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V Bayer. A controversial case for many reasons but one that piqued my interest in the importance of bioprocessing. Although the focal point of this case was the issue of compulsory licensing, it led me to thinking about how the same product can be synthesized in multiple ways, thus altering consequences like cost of manufacturing, pricing and accessibility. As an amateur Biotechnologist, I explored these aspects further and realized the impact of how innovative technologies can help us achieve these objectives, and this is where my fascination with the field of Bioprocess Engineering started. Biology has always been my subject of interest. Back in college, I vividly remember attending a seminar on the recent advances in biotechnology and bioprocessing. The professor mentioned about concepts and technologies that simply blew my mind.

To be honest, not that I really understood the ideas he put forth, because it all seemed so impossible to me. It only made me more curious to explore the processes that we generally consider mundane, at a cellular level. This is when I decided to pursue a bachelor's degree in biotechnology. As a Biotechnology undergraduate at Savitribai Phule Pune University (formerly University of Pune), I believe the course work has provided me with a solid foundation in science as well as engineering related subjects and various mathematical concepts. Courses like Applied Chemistry and Biochemistry have helped me gain good knowledge about biomolecules, their importance in metabolic and biological processes, functions and their interactions with other molecules; while Genetic Engineering and Genetics & Molecular Biology have been useful in understanding the production and

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amplification of these biomolecules at genetic level. The practical sessions from Microbiology and Cell Biology & Tissue Culture have equipped me in handling microbial cultures and various tissue culture techniques.

Fermentation Technology, Reaction and Biochemical Engineering have provided a basic knowledge about upstream processing and courses on Bioseparations have given an insight about downstream processing. I was introduced to chemical engineering concepts required in designing a bioprocess in courses like Fluid Flow & Unit Operations, Heat & Mass Transfer, Stoichiometry and Thermodynamics.

A thorough knowledge about the various parameters affecting the bioprocesses plays a critical role in scale up studies. Bioprocess Equipment Design and Plant engineering & Project Costing familiarized me to the model of design criteria for manufacturing quality product. I am also convinced that I have successfully implemented my theoretical knowledge in a laboratory environment, as exemplified by the fact that I have received excellent grades in the Instrumentation & Process Control and Bioprocess Modelling & Simulation lab. In my opinion, my undergraduate course has prepared me in all aspects to pursue a master's degree in Biological & Agricultural Engineering with a major focus in Bioenergy & Bioproducts Engineering. Further, during my undergraduate studies, my curiosity and propensity for applied learning resulted in my training at APT Research Foundation (formerly National Toxicology Centre) under the guidance of Dr. Kishori Apte. ATR is a pre-clinical testing centre. During my fifteen days training, I was thoroughly explained about the in-vivo and in-vitro toxicity tests performed in the laboratory, as per the OECD guidelines.

The training was very helpful in understanding some basic concepts from a final year elective course: Biotherapeutics Technology. Seminars and presentations have always been an integral part of my undergraduate coursework. I had given a seminar on ' Anticancer Drugs from Marine Source', in my third year, with a thorough literature review about the FDA approved anticancer drugs and potential drugs in clinical and preclinical pipeline, their source, biosynthesis and mode of action.

In my final year, impressed by my meticulous presentation skills, one of my professors gave me a chance to conduct a session in a juniors' class on ' Embryonic Stem Cells and Clinical Applications'. In order to maintain a high regard for an all-round development of my personality, apart from academics I encouraged myself to participate in extra-curricular activities during my undergraduate studies. I have served as a college representative for inter-college swimming competitions, official campus photographer for cultural fests, photographer for the department's newsletter and member of the organizing committee for technical fests. I have also been associated with CRY, an NGO in India working towards the upliftment of underprivileged children and was awarded as the ' Best Debut- Female Volunteer' for my contribution in Pune's Public Action Group (PAG). Later, I worked on my undergraduate thesis entitled, ' Bioprospecting for Hydrophobins' under the direction of Ass. Prof. Shraddha Kulkarni. Hydrophobins are small cysteine rich surface active proteins produced by filamentous fungi, having a plethora of applications due to their ability to self-assemble into amphipathic membranes at an interface. The objective of my research was to

isolate and identify hydrophobin producing fungal strains from waste samples of malt processing industry Barmalt Malting India Pvt.

Ltd. Further I worked on the development of a bioprocess for the production of hydrophobins from isolated GRAS clearing fungal strains. And optimized the process to increase the yield of hydrophobin production. I was fortunate enough to get a chance to present my results at two national conferences. It was for the first time I was involved in conducting a research.

I would often wait back after classes or work during weekends, especially to see my results. Also, I engaged myself in reading journals and monthly magazines to keep myself updated about the upcoming technologies in the development and manufacture of bioproducts. This eventually got me interested in the subject.

After a year of researching about fungal protein in a university environment and due to my ever increasing enthrallment with these fields, I was certain that I needed to get involved in this type of research. I was privileged to be selected for the competitive Biotech Industrial Training Programme 2016-17 at Praj Matrix - R Centre (Division of Praj Industries Ltd.) Pune. The training was sponsored by the Department of Biotechnology, Govt.

of India. I worked under the guidance of Dr. Yasmin Mirza. The emphasis of my individual project was to improve bacteriocin production by inducing UV mutation in *Bacillus amyloliquefaciens*. The training introduced me to the thrilling nature of working in an industrial-level research laboratory.

Currently, I am working as a Biotechnologist at Praj Matrix - R Centre which

is a division of Praj Industries Ltd. Praj is one of the most successful companies in India in the field of bio-based technologies and engineering, supplier of ethanol plants and providing sustainable solutions for bioenergy, bioproducts, breweries and industrial wastewater treatment.

I am currently working on an antimicrobial peptide, which is the company's in-house product. I am interested in studying the fundamentals of biomolecular processes with an engineering approach. Moreover, today the bioprocess industry is facing some bottlenecks that give a tremendous scope for research and innovation in this area. With a graduate degree in this field I wish to equip myself so as to be able to solve these real world problems. One common bottleneck is experienced while expanding from pilot to manufacturing scale, every step requires new controls for effective productivity. Another challenge is to find new ways to increase productivity, reduce costs while still ultimately develop new technologies that enhance human life. In accordance with my current research interests, I think that the Biological & Agricultural Engineering Program with a major focus in Bioenergy & Bioproducts Engineering at Washington State University is ideal for what I would like to study.

I am particularly interested in working in the Bioprocessing & Bioproducts Engineering Laboratory and the research of Dr. Shulin Chen and Dr. Birgitte K. Ahring. Definitely, my interest in this program is also strengthened by WSU's excellence in Industrial Biosystems Engineering research and collaboration. I am confident that the program will enhance my abilities to integrate my technical knowledge with practical applications.

After completing the graduate program, I hope to obtain a doctoral position at an institute specifically examining biological systems engineering and creating effective solutions to practical problems.

I then hope to obtain a virtuous position in the industry, with an aim to develop robust revenue-saving manufacturing processes for bioproducts beneficial to mankind.