

DST's INSPIRE Camps: do they actually need a change?

I read with interest the correspondence by Koul¹, where several concerns are raised about how the INSPIRE Camps are organized. Having been a participant of one such camp at the Indian School of Mines-Dhanbad in the past, I wish to offer my response to the above.

The first point made is about the selection procedure as it provides an opportunity to only those who score good grades in the examinations. I do not think that is strictly the case. As far as I have been able to understand, the final discretion to select the students rests with the organizing institute. In my own case, many of fellow participants having not-so-good grades, but with considerable interest in science were allowed to participate. And yes, this should be the case as we know many, including Einstein, Edison and Ramanujan who did not score well in their examinations, but made a great impact on science.

The next point raised is that the camps should be fully residential. Again, I beg to differ. Actually, what happens is that after listening to the talks of mentors, thoughts begin to assimilate in the minds of the students. It is not necessary that the doubts or questions may arise in those five stipulated days. As a result, what is more necessary is that the students have the complete freedom to communicate with the mentors through phone or e-mail. This will actually foster personal interaction. In my own case, I have been fortunate to have encouraging mentors who have been Bhatnagar awardees or currently hold chairs of Distinguished Professors.

Another apprehension which I wish to express is the stringent division which we make between basic sciences and other fields like engineering. It is the result of this impervious nature between professions that no progress is made in

either of them. If science is to be encouraged, we need a highly multidisciplinary approach. Nevertheless, students specifically interested in basic sciences, should be encouraged, a point which I have made previously as well².

Finally, I must also add that INSPIRE is a good scheme and will potentially continue to act as a motivator to students across our country. It might even be extended to make a science-for-all academy in India^{3,4}.

1. Koul, M., *Curr. Sci.*, 2012, **105**, 145–146.
2. Singh, U., *Curr. Sci.*, 2013, **104**, 284.
3. Mashelkar, R., *Science*, 2012, **335**, 891.
4. Singh, U., <http://comments.sciencemag.org/content/10.1126/science.1220166> (accessed on 26 July 2013).

UDAYAN SINGH

*National Institute of Technology,
Rourkela 769 008, India
e-mail: udayansingh.1112@yahoo.com*

Too early to have a fresh look at DST's INSPIRE Camps

Regarding the observations of Koul¹ on DST's INSPIRE Camps, the following may be noted: This is the very first and only programme supported by a science funding agency in the country which extends services to talented school children of India. It is a well-conceived project by the distinguished Secretary of DST and is processed after several meetings by a host of top-notch scientists and educationists of our country. Presently, marks obtained at the 10th standard examination are taken as the sole criterion to select a talented student to participate in the Camp. DST has been and is continuing to change the 'cut-off' mark for selection every year and for every state based on the literacy level of the respective state. Koul suggests that besides marks, intelligence, skill and interest level of the student should also be considered. However, she has not provided yardsticks by which the suggested criteria can be objectively used to assess the huge student population spread over the vast and varied geographic areas of our country. Until, simple and widely practi-

cable criteria are developed, it may be too early to have a fresh look at the selection procedure for the Camps.

With regard to Koul's concern of huge funds being allocated, she must become aware that the entire country pays tax to keep Delhi subsidized. In places other than Delhi, there are many problems that have to be surmounted by the organizers. For example, there was power-cut for 14–16 h a day in Tamil Nadu until June 2013. In many other states too, power cut is common for several hours in a day. It costs much to keep a generator running throughout the INSPIRE Camps, which can be met with the approved budget. In these days of soaring corruption, let our talented children enjoy a little more comfort with the 'huge funding' for the INSPIRE Camps.

Incidentally, a scenario of DST Camps in Tamil Nadu may be mentioned. (i) I know many mentors, who participate in the programme at the cost of their casual leave. I also know a Bhatnagar Awardee, who has been advised to take rest after undergoing a critical surgery, but risks to

foray into the INSPIRE Camps. At the age of my seniority (74) and despite many commitments, including a time-bound book-writing project, I participate in as many Camps as possible, as it is a soul-satisfying experience to interact with the bubbling scientists. I also have participated in valedictory functions of this programme at many institutions and listened to the responses of the participants. Here are some comments by the participants. 'unique and wonderful programme', 'excellent arrangement by organizer', 'shall do science' and 'why not DST extend the programme for seven days'. (ii) Though not a prescribed duty, many organizers are motivated to extend services to the talented students. Trichengode, a small town has made history by bringing four Nobel laureates for the Camps. In villages/hamlets like Puliampatti and Kakkapalyam, the rural folks came to know about DST and its services. The jubilant participants wearing 'DST-INSPIRE' inscribed T-shirts indeed serve as mobile advertisements for the Camps. Three top-ranking girls

during the last two years, who participated in the INSPIRE Camps in a small town, Arupukottai, have joined mathematics and physics degree courses, after foregoing their engineering seats. Of course, the overall impact of DST's INSPIRE Camps is small, especially in Tamil Nadu, but it is very much required. Certainly, its impact will be more in the future. The enrollment in arts and science colleges in Tamil Nadu, which was

low during the past few years, has increased this academic year.

