Ethics in scientific research

This is a follow-up written on 'Tailored stem cells' (this issue, p. 1311), 'Tailored stem cells – too good to be true'! (http://www.shvoong.com/abstract.aspx?id=147779), while I was monitoring the ongoing controversy over ethics violation by South Korean stem cell research pioneer Woo-Suk Hwang towards the end of 2005. The scientific showdown between the two eminent and ambitious scientists and prior collaborators Woo-Suk Hwang of South Korea and Gerald Schatten of Pittsburgh, USA, has led to an unpleasant situation in the scientific research community worldwide. Fraudulent research has been particularly considered as a disturbing event, because it threatens an enterprise built on trust. Fortunately, these cases are quite rare, but they have a lasting damaging impact.

This is all about the 'now infamous' report published in the US journal *Science* in May last year. Hwang said that he had cloned human embryos and extracted stem cell lines tailored to match his patients. By reproducing a human embryo and then tinkering with it to create stem cells with tailor-made biological characteristics, he had apparently come closer than anyone to turning the dream of therapeutic cloning into a reality that could benefit millions of people afflicted with severe ailments.

However, upon the shocking revelation of the fraud in this overly ambitious project, Hwang publicly apologized to the scientific community and the Korean government, to whom he owed an overwhelmingly large amount of grant money. Schatten, the American collaborator on this paper was also under fire for a long period of time due to his involvement in the reports. However, a University of Pittsburgh panel has now declared Schatten as being innocent of research misconduct in the South Korean stem cell debacle. His failure to closely oversee research, with his name, makes him guilty of research misbehaviour according to a summary report released on 3 February 2006. According to the summary report, Schatten had nothing to do with the authorship of the 2004 paper, which was also subsequently found to be fraudulent. However, he devoted a tremendous amount of time and energy to the 2005 paper, composing numerous drafts and allowing his name to appear as a senior author, although he did not exercise a sufficiently critical perspective as a scientist, the panel relates.

It is a pity that those who suffer from incurable diseases were the objects of this fraud and academic fabrication, further makes it an unforgivable offence of the worst possible kind. A feeling of anger and a sense of betrayal marked the reaction in the scientific community on the day of Hwang's announcement of deliberate fabrication concerning research results on patient-specific stem cells. Schatten who co-authored the discredited papers, severed ties with Hwang and emphasized that he served only as an adviser and did not perform actual experiments. Media reports indicate that he acted as a liaison/high-profile promoter between Hwang and American scientists for getting the paper published in *Science*.

People have formed an opinion that there should be no such thing as a 'courtesy authorship'. While Hwang's career is already in shambles, Schatten's career is largely dependent on the answers to several questions relating to his role as a senior author of two of Hwang's papers. However, there have also been questions about mixing patriotism with science. Hwang became a superhero too soon, and he had portrayed the responsibility of brightening up the future of his country. The media blindly praised the doctor without knowing much about of stem cell research. The media and the journal *Science* have been held equally responsible for the oversight and publication of fraudulent data, to be remembered in years to come by the scientific community and people at large.

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Are we not solicited and/or contributing in life sciences?

Academicians from various backgrounds have analysed and assessed the magnitude and quality of India's contribution in different areas of science and technology, based on different criteria like (a) International awards and honours, (b) patents, (c) number of publications, (d) publication in high impact journals, (e) citation index, etc. Here I suggest yet another parameter which can be a supplement to the above criteria.

Many international publications function based on invited articles. In the publishers' jargon, 'they solicit manuscripts only from those who have made original and/or substantial contribution in a given field. In other words, they make the articles authoritative by inviting only leading experts in the field'. How many of our scientists have such recognition?

Being in a biotechnology department, I prefer to scan the 16 volumes of *Biotechnology*[1]. The total number of chapters in these volumes is 313 contributed by 547 authors. Only one article by two authors is exclusively Indian, i.e. solely by Indian authors contributing from India, with one member in the Editorial Committee. A similar exercise with *Encyclopedia of Microbiology*[2] yielded 298 articles written by 451 authors. Only one article by a single author emanated from India. Further, I have scanned 154 volumes of *Methods in Enzymology* (spanning years 1955–91)[3], though as of today there are more than 405 volumes. There were 8620 articles contributed by 13,790 authors, of which only 22 articles are from India contributed by 30 authors. As the referee pointed out, the above plight can be shared by many nations of the world, and that USA and advanced Europe being a multiethnic scientific community, contributions from several nationalities, including Indians might have gone into the published work directly or indirectly. However, this should not make us complacent in view of the fact that we are the third largest scien-