

## Fellowships slowly kill future prospects

Many research fellows are facing a situation similar to Upadhyay (*Curr. Sci.*, 1998, 75, 1105). I was once a research fellow but now I am a central government employee. Many people discouraged me from taking up this job since it did not suit my qualifications. But I took it up. If not, I would also have been a research fellow like Upadhyay and faced similar problems.

My opinion about this bad condition of research fellows is as follows:

Many Science and Technology organizations like CSIR, UGC, DST, DOD, DAE, etc. provide funds for doctoral/research work after post-

graduation (JRF, SRF, RA, Pool Officers, and young Scientist award, etc.). All these fellowships are extended solely on the candidate's progress. But there is no strict/confidential procedure to evaluate a candidate's progress. And, how far these project reports are useful to the nation and what is achieved through these projects is a question mark.

So, I suggest that, instead of encouraging researchers with this type of temporary back-ups, it is better to create some permanent posts like Research Officers. Fellowships can be provided to candidates (who are working under

these Research Officers/Professors/Readers/Lecturers/Scientists) up to their doctorate degree only. Then, there will be no question of waiting for further projects/fellowships by these candidates. No doubt about 30 to 40% of the funds given by the Science and Technology organizations are misused.

I do agree with Upadhyay that urgent action has to be taken regarding this problem.

KRISHNA BHAGAVAN

*Indian Bureau of Mines,  
Bangalore 560 022, India*

## Nicotine is addictive

Gururaj Hunsigi's article 'Molecular farming through nicotine-free tobacco' (*Curr. Sci.*, 1998, 75, 1106) has outstanding data on global and Indian production of tobacco and the Indian earning of INR 400 crores in foreign exchange due to export and INR 2500 crores as excise duty. However, his statement that 'recent research has shown that nicotine is not yet classified as addictive but is only habit forming similar to cocaine and morphine', is amazing. Any text will describe nicotine as a powerful and addictive drug. The repeated effect of nicotine on the central nervous system leads to addiction or dependence. Cigarettes are highly efficient at delivering nicotine to the brain.

William Ecenbarger in his April 1993 *Reader's Digest* article 'America's new merchants of death' reveals that 'a *Reader's Digest* investigation covering 20 countries on 4 continents has shown that millions of children are being lured into nicotine addiction by American cigarette makers'. In the last 2-3 years, massive evidence has been unearthed about tobacco which goes by the name of 'The Brown and Williamson documents' for which the main credit goes to Stanton A. Glantz, Professor of Medicine in the Division of Cardiology, University of California, San Francisco (UCSF). The story runs like an Agatha Christie narration: Glantz was a scholar

interested in the field of tobacco and the public health and he received from an unknown source 'Mr Butts', approximately 4000 pages of memoranda, reports, and letters covering a 30-year period (from 1960s) from the Brown and Williamson Tobacco Corporation (B&W) and its parent company, the British American Tobacco Company (now BAT Industries). With additional documents received from a former BAT chief scientist and some more sources, Glantz deposited all of them (by then running to 10,000 pages) into the UCSF library. The tobacco industry did not know that Glantz possessed these documents. While the legal battle started with B&W asking UCSF library to return the 'stolen' documents, Glantz was quietly reading and analysing the documents. Ultimately a book-length analysis was submitted to the *J. Am. Med. Assoc. (JAMA)*, one of the world's leading medical journals. *JAMA* published several of these unusual articles in their issue of 19 July 1995 together with a comprehensive 3-page editorial. It was a bold step. The editorial was signed by 22 leading medical doctors associated with *JAMA* as trustees or in other responsible positions. Concurrently, efforts were made to get a book published but it failed with more than 30 of America's leading commercial publishers and several academic pub-

lishers politely turning down the manuscript for one reason or the other!

The documents show that,

- (i) Research conducted by tobacco companies on the deleterious health effects of tobacco was often more advanced and sophisticated than studies by the medical community.
- (ii) Executives of B&W knew that the use of tobacco was harmful and that nicotine was addictive and debated whether to make the research public.
- (iii) The industry decided to conceal the truth from the public.
- (iv) The industry hid their research from the courts.
- (v) Despite their knowledge to the contrary, the industry's public position was that nicotine was not addictive.

Not only did *JAMA* publish the articles believing it to be the right thing to do, but it gave some 14 recommendations to make an unequivocal stance against tobacco a non-partisan public health issue. I give below only the first recommendation because it is related to the addictive nature of tobacco:

'Further efforts should be made to educate physicians, the public, and policy-makers about the consequences of tobacco use, the predatory nature of

the tobacco industry, and the ways individuals can break their addiction to tobacco.'

