CORRESPONDENCE

Losing out on Fellowship of Academies

The title of this correspondence is adopted, with due apologies to Balaram, from the title of his recent editorial in *Current Science*¹. We witness seasons of election (or is it selection?) of the Fellows to the Academies of sciences in India, like the season for Nobel announcements. The methodology of election is somewhat obscure: the Fellows of the Academies can send in their nominations, but when this list is made available, it is marked as ‘confidential’. I fail to understand the reason behind this marking. Then the process starts with the nominations getting screened by the respective sectional committees and the short-listed names from each sectional committee sent to the Councils. I understand that this list is ‘pruned’ by the Councils and names of the selected Fellows are announced after informing the elected Fellows. But in one sense, we are ahead of the Nobel Committee in that the Academies need not publish citations to justify elections!

Over a period of two decades, I have formed an impression that, ‘success depends on abilities (of the candidates and their mentors) to project, market and manage science and to network effectively in a complex community’, as mentioned by Balaram¹. The most important parameter in this list is *how well one can network*. But as Balaram¹ mentions, ‘Unfortunately, like democracy, we have no better system (or choice).’

But in all this, as some candidates lose out, we do not have the fear – not yet – that the candidate may end up like Douglas Prasher (see Balaram¹ for related story); we have a kind of social security built in our system, i.e., once a Government/university/research institution employee, always a Government/university/research institution employee!


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Myths and realities about biotechnology courses

In India, the media decides how the society should think and act. This has both positive and negative effects. One of the negative impacts which the media has created in the academic circles is the sensationalization of biotechnology (BT) courses. Information technology (IT) and BT are the buzzwords in our media as well as in the academic and bureaucratic circles. Students join BT courses expecting a lucrative salary, similar to IT. It is true that this is the century of biosciences and job opportunities are more, but not how the students imagine.

BT is the merging of biology and technology, and students are supposed to learn both areas well. But except for the courses run in the IITs and in a handful of institutions across the country, this balance is not maintained properly. Ultimately the students learn only a modified biology course, not much different from the conventional biosciences programmes. The only difference in syllabus is to tactfully skip some of the basic subjects like taxonomy, histochemistry, cytology, etc.

Now examine the employment avenues for BT students. Most of the colleges advertising campus recruitments for BT courses place their students either in the pharmaceutical, healthcare, agricultural or food industry. Are these industries a recent phenomenon? Certainly not, they have existed over several decades. How were these sectors working earlier when there were no BT courses? When a student from a conventional background over-takes a BT student with regard to job opportunities, a hue and cry is made.

The problem is that many feel that BT is a new branch and students pursuing conventional biology courses do not learn advanced techniques. For a majority, BT means working 24 h inside an air-conditioned laboratory handling only advanced instruments like PCR, HPLC, etc. The reality is that most of our conventional bioscience programmes also have almost similar course content. The only handicap is the lack of the technological component; unfortunately the same is the case with more than 90% of our postgraduate BT students.

The fact that a large number of BT students are unable to qualify in the CSIR–UGC NET exam¹ itself speaks of the lack of quality among them. Being a national-level test for lecturership and for doing research, this was the only test available to the students till recently. Since most of our BT students opt for research in the biosciences area rather than the technological area, they are bound to take this examination. How will a student unable to understand basic biological processes be able to do research in biosciences? The syllabus of CSIR–UGC NET exam is highly balanced and only a student who reads outside his area of study would be able to qualify in the test. If BT students are not able to qualify, it means they are not competent. There are many students from conventional branches who do not qualify. So there is no meaning in cursing others for one’s own fault.

Unfortunately, the decision-makers in our country get carried away easily by the society at large. They have now included a BT section in some competitive examinations like ICAR, GATE, etc. In most cases the questions discussed in this section will be related to applied molecular biology or biochemistry. Unfortunately or fortunately even our best students from conventional backgrounds can easily score high marks if they are allowed to take these examinations. Even the DBT has initiated a new examination meant only for BT students. The CSIR–UGC syllabus for life sciences has been modified now to satisfy the needs of BT students. But close scrutiny would again reveal that only the names of the topics have been changed, the content remains the same, ‘the same old wine in a new bottle’. This is a wrong precedence our
Ecotourism in wetlands causes loss of biodiversity

India has a unique geographical diversity with great avenues for ecotourism. Besides giving people the chance to see the flora and fauna in their natural environment, ecotourism is a source of income to the local people as well. The various State tourism ministries are trying to find new areas that attract tourists, both native and foreign. However, ecotourism may not prove to be good for all areas, especially the wetlands that support a diversity of wildlife. Wetlands and water birds are inseparable elements and it is obvious that the presence of bird diversity in a wetland indicates the quality of the area. Water birds extensively use the sand flats, mudflats, and swamps for feeding, resting and breeding, and these marshy areas might be adversely affected by ecotourism. Several studies have proved the ill-effects caused to the wetland ecosystems, especially to water birds due to recreational activities. For instance, a study in the intertidal region of The Netherlands showed that the number of breeding pairs of wading birds has steadily decreased due to the ever-increasing recreational use.

Tourist activity such as sun-bathing, collection of molluscan species, and scuba diving can disturb the ecosystem in a variety of ways, including repeated trampling on the soil substratum. Leisure mud walks on wetland habitats, which is becoming popular nowadays, might cause stress to the benthic animals in these areas. Human trampling might modify the abundance and population dynamics of the clams and cockles. It has been reported that there is a negative impact on adults of both groups because human trampling directly kills or buries the animals, and might provoke asphyxia. Human footsteps can also destroy other burrowing benthic worms and the deep burrowing animals. Moreover, these kinds of actions might also alter the strength of the biological interactions and have a negative consequence on other benthic organisms of the wetlands. Further, exchange of nutrients and oxygen between the sediments might also get modified due to compaction of soil. As a result, water birds that depend on the benthic forms for their survival, will also get severely affected.

Sometimes, tourists are also taken for a motor-boat ride to see the wetland and mangrove areas, which causes disturbance to the water birds. This will interrupt the birds’ activity patterns or make them to move away or even force them to leave these habitats permanently.

Human disturbance also reduces the time that is available for feeding and may force the birds to select alternate feeding areas. In general, birds are unable to compensate the lost feeding time, which indeed affects their energy reserves as well. According to Burton et al., the high level of disturbance affects the numbers of bird species using a site on subsequent days. So careful considerations are required before establishment of ecotourism programmes in and around the wetlands of India in order to conserve these habitats of migratory birds as well as to protect biodiversity of other forms such as benthos.


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