

Plant molecular biology: Sources of information, scope and spectrum

It was very thoughtful of the editors of *Current Science* to bring out the Special Section on *Plant Molecular Biology*. Much of the basics of cell and molecular biology is learnt by students of biology through the research done using either the microbial systems or the mammalian systems rather than that from the plant systems. It is only in recent years that similarities and differences in the basics of molecular biology between higher plant and animal systems have been experimentally elucidated.

If the topics covered in the available source material are any indication of trends in plant molecular biology research at the international level, the special section does not, and perhaps could not, in any way project the wide spectrum of areas that are receiving major attention of plant molecular biologists worldwide. Consequently, it has also failed in its stated attempt 'to bring together essays on some of the most important areas that are revolutionizing the understanding of plant biology'. The special section deals with only some selected areas of plant molecular biology, like photoreceptors, phyto-hormones, chloroplasts, gene expression, signal transduction pathways, etc. A number of topics have been left out in the special section. For instance, cell wall and plant vacuoles are unique to plants and they deserved a treatment in this section. Similarly, although abiotic stresses have been covered, an equally important and related topic of biotic stresses, including disease resistance and plant-pathogen interactions, has been left out. Many other topics that are not covered include cytoskeleton, molecular evolution and molecular systematics/taxonomy, cell membranes, intercellular and intracellular trafficking, etc.

Obviously, all the above topics could not have been covered in the limited space that was available for this special section, as also emphasized by Lawrence Bogorad in the very introduction of his article published here. Faced with this limitation, however, the choice of

topics for this special section was perhaps also governed by the choice of authors, most of them being former students of Delhi University, mainly in the laboratory of one of the guest editors. The research in plant molecular biology at the international level is much more than what is projected in the special section. Even the discussion on plant molecular biology work being done in India is unconsciously an attempt to highlight the work being done in Delhi. Although the guest editors claim that they did not cover the work done in the field of plant biotechnology, they have themselves written an article on genomics and DNA chips (which is largely biotechnology), without discussing the plant biotechnology work being done elsewhere in the country, and without any reference to a detailed article on 'DNA chips/microarrays' published earlier in *Current Science*. It would have perhaps been more appropriate, if the guest editors had selected a specific area of plant molecular biology and invited articles for an in-depth discussion on this topic, since it was not possible to cover all those areas of plant molecular biology which are receiving a major thrust worldwide.

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Response:

It is a matter of regret that our efforts seem to have fallen short of P. K. Gupta's expectations. He is one of the leading plant biologists of our country with many contributions in the areas of cytogenetics, plant breeding and plant biotechnology. However, opinions vary and happily for us there are many who have commended the Special Section. Regarding the specific points or issues raised by him, first of all we take up

that of not citing his review on DNA microchips. There was no intention to slight his contribution. In an effort to ensure that our own reference list fitted within the stipulated length of articles, we could barely manage to include citations to primary literature and just a few reviews by those who made history themselves.

While in the process of editing this special section, we drew up the list of topics first and then picked the authors. It just so happened that some of our former associates possessed the best expertise on certain topics chosen. There are very few centres yet in the country for *basic* plant molecular biology and it was natural for us to turn to these few for help. The choice of topics reflected our interest in developmental biology and our view of what is most exciting today. We are aware of the impact that new techniques are having on the whole spectrum of plant biology. *Current Science* itself had suggested a special section of only 8–10 articles; it was not intended to be a special issue.

Lastly, in our thinking, genomics is a subject of fundamental importance – as a journey to 'the centre of biology' and understanding the blueprint of life itself. Basic advances invariably have fallout in agriculture, medicine and human welfare.

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Note: However, although molecular cytogenetics and phylogeny were not central to our theme, we wish to bring to the attention of readers S. N. Raina's (Delhi University) extensive studies on variations in DNA content, number and organization of ribosomal genes, satellite DNA and the like, particularly on the genus *Vicia* as an example of pioneering work on these aspects.