



**Figure 1.** Regional distribution of the top 50 high-impact hospitals.

computing the *h*-index, the ones that are commonly used include *Web of Science*, Essential Science Indicators (ESI), Scopus and Google Scholar. ESI (<http://esi.isiknowledge.com>) is more suitable for determining the *h*-indices of hospitals as it provides standardized institution name tagging and avoids inconsistent author addresses.

ESI lists publications and citations for ranking scientists, institutions, countries and journals based on the articles indexed in the *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. It covers 22 specific research fields and sums up data covering 10–11 years. Here, we have used data from a 10-year plus 8-months period, namely 1 January 2000–31 August 2010. The procedure adopted for data collection and calculations is as follows: (i) obtain the list of all institutions with their total number of papers and citations from the ‘citation rankings’ in ESI. (ii) Determine the high-impact hospitals using the search keywords ‘hosp’, ‘infi’ and ‘clin’, and delete the wrong cases as far as possible. For example, in ESI, we removed a case named ‘UNIV HOSP’ because it includes many hospitals in different universities. (iii) Calculate the *h*-index of each hospi-

tal using ‘view papers’ under the ESI data of that hospital. Based on their *h*-indices, the top 50 high-impact hospitals in the world are listed in Table 1.

As seen from Table 1, Mayo Clin & Mayo Fdn has the most number of papers (29,425) and citations (640,126), but its *h*-index (222) is smaller than that of Massachusetts Gen Hosp (257) and Brigham & Womens Hosp (256). It is remarkable that the *h*-indices of the latter two hospitals are close to those of some renowned universities such as Duke University (257) and University of Cambridge (255). Of course, one important reason is that the average citations for medical disciplines may be higher.

A large difference is seen between the higher and lower cases (Table 1). The top hospitals have obvious advantages in terms of quantity of output, number of citations as well as total research impact. This is often associated with scale; many of these hospitals are large general hospitals. There are also some university hospitals that have high impact. For example, the Karolinska Univ Hosp, which is closely affiliated with the Karolinska Institute in Sweden, gets an *h*-index that is highest among the seven university hospitals and higher than other hospitals

in Table 1, except the five top hospitals in USA.

The leading hospitals in USA have a great advantage in terms of *h*-index. But, as shown in Figure 1a, it is interesting that hospitals in England feature more (28%) in the set of 50 high *h*-index hospitals than those in USA (24%). In addition, Figure 1b shows that hospitals in Europe constitute nearly 50% and none of them are located in Africa and Latin America. The regional distribution of high-impact hospitals seems to be imbalanced.

Although the *h*-index is only one measure and cannot cover all the achievements of a hospital, it can provide a remarkable assessment of the research impact of a hospital.

- Weiner, B. J. *et al.*, *Health Serv. Res.*, 2006, **41**, 307–334.
- Rothberg, M. B. *et al.*, *Health Affairs*, 2008, **27**, 1680–1687.
- Tess, B. H. *et al.*, *Clinics*, 2009, **64**, 571–576.
- Hirsch, J. E., *Proc. Natl. Acad. Sci. USA*, 2005, **102**, 16569–16572.
- Braun, T., Glanzel, W. and Schubert, A. A., *Scientometrics*, 2006, **69**, 169–173.
- Csajbok, E. *et al.*, *Scientometrics*, 2007, **73**, 91–117.
- Star, X. Z. and Fred, Y. Y., *Curr. Sci.*, 2011, **101**, 21–22.
- Prathap, G., *Curr. Sci.*, 2006, **91**, 1439.

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## The *Bt* brinjal–biodiversity issue

In a recent note discussing the effect of *Bt* brinjal on biodiversity, Bokalia<sup>1</sup> calls for a healthy debate based on unbiased scientific data. This is surely no more than we would reasonably expect. An intrinsic part of this debate is the *Bt* brinjal–biodiversity issue, commented upon recently by several authors<sup>2–5</sup>. In the con-

text of the heightened need to maintain balance in the natural environment, the biodiversity issue is a legitimate one and deserves careful consideration.

On-going biodiversity concerns include the effects of *Bt* toxins on non-target invertebrates<sup>6</sup> as well as transgene transfer to brinjal wild relatives<sup>7</sup>. However,

contrary to the view<sup>1</sup> that these points are not convincing, they have nevertheless featured strongly in several authoritative reports<sup>8,9</sup> on the safety of *Bt* brinjal. Furthermore, the statement by the Minister for Environment and Forests, Government of India in February 2010, clearly refers to these precise biodiversity

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concerns ([www.moef.nic.in](http://www.moef.nic.in)). In the same statement the indefinite moratorium on the commercialization of *Bt* brinjal was also announced.