One should read the *JAMA* articles and Glantz's own narration published in *The Times Higher*, 6 September 1996, to appreciate the sad story of ill-effects of tobacco and the evidence in its support.

It may be of interest to many that the Tobacco Prevention Section of International Union Against Tuberculosis and Lung Disease, Paris, France, has published a 369-page highly informative book (1996) entitled *Educating Medical Students about Tobacco: Planning and*

*Implementation*, edited by Robyn L. Richmond, School of Community Medicine, The University of New South Wales, Australia. Its last chapter deals with pharmacological aspects of nicotine, what makes it addictive, and pharmacological treatment of nicotine dependence.

The purpose of this article is to set the record straight about the undisputed addictive nature of nicotine much like the addiction to alcohol, opioids, or cocaine. Cultivation of a nicotine-free tobacco plant may or may not be possible but it may be stated that attempts made in the past by the cigarette indus-

try to bring into market low-nicotine cigarettes including even the filter-tipped cigarettes have proved to be largely market strategies. I wonder if a totally nicotine-free tobacco leaf can ever be the raw material for cigarette manufacturers when their central theme is to lure youngsters to nicotine addiction.

BHARAT R. SANT

C-14/2, Kakateyanagar,  
Habsiguda,  
Hyderabad 500 007, India

## Transgenics, terminators and suppressors

The lead taken by *Current Science* in clarifying the technology behind transgenics and terminator seeds and its social and political implications is laudable<sup>1-7</sup>. The treatment of the topic by the popular press and the media has created confusion rather than dissecting out the crux of the issue<sup>1,2</sup>. This is evidenced by the reactions of the agitated farmers and public in many parts of the country who branded all transgenic varieties and even hybrids as terminator seeds. It was at this juncture that University of Agricultural Sciences, Bangalore organized a seminar with the participation of scientists, technocrats and policy-makers to dispel the fear and doubts regarding the introduction and experimentation of transgenic plants into our country. The speakers were eminent scientists in biotechnology and related areas.

The keynote address by Manju Sharma, Department of Biotechnology read in her absence, highlighted the efforts going on in the country to develop our own transgenic technology and noted that the guidelines prepared by the DBT for testing transgenic plants had adequate safeguards and monitoring mechanism built into them. The DBT has also taken immediate steps to disallow the patent on terminator technology in India and prevent the entry of seeds containing the terminator genes. It was also declared that the experimental trials of Bt cotton were approved by the Review Committee on Genetic Manipulation (RCGM) and is as per the laws of the Government.

G. Padmanaban (Indian Institute of Science) explained the international scenario on transgenics and said that countries like the United States, China, Argentina and Mexico are cultivating transgenic varieties on a large scale and this should give India confidence to go ahead with the adoption of the technology. Only in Europe the public opinion on the use of the technology was divided. Referring to the collaborative research programme of the IISc with the private sector, he suggested that MNCs and research institutions in India should hold joint patents so that this would safeguard the interests of the nation while reaping the benefits of a frontier technology like transgenics. He urged the scientists, enlightened administrators, progressive farmers and peoples' representatives to come together to spread the correct message about transgenic technology, so that India would not miss the boat of the transgenic revolution in agriculture.

P. K. Ghosh (Member, Review Committee on Genetic Manipulation) clarified that the Government has not yet taken any decision on whether Bt cotton would be allowed to be used by the Indian farmers or not. The final decision will be taken only after thorough scientific evaluation of the ongoing experiments. He added that the scientific data on environmental safety of Bt cotton submitted by the company and its experimental verification did not show any sign of negative impact on human beings or other organisms. He revealed

that experiments conducted by the DBT have proved that the pollen grains of cotton do not spread beyond 2 m but an isolation distance of 5 m is provided around the plots where field trials are going on at 40 locations in the country.

P. S. Rao (Bhabha Atomic Research Centre) explained the importance of transgenic varieties in increasing agriculture production in terms of quantity as well as quality to meet the challenge of catering to the needs of a growing population. He was convinced that the field trial is a right step in adopting the technology and the doubts about its adverse impact on the environment were misleading. C. M. Gaiind (National Research Development Corporation) spoke on patenting laws and documentation of biotech products developed through transgenic approach. He explained the efforts of the NRDC to promote, protect and support inventions by patenting in India and abroad. S. R. Rao (Department of Biotechnology) who spoke on public acceptance of biotechnology and its products said that in many developed countries like Japan, products of biotechnology are readily accepted despite all the negative propaganda.

Although the purpose of the seminar was to examine the various dimensions of the issue, all the speakers highlighted only the brighter side of the technology even concealing scientific evidence on the dangers associated with it, raising suspicion among the already cynical audience that the seminar was for the