

The agony and the ecstasy of drug discovery



What struck me most about Prof Javed Iqbal's marvellous National Science Day Lecture at NAL on 28 February 2005 was the speaker's unbridled optimism. I left the lecture hall feeling buoyed and upbeat.

Prof Iqbal, who is with Dr Reddy's Lab and holds ten global patents, was talking of the joys of drug discovery ("serendipity is no longer the name of this game") and although he warned that the process is long-drawn, frustrating, disappointing and expensive ("you need deep pockets to be a player in this business"), he seemed cheerfully

confident that this game is 'winnable'.

Prof Iqbal also suggested that the "inventive Indian mind" was especially well suited to succeed in this business. "When you are a big drug-making giant, you're much too automated and therefore less likely to succeed in a knowledge-intensive enterprise", he said.

Drug discovery, Prof Iqbal explained, is all about targeting the protein causing the disease with a high amount of precision. In an exciting narrative, embellished by some outstanding graphics and animation, Prof Iqbal talked of how designers first understand the structure and behaviour of the protein, zero in on a candidate molecule and then traverse the tortuous route to verify if this candidate molecule could indeed "fly".

In most cases, success doesn't come easily. There are so many issues to consider: affinity of the molecule to the target protein, requirement of a very high specificity, questions about toxicity, ability to cross the 'cell barrier', IPR-related matters etc. But the rare success that comes one's way gives immense pleasure – and yields astronomical sums of money. "If a pharma company can come up with even one blockbuster drug every five years, it's doing extremely well", Prof Iqbal said.

Prof Iqbal's lecture was also notable for his asides and occasional flashes of humour. Wondering why chemists and biologists choose to stay apart, Prof Iqbal said "we could have done all this fifty years ago if we had been together!"



NAL's aircraft designers and engineers appreciated the many parallels between drug design and aircraft design. In fact, in his summing up, Dr A R Upadhyya, Director, NAL, even commented aloud on these parallels: "both aircraft and drug design require a lot of time and money, face similar certification worries and witness the same sort of inter-disciplinary strife". Dr Upadhyya however confessed that he was taken aback to learn that proteins too could be malevolent. "My doctors have always told me that proteins are good", he protested.

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