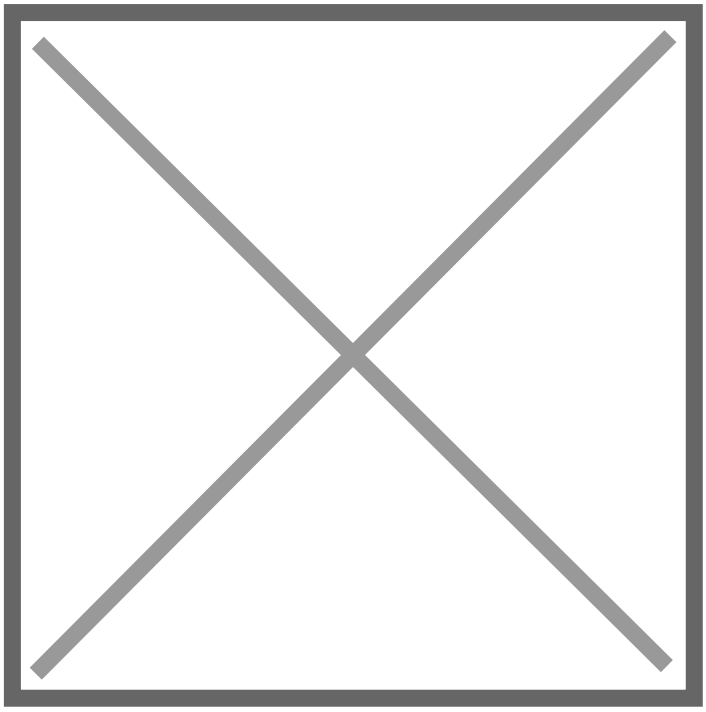
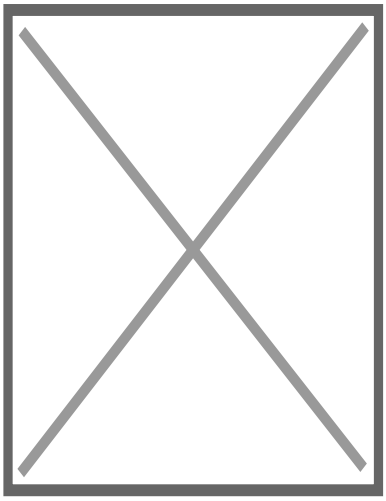
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Architect of Modern Biology

13 December 2007 | News



Architect of Modern Biology



He is widely regarded as the architect of modern biology and biotechnology in India. Educated at Varanasi and Lucknow, he is one of the youngest to have obtained a PhD at the age of 21 and produced four books and has over 125 major scientific publications and over 400 articles and other write-ups in reputed publications all over the world. He has been advisor to several well-known pharmaceutical and other industries, chairman of three companies and member of the Board of many others. He has been a member or chairman of over 125 major national and international standing committees and has been connected with numerous scientific, social and cultural organizations.

He has been the man behind setting up the world class Centre for Cellular and Molecular Biology (CCMB), Hyderabad.

A recipient of over 100 national and international honors and awards including the Padma Bhushan, the Legion d'Honneur and the National Citizens Award (India), Dr Bhargava, who has turned 80, is being conferred the BioSpectrum Life Time Achievement for his over four decades of untiring contributions to biotech development in India.

Dr Pushpa M Bhargava

- Founder Director of the Centre for Cellular and Molecular Biology (CCMB) and former vice chairman of the National Knowledge Commission
- Started his own private consultancy Anveshna, after retirement from CCMB
- PM Bhargava is chairman of The Medically Aware and Responsible Citizens of Hyderabad, the Sambhavna Trust, Bhopal, and the Basic Research, Education and Development Society (BREAD), New Delhi
- Recipient of over 100 national and international honours and awards including the Padma Bhushan and the Legion d'Honneur.

Dr PM Bhargava is currently the chairman of The Medically Aware and Responsible Citizens of Hyderabad, the Sambhavna Trust, Bhopal, and the Basic Research, Education and Development Society (BREAD), New Delhi

Dr Pushpa Mittra Bhargava in the 1960s was proud of being called a biochemist. After biochemistry came molecular biology and cell biology. So when he was asked to set up a biotech center of excellence, he gave it the name Centre of Cellular and Molecular Biology. Today, he hates being called either as everything according to Bhargava is integrated. He prefers the term biologist.

He is in fact one of the early champions of biotech in the country. His first encounter of sort with the idea of biotechnology intellectually was when he wrote the review of one of the most scientifically renowned papers on the uptake of non viral nucleic acids by plant and animal cells. That was what genetic engineering was about. This was written in 1971. It was a long review published in the Academic Press Book. He was also among the first few people to have coined the word Genetic Engineering. In 1973, he wrote a syndicated article in which he used this term. "The reason why I didn't remember this was because the article was unfortunately published in Motherland, a RSS journal. It was a syndicated one, so I had no control over it. The word was actually used six months before my article. There was another person who used the same term," remembers Dr Bhargava. So they were the first two to use the term genetic engineering in 1973.

