

## Where do the hybrids go?

With great interest, I read the letter by Subbarao<sup>1</sup> in *Current Science*. The author of the said letter and those cross-referenced<sup>2,3</sup> are stalwarts and eminent personalities, i.e. all of them are 'on the other side of the table'; they are job-givers, policy-makers and the like.

May I humbly submit the opinion of one who is on 'this side of the table'. I was, until recently a job-seeker. Having recently returned from the US after a longish postdoctoral stint, I was scouting for jobs and after landing on one after much heartache; the experience made open my eyes to a few realities and I am submitting the same via this letter.

(1) Outside India, research in modern biology is interdisciplinary in nature. It is not a 'buzzword', but a reality. In India, however, I was told by not one, but several universities that despite having a Ph D in biosciences, I cannot become a research guide in 'Biochemistry', 'Biotechnology' or 'Biology' because my M Sc is in physics. The same precludes me from being a lecturer at a college also (pers. commun.). Clearly 'interdisciplinary' has not even become a buzzword in India; becoming a reality is far cry. By the same token, a chemist cannot become a research guide in pharmacology, even if he holds a Ph D in Pharmacology.

(2) The same goes for jobs. For example, to attend the ARS examinations/job

interviews held for the various jobs advertised by ICAR, prior M Sc degree in any one of agricultural sciences is a must (see Appendix V of notification-for-ars-2015.pdf<sup>4</sup>). Why? It is not a competitive process. Is passing a technical examination so easy that the door has to be closed through apriori scrutiny? What if an M Sc in chemistry, has a Ph D in Pharmacology/Toxicology and has carried out advanced zebra fish genetics and wants to work in fish genetics? Where does he/she go?

Hence the question where do the hybrids go?

Luckily for us hybrids, the grant-giving bodies are more open and the ad-hoc grants are really life-saving. However, those are available only after we get a job; thus we have a chicken and egg situation.

(3) Many Indian states (please check web-pages of the various State Governments) do not even have a Department of Science and Technology. How is alternative energy or indeed waste management or water management or modernization of agricultural practices going to be possible without science and technology?

I understand when the author says that the ambience is right in the TIFRs, IITs, IISc and IISERs<sup>1</sup> and chances are, we might find India's next Nobel Prize winner from there. However, I doubt if the

above-stated institutes can accommodate all the Ramalingaswamy or Inspire or Swarna Jayanti fellows through various batches, for example. So, should we not try to improve the ambience in other institutes as well? It will increase the probability of bringing the Nobel prize home.

Thus although scientific research is funded by the various Government agencies, the Ministry of Higher/Technical Education/UGC too has to play a hand in rectifying the lacunae stated above. I do hope that all of them come together to promote a better scientific temper in India.

1. Subbarao, E. C., *Curr. Sci.*, 2016, **110**(2), 130–131.
2. Rao, C. N. R., *Curr. Sci.*, 2015, **109**(5), 844.
3. Mashelkar, R. A., *Curr. Sci.*, 2015, **109**(6), 104.
4. <http://asrb.org.in/images/asrb/pdfs/notification-for-ars-2015-and-net-2015.pdf>

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## How well are we managing laboratory waste in India?

The contribution of Indian scientific research establishments in the scientific and technological development of the country is significant. Today, India houses a good number of Central Universities, State Universities, Private Universities, Indian Institutes of Technology (IITs) and other scientific research laboratories and institutions (autonomous, private sector or affiliated to bodies such as CSIR, ICMR, ICAR, DRDO, etc.), having facilities for scientific research. While they are contributing to the progress of science and technology in the country, they are also generating considerable amount of laboratory waste which is generally hazardous. It contains toxic,

concentrated chemical solvents, biological materials of animal, human, plant or microbial origin, contaminated materials (such as filter papers, gloves, tissues, glassware, etc.) with hazardous materials adhering to them, old or unlabelled chemicals, broken glasses, contaminated sharp objects, radioactive materials, cytotoxic materials, nanomaterials, and so on<sup>1,2</sup>. Laboratory waste is characterized by its inherent toxicity which necessitates specific attention towards its environment-friendly disposal. Here we wonder are there proper waste treatment plants in every institute in India having facility for scientific research in order to treat the complex laboratory waste re-

sponsibly? Considering the diverse, yet distinct nature of laboratory waste, how efficient are these plants towards averting environmental contamination? How aware are the researchers in these institutes towards responsible disposal of the waste generated through their work? Or is it the case that we are simply ending up polluting the environment while finding solution to a specific problem of scientific or environmental significance?

Our experience in the field of laboratory research in India illustrates a disappointing picture. Consequently, here we caution that Indian research establishments are yet to behave responsibly while handling their laboratory waste.