Of course, I certainly agree with Koul that DST should fund only institutions which provide compulsory lodging facility to promote horizontal interaction among the participants. DST may also secure feedback from mentors in a sealed, signed envelope.

1. Koul, M., *Curr. Sci.*, 2013, **105**, 145–146.

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T. J. PANDIAN

9, Old Natham Road,
Madurai 624 014, India
e-mail: tjpandian16@gmail.com

The Achilles heel of sophisticated instrumentation in pheromone research

Quite a few young workers in India are now keen on doing research in chemical ecology/ethology. This is a good choice, because, in our country we have a wealth of fauna and flora to choose from for research. However, lack of expensive, sophisticated apparatus is a well-known hindrance to our research. For lack of a gas chromatography mass spectroscopy (GCMS) column in which dichloromethane can be used, we missed certain molecules while studying the body odour of wild tigers¹. One wistfully thinks of the good old time around 1950 when the worthwhile discovery of the 'cat spot' was possible with a simple technique². In the span of 20 years my colleagues and I have traced 40 odd compounds as putative candidates for tiger pheromone. But

at one fell swoop, Burger *et al.*³ have now detected a hundred odd compounds!

Rather strangely, neither Burger *et al.*³ nor Soso *et al.*⁴ could detect 2-acetyl-1-pyrroline (2AP) in the tiger with the help of solid phase dynamic extraction (SPDE) GCMS, although I did so with paper chromatography and gas chromatography packed column⁵. The Achilles heel of SPDE GCMS is the 'absence of high abundance of usefully selected ions' of the mass spectrum of 2AP (P. Apps, pers. commun.) and the large number of putative pheromonal compounds.

1. Poddar-Sarkar, M., Ray, S., Pal Chowdhury, S. G. and Brahmachary, R. L., In *Chemical Signals in Vertebrates*, Springer, USA, 2013.

2. Datta, S. P. and Harris, H., *J. Physiol. (London)*, 1951, **114**, 39.

3. Burger, B. *et al.*, *J. Chem. Ecol.*, 2008, **34**, 659.

4. Soso, S., Poddar-Sarkar, M., Koziel, J. and Brahmachary, R. L., In Annual conference of Ethological Society of India and National Symposium on Live Organisms and their Expression in the Environment, University of Calcutta, 26–27 November 2012, abstr.

5. Brahmachary, R. L., *Curr. Sci.*, 1996, **71**, 257.

R. L. BRAHMACHARY

21B, Motijheel Avenue,
Kolkata 700 074, India

Lion figurine from Abhayagiri

Rajendran¹ reports a lion figurine carved into a quartz nodule from Abhayagiri, described as a 'non-Acheulian Lower Palaeolithic' occurrence in Kerala. To date, not a single Palaeolithic site has been meticulously excavated and well-dated in Kerala and the presence of Lower Palaeolithic hominin occupation here remains enigmatic². The most widely accepted Palaeolithic palaeoart in the Old World comes from younger contexts and well-dated sites that have been studied using multidisciplinary scientific techniques. No comparable example of a Palaeolithic figurine on quartz has been

reported previously from anywhere. Pre-historic engravings and carvings exist on comparatively softer rocks and materials such as ochre, sandstone, laterite, ostrich eggshells, bone, ivory and wood. The site of Abhayagiri and the so called 'figurine' lack analytical and interpretative frameworks and the report favours superficial sensationalism over science.

First, it is impossible to actually carve figures from quartz using quartz due to its crystalline composition and random fracture mechanics. No scientific analysis of any kind has been carried out on the so-called figurine to validate its

authenticity as being man-made. For instance, Rajendran could have applied 3D digital scanning, (environmental) SEM, or even experimental carving on quartz. There is not even a simple black-and-white line drawing of the 'lion' carving next to or superimposed upon figure 1 in the paper¹ to enhance its visual integrity. Readers are left just with their imagination to see the 'carved lion' (if there is any at all). Moreover, it is surprising that only a short paragraph at the end is dedicated to the specimen itself – the rest of the paper represents a rough review of global and Indian palaeoart.