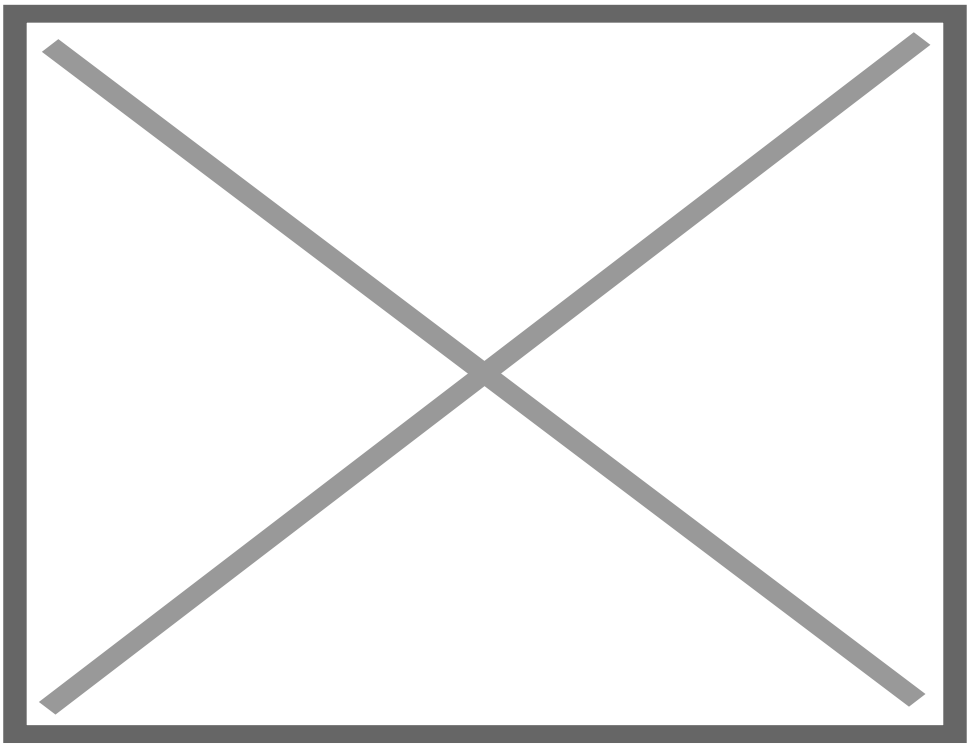
Dr Bhargava is one of the few scientists, who has had the chance to have a ringside view of the developments in modern biology. He had fought two battles for the biotech industry in India. One was initiating the setting up of a separate department for biotechnology in the ministry of science and technology. And the other being setting up a world class center-of-excellence-Centre of Cellular and Molecular Biology (CCMB)-in Hyderabad. Incidentally, he is also believed to be the first person to use the word biotechnology in public. In 1978-79, he suggested the setting up of a separate department for biotechnology. An apex body came first and then finally the Department of Biotechnology (DBT) was set up in 1986. He had wanted DBT to focus on developing the biotech industry in the country and encourage commercialization of publicly funded research work. But DBT in the initial years focused on academic research much to his disappointment. He is happy that DBT is now very industry friendly.

The other major contribution of Dr Bhargava is CCMB, which is today not only India's best laboratories, but a world class institute. Everyday was a challenge for Dr Bhargava while setting up the institute. He created a world class infrastructure, recruited quality people, and set up best practices and a very conducive environment. All these were unheard then and he fought against all the established norms to create such an institute. And more so it was built at a cost of Rs 12.5 crore against an estimate of Rs 67 crore.

He is an upright and outspoken person. He does not even have a house of his own. He still lives in a rented house. "We have three very valuable items. One is our documents, almost quarter of million letters. In fact some of our letters people ask if they

can put it in public display. The second is the collection of gifted books and the third gifted paintings." He is probably one among the only few people in the world to have letters written to him by leading scientists from the globe. All of his documents, gifted books and paintings have been given to a foundation.

Though a scientist, Dr Bhargava is found of art and reading. He believes in making a correlation and learning everyday. He loved maths. But went on to do PhD in chemistry and then biology. He has learnt business planning, how to read a balance sheet and can write a business plan today. He has been on the board of several companies and has also advised many start-ups. Even at the age of 80, he is always on the move. In the last six years, he has been out of Hyderabad for minimum of 130-160 days in a year and these trips combined several things-the lectures that he deliver has been 76 in 2000, 78 in 2001, 76 in 2002, 63 in 2003, 51 in 2004 and 57 in 2005 and 55 in 2006. And he sees all this as a gain by being around with people. Though he is a little disappointed that large corporate houses have not entered biotech businesses as they should have he is very hopeful that the private sector would make significant strides in the biotech development.



