

## Yardstick for participation in scientific research: Intellectual capacity or mere technical competence?

'I myself do not burden my memory with simple facts that can be looked up in textbooks. But the true purpose of education is to train the mind to think. For that reason, it is priceless.'

– A. Einstein<sup>1</sup>

Nowadays, many researchers are burdening their memory with protocols than concepts. They mistake the ability to memorize protocols as the ability to think productively.

The most striking aspects of the work of Gregor Mendel, James Watson and Kary Mullis – 'foundations of genetics', 'double helical structure of DNA' and 'polymerase chain reaction (PCR)' respectively, are (a) their interdisciplinary approach for arriving at their concepts and (b) their intellectual capacity to visualize something based on the available data at that time in different domains of science.

We hail them as path-breakers. However, lessons are not learnt from their works. Many confuse technical competence with intellectual capacity. If a plant

gene can be localized with the help of an aneuploid series, then there is no need for *in situ* hybridization to do the same cytogenetic work. The latter can be either used as a precision tool or wherever there is limited scope for the former. Many researchers are not formulating projects based on the need, but based on the availability of instruments. Doing some work just because instruments are available, is ridiculous.

Nowadays, researchers in plant sciences are obsessed with molecular techniques rather than building up a strong foundation over which need-based research can be done. Because of this craze, there are no takers for the classical areas like statistical genetics, biometrical genetics and population genetics. The reason is simple. To shine in these areas, a strong foundation in mathematics is necessary. Alas, mathematics cannot compete with the 'glamour' of a photograph of gel electrophoresis! Chargaff<sup>2</sup> once said, 'Excessive reductionism is I believe doing much harm in biology'.

The need of the hour is cultivating the intellectual capacity, to innovate and arrive

at pragmatic solutions to socially relevant problems. I firmly believe that 95% redundancy not only exists in the genome, but also in publications, institutions, researchers and in their ideas. In other words, out of every 100 scientific institutions in India only a few like IISc, CCMB, JNU, AIIMS and IARI are justifying their status as scientific institutions. Only a few scientists practise science with original thinking.

1. Kothare, A. N. *et al.*, in *Of Science and Scientists – An Anthology of Anecdotes*, National Book Trust, New Delhi, 1998, p. 230.
2. Chargaff, Erwin, *Bioscience*, 1997, **47**, 795–797.

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## The impact factor syndrome

Once upon a time, when we received a communication from an editor's desk that our manuscript was finally accepted, it was immediately party time. The mood was high, experiments were shut down for a day and there were no hitches to the celebration. The satisfaction, that a piece of work well done, was now to go to press, for others to read and possibly appreciate, was complete.

But those carefree days are now a thing of the past. They were in the days when I was not yet afflicted with the impact factor syndrome (IFS). Now things are slightly different. After battling for months with an editor, and at times with the editor-in-chief, and then finally succeeding, I am all set to call it party time. It would probably be about then, that my technician pulls out a printed sheet from

his file, and asks me in which journal the manuscript had been accepted. 'But the impact factor is only 3 sir, *JBC* is 8' he says, running a finger down his list. My enthusiasm starts collapsing like a house of cards (symptomatic of IFS) as I try to explain that the IF is good, but there are also other parameters and considerations that go into the choice of a journal, and that IFs also are always higher for journals with review articles. . . . The arguments I make are convoluted and I know my technician is not convinced.

The syndrome's symptoms can also manifest themselves under slightly different circumstances. The situation can be considered serious when one studies the reactions to new journal submissions. One might have opted for any of the newer journals. It could be ASM's new

*Eukaryotic Cell* or Springer's *Functional and Integrative Genomics* or else a new publication from Wiley. But when the paper is published, no one is impressed, not even when I mention that the manuscript has gone through an extensive peer review, with reviewers scrutinizing the manuscript quite thoroughly. 'So you mean it still has zero IF?' 'In a sense, yes', I answer defensively (a clear diagnosis of IFS), adding, 'that after 3 years when the IFs are computed for the journal, it could have a high IF'. But no one is listening anymore.

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