Yadugiri<sup>5</sup> provides a useful review of the *Bt* brinjal debate and calls for further tests which could help provide a clearer picture of the safety of this transgenic form. From the invertebrate point of view, these include measurement of resistance in the brinjal fruit and shoot borer (BFSB) as well as monitoring the effects on non-target pest populations. There remains a need for data on the development of resistance in the BFSB from all the brinjal-growing states ([www.moef.nic.in](http://www.moef.nic.in)). Furthermore, effective studies on non-target lepidopterans (such as moths and butterflies) and non-lepidopterans (such as bees) have not been performed to date<sup>9</sup>. From the flowering plant point of view, Yadugiri<sup>5</sup> suggests tests which include identification of wild relatives and assessing the fitness of transgenic wild relative hybrids. Historically, there have been many problems with the identification and synonymy of wild species related to brinjal<sup>4</sup> and a taxonomic review is urgently needed. To date, there has been

no thorough study of interfertility between untransformed brinjal and its closest wild relatives in South Asia, let alone detailed studies of hybridization between *Bt* brinjal and its close relatives, native or introduced. Moreover, several hybridization studies which are routinely referred to were performed more than 20 years ago, and used outdated methodologies.

At the Tenth Conference of the Parties to the Convention on Biological Diversity (COP10) in Japan in October 2010, a new ten-year strategic plan with 20 targets was constructed. Target 9 relates to preventing the introduction of invasive species, and target 13 is geared to conserving the genetic diversity of crops and their wild relatives<sup>10</sup>. In accordance with the COP10 guidance and while the moratorium continues, it seems prudent to encourage careful and thorough environmental monitoring. Only after accumulation and balanced interpretation of such 'unbiased scientific data' can a 'healthy debate' take place.

1. Bokialial, D., *Curr. Sci.*, 2011, **101**(2), 136–137.

2. Kesavan, P. C. and Malarvannan, S., *Curr. Sci.*, 2010, **99**, 908–914.
3. Hanur, V. S., *Curr. Sci.*, 2011, **100**(9), 1285–1286.
4. Samuels, J., *Curr. Sci.*, 2011, **101**(4), 469.
5. Yadugiri, V. T., *Curr. Sci.*, 2011, **101**(4), 472–476.
6. Shanmugam, G., *Curr. Sci.*, 2011, **100**(2), 147.
7. Samuels, J., *Curr. Sci.*, 2011, **100**(5), 603–604.
8. Centre for Sustainable Agriculture (Hyderabad), Report of the Independent Expert Committee on *Bt* Brinjal, 2006.
9. Seralini, G.-E., Report, CRIIGEN, France, 2009.
10. Report, Convention on Biological Diversity; <http://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf>

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## Eligibility for research: selection or discrimination?

The University Grants Commission (UGC) has recently made qualifying entrance tests (NET/SLET/SET/GATE) as mandatory to register for Ph D in universities<sup>1</sup>. However, there are no equally serious measures to enhance the quality of theses and supervisors, or to attract more researchers to improve the dwindling number of Ph Ds in all disciplines.

A student coming from an average college finds it difficult to pass the NET/SLET (as is reflected from the success ratio). The syllabus for the entrance test has a wider coverage than that of a postgraduate course, and needs to be learnt by self-study. As an example, the 'earth and atmospheric sciences' syllabus covers geology, geophysics, oceanography and meteorology. Most of it may not have an immediate connection to the specific research topic of interest to the candidate. A good researcher simply needs to generate original and quality data, and to deliver new and useful inferences

through a well thought out and creative research agenda under competent supervision. The focus on relevant related fields may happen at an advanced stage, and not at the beginning. Passing the entrance exam does not test this ability of a candidate. Are we then impeding a large number of patient, hard-working, dedicated, creative, improvising, motivating and enquiring (PHDCRIME) candidates?

Most of the research fields in India have great demand for original research output and robust and indigenous databases with/without following Western ideas, methodology and instrumentation. A large number of aspirants working in research institutes, universities, colleges and industry who wish to do a Ph D in their own area find it difficult to register due to the UGC norms. With their basic skill and work experience, they can produce good Ph Ds at par with fresh NET-qualified candidates. The situation is alarming for universities as recently, the

Council of Scientific and Industrial Research and the Indira Gandhi National Open University have introduced their own Ph D programmes (probably to avoid the hurdles of UGC). Major governmental agencies like the Geological Survey of India, Botanical Survey of India and India Meteorological Department may follow a similar path. These agencies, founded during the British era, owe a treasure of unpublished information that needs to be utilized by researchers. Thus, universities may lose good researchers, authentic data and interacting research organizations.

In the current scenario, in which fundamental science is flourishing compared to the previous phase of technology, with growing fields like nanoscience, biotechnology and climate-change studies – research manpower is in great demand. It is therefore urgent to recruit more researchers, instead of discriminating them at the initial level.