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How I became a biophysicist

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An important milestone in my journey towards becoming a scientist was my father's decision to give up a cosy lecturer's job in Haryana to accept an uncertain contract appointment to teach English in far-away Hyderabad, where he had to move along with a young wife and three small children. The cosmopolitan atmosphere and increased competition in a large school did wonders for enhancing my interest in studies. Every time I did well in an examination my father rewarded me with gifts of books and thus nurtured my lifelong passion for literature.

I do not remember exactly when I decided to study science or even think of it as a career option but one incident during my high school days does give some indication. The all girls' school where I was studying decided to withdraw the option of offering higher mathematics as an elective subject. At first I did not realize that the number of maths classes had been reduced and we were being taught only basic mathematics. When I became aware of the school's decision, I was very upset and though not keen to study engineering, still insisted that I should be allowed to study higher mathematics and not biology. I was all set to leave the school but surprisingly the principal relented and arranged for a special

maths class exclusively for me and a fellow student who had similar interests. Today, such consideration from the head of a premier school would be unthinkable.

Ironically, though, within a few months I had to shift to a school at Dehradun for personal reasons and I found that due to the earlier events, I was now lagging behind in the maths class. I requested the maths teacher at the new school to give me extra coaching but this exceptional man, after talking to me a couple of times and observing my performance for a month, actually refused and asked me instead to try and solve all the problems in the book myself. I was to approach him only if I got stuck with a really difficult problem. At that time I was hurt and angry, but I later realized what a wonderful piece of advice it was and what a great compliment this unusual teacher had paid me. This helped me score good marks and also inculcated in me an abiding interest in the 'problem solving' approach.

The next major event was my reckless decision to opt for specialization in biophysics for my master's course, instead of the more popular solid state physics or even more glamorous nuclear physics. Biophysics was introduced that very year and, as is usual in Indian universities, without much preparation. We were however lucky to have a couple of enthusiastic teachers and access to some good books. Thus, after having strenuously objected to studying biology at school, I found myself thoroughly enjoying this new found subject, although still uncomfortable with dissecting frogs to study their muscle contraction. What appealed most to me was the strange but happy marriage of biology with physical science!

My admission to the Indian Institute of Science for doctoral work at the Molecular Biophysics Unit thus seems to have been the culmination of a predestined goal. Here too I was fortunate enough to work with stalwarts like Professors G. N. Ramachandran and V. Sasisekharan. These two brilliant scientists with completely divergent personalities taught me the meaning of real research – not just to pursue the comfortable and non-controversial 'me too' science but to question the accepted dogmas even when it leads to uncomfortable situations.

I was also fortunate to get a feel for the importance of basic research in understanding real-life human diseases, while looking for a biological role for the hydroxyproline aminoacids in the protein collagen (for my doctoral work under Prof. Ramachandran). Even more exciting was the post-doctoral research with Prof. Sasisekharan, exploring the possibility of unusual structures for DNA, at a time when it was blasphemous to even think about it! The idea that a structure other than the celebrated Watson-Crick double helix actually exists and plays an important role in the biological function of DNA is now fairly well accepted. It is with no small degree of satisfaction that I look back on the last thirty years and sincerely feel that our work has made some important contributions towards a better understanding of this basic building block of nature.