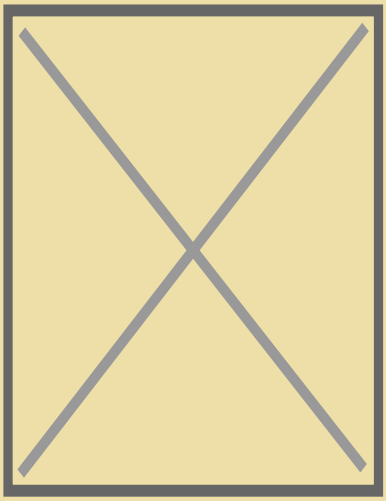
A modern biologist

"I was born in a middle class family. My father was a medical doctor. I never went to school. My parents said they tried to get me into a school but no school was ready to take me. When I was 10 years old, my family shifted to Varanasi. My grandfather took me to the Krishnamurti Foundation India school there to get me admitted to sixth standard. But the school admitted me to the ninth class. At 18 years, I did my MSc and at the age of 21 I did my PhD and my first scientific paper was published when I was 19.

I decided to do MSc in chemistry which I disliked most. Mathematics was my first love and I did all the university mathematics except for integral calculus at the age of 13 or 14 on my own. Yet I was not excited as we were taught mathematics as a set of operations. My next favorite subject was physics, but I didn't take that too. So I thought I would do my masters degree in chemistry and then decide what to do.

I did enjoy doing my PhD in chemistry and also set a record of doing PhD at the age of 21 in 1949. I had 14 major papers at the age of 23. However in 1953, I decided to leave chemistry as I used to read a lot of books on anthropology, sociology, political science and that was fantastic. While doing so I saw connections between chemistry and biology and was very excited. But I had never studied biology in school. So I decided to make this paradigm shift by going abroad. The shift to biology was intellectually very exhaustive. Twenty five of my personal friends have won Nobel prizes and I am probably the only one who has had a ringside view of every biotechnology development".

"The greatest excitement in life is to seek new correlations"



-Dr Pushpa M Bhargava

What are your comments on evolution of biotech agenda in the country?

I was probably the first person to use the term biotechnology in public. In 1978-79 my suggestion was that we must set up a separate department for biotechnology. A high power meeting was called by the former Union minister of state for science and technology and scientific adviser to the former prime minster Rajiv Gandhi, MGK Menon, to discuss what to do.

The decision was to set up an apex body for biotechnology. My idea was that we should invest in genetic engineering for microbes, enzyme tech, immunoltechnology, tissue culture, increasing photosynthesis, alcohol production from natural resources, energy plantation. So there were eight areas that I suggested. A few days after this meeting, the scientific advisory committee put the recommendation before Prof. MS Swaminathan, who was chairing it. The committee decided to set up a national biotechnology board (NBTB) as Prof. Swaminathan left for IARI. I was disappointed as I was pushing for a separate department. The NBTB was set up and the question was who will take charge of it? I suggested Dr S Ramachandran's name. NBTB was to be serviced by the DST. It was given a budget of somewhere around Rs 3-4 crore. The idea was that all the other agencies like ICMR, ICAR, and CSIR would contribute.

I should also tell you that the science policy is a very dirty policy. I actually had no support from the scientific community. I wanted a department not for myself but for the country. In 1985, I wrote a letter to prime minister Rajiv Gandhi and that did the trick. In February 1986, the department was announced, and my dream came true.

The DBT was to be set up to be involved in commercialization. I wanted a department of biotechnology and not biology. I wanted the government to set up the department in public-private partnership structure. I was very disappointed as no action was taken.

I put my bet on the private sector and I must say that it has been very satisfying for me. The Indian private sector has grown, thanks to people like Varaprasad Reddy and Kiran Mazumdar-Shaw.

What was your experience with Sun Pharma?

In 1991, Dilip Shanghvi invited me to his campus. I talked to him about R&D and he talked to me about business and how business is run. Finally Dilip said we have an R&D group and we want to bring it to Baroda. Then he showed us a place. Next day he called up and said he was planning to buy one floor of 5,000 sft. I advised him to buy the whole building and he did that, despite not having the budget. Then we designed the entire center and today Sun Pharma is a Rs 2,000-crore company.

I learnt a lot from him. He was a commerce graduate, but he took the trouble to understand science. My trouble to understand other areas is far less significant than his trouble to understand science. So I could speak to him as a professional and it was a wonderful experience.

Once one's mind is spoken and one's interest is strived by self interest, there is so much that one