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Biotechnology, a priority area for public policy

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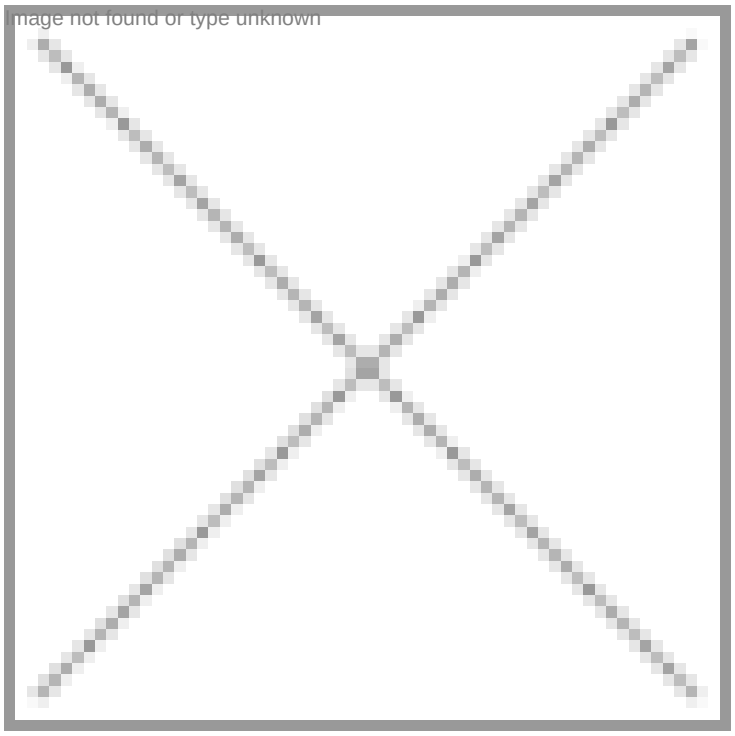

Science is not merely an instrument of economic and technological progress, it is also a means to acquiring a more rational approach to life.

Biotechnology, pharmaceuticals and health technology are areas in which Indians have made impressive contributions and this is certainly a priority area for public policy.

The recent breakthrough by our scientists in the discovery of a new molecule, the first since 1963, to treat tuberculosis is an important achievement made possible by public-private partnership in R&D. By reducing the time period for treatment of tuberculosis this molecule can help reduce the cost of treatment once it is available in the market. This is a fine example of science coming to the aid of the needy, especially the poor. Scientific advances will continue to offer new solutions for dealing with health issues. Our efforts must be to adapt such advances to our Indian conditions. Here again the importance of appropriate technology, including in instrumentation comes to the fore.

New advanced health technology must help the poor and needy. Our 'best minds' in science must engage themselves in providing solutions to the problems that can make a difference to humanity.

Dr Manmohan Singh
Prime Minister of India

Every 30 seconds, somewhere a child dies of malaria.

We can imagine the benefit to humanity if we had a good vaccine for malaria. HIV/AIDS is ravaging nations today. A new vaccine of HIV/AIDS can make a big difference. Such breakthroughs cannot occur unless our most creative brains dedicate themselves to these problems. I appeal to the very best of our scientific community to engage themselves in dealing with such challenges that are both intellectually stimulating and socially relevant.

New drug discovery research is becoming increasingly expensive. It now takes up to 15 years and up to $1.5 billion to move a molecule to the market. Let alone the poor in India, even the rich in the developed world will not be able to afford such drugs! India cannot just emulate these models and hope to win. We must create alternative paths of drug discovery, where India has distinct comparative advantage and a chance to win.

India can be a major partner in the process of discovery, development and delivery of such products.

Consider just two recent examples that encourage me to believe that our biotechnology and pharma R&D system and industry can help reduce the cost of medicines worldwide and be a force for good in the world. The Central Drug Research Institute, Lucknow produced a drug to treat cerebral malaria. Themis, an Indian pharma company sells it under the brand name E-Mal to 48 countries, many of them in Sub-Saharan Africa, at affordable prices.

India's Shantha Biotech came out with a recombinant DNA vaccine (Shanvac) on Hepatitis B. This vaccine was being sold for $15 per dose. Thanks to the entry of Shanvac, the prices of the vaccine kept on tumbling till they came to less than a dollar per dose. Shanvac today supplies this vaccine to UNICEF for 50 cents! This is a spectacular reduction in price by a factor of thirty! India's unique S&T capacity as well as low-cost manufacturing capacity can benefit India and the whole world.

