathematically rigorous protocol, but a child-like 'yes' 'no' dichotomy. It depends on personal taste. In other words, unlike science itself, which is inherently rigorous and unbiased, these awards, however transparent and honest, are subjective and are coupled with an unintentional bias. This does not imply that awards are to be frowned down upon. Such biases are favourable. They precipitate judgement, and nudge one to scoop the sweet, else one would vacillate forever. The prestigious CSIR Young Scientist Award is one with refined tastes.

First instituted about three decades ago, the CSIR Young Scientist Award is a shot in the arm for promising young talent. Bestowed upon Indian scientists, no older than 35, it carries a cash prize of Rs 50,000, an incentive of Rs 7500 per month till the scientist turns 45, and also a research grant of 5 lakh rupees per annum for five years. Although the awardees are chosen from a strong pool of contenders subject to stringent selection criteria, the question still remains: how *tasteful* is this award? How scientifically resolved are its taste buds? A General Article, **page 753**, examines the research output of the nominees through the magnifying lens of 'citations' to answer these questions.

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