A strategy for development of instrumentation in India has been worked out by the Indian National Science Academy (INSA). I agree with its conclusion that Indian firms must acquire a high profile in the global market for medical instrumentation. The INSA report too emphasizes the importance of patenting and of increasing the number of patents filed by Indians.

Science and technology must pervade our psyche, our way of thinking and our way of working. We must have a greater integration of our economic and social programmes with R&D activists in science. The National Common Minimum Programme (CMP) of our government underlines the importance of integrating science with society and fostering scientific temper among the people so that we are able to deal with the challenges at hand in a rational and reasonable manner.

Our government has promised a "new deal to rural India". This "new deal" will have an economic and social content, as well as a technological component. We have emphasized the need for a Second Green Revolution. This requires greater application of S&T in agriculture. We must improve the productivity of land and water as well as of other inputs in agriculture. This requires an increase in investment, both public and private, both in rural infrastructure and in the application of S&T in agriculture. The benefits of new research in biotechnology, in electronics and communication technology and in infrastructure related technologies must translate into higher incomes for our farmers and a strengthening of our farm economy.

I am concerned by the fact that our best minds are not turning to science, and those who do, do not

remain in science. On the one hand, we are truly proud of the fact that this year, all the 19 young boys and girls, who represented India in Olympiads, came back with medals. On the other hand, our past record shows that practically none of such Olympiad medal winners pursued science subsequently as a career! We must reverse this trend.

I understand that in a recent nationwide study launched by Indian National Science Academy and conducted by National Council of Applied Economic Research, it was revealed that less then 3 percent of school children indicated their preference to pursue a career in science. We have to improve the quality of teaching and increase the enrolment of students in science and mathematics at the school level. Our scientific community must take grater interest in science and maths teaching and syllabi at school level to make them more interesting.

We must find ways of making these disciplines more attractive to children and widen the base of science and maths teaching.

Second, I am concerned about the tyranny of bureaucracy and the quality of output in many of our scientific research establishments. The pursuit of research in science is an adventure, a creative endeavor. Are we creating the required environment for innovation, for experimentation, for risk and creativity in our institutions, be they universities or national laboratories? Or have we allowed bureaucratic systems and patron-client relationships to stifle creativity?

Are our research laboratories exciting places for the young, encouraging creativity and experimentation, or are we scaring them away with our bureaucratic ways and our hierarchical systems?

Third, I do wonder whether or not we are creating the required incentive mechanisms to reward creativity? In addressing this challenge we will also be dealing with the problem of making science a more attractive career option.

But there are other aspects of the incentives issue that we must also address.

One such is the protection of intellectual property. I believe an important incentive mechanism for research is provided by the patent regime.

As you know, the government has taken steps to usher in a new patents regime. Apart from keeping our international commitments, an important objective of our government is to bring in a balanced intellectual property regime, which on the one hand will give a full expression to the creative ability of India's intellectual prowess and on the other hand also protect the interest of society at large.

Indeed, an ideal regime of intellectual property rights has to strike a balance between the private incentives for innovators and the public interest of maximizing access to the fruits of innovations. This balance is reflected in article 27 of the 1948 Universal Declaration of Human Rights, which recognizes both that "Everyone has the right to the protection of the moral and material interest resulting from any scientific, literacy or artistic production of which he is the author" and that "Everyone has the right .... to share in scientific advancement and its benefits".

I do believe that the new regime that we will have will balance the interest of the innovator and that of the society in an optimum way.

The new patents regime will have a special significance for the fortunes of our drugs and

pharmaceutical industry. Our industry benefited from the 1970 patent amendments. As a result, today we have a strong manufacturing base in drugs and pharmaceuticals. However, industry will have to move from mere imitation to innovation now. It will have to get into new drug discovery research. I am very happy that industry has already accepted this challenge. I understand that during the last four years, the R&D investment made by drugs and pharmaceutical industry has gone up by 400 percent. I am also happy to see the creation of new R&D centers by some of the leaders during the past few months. I assure you that our government will play an active role in partnering industry to carry this movement forward.