



How Kiran Mazumdar-Shaw 'Fermented' Biocon – Book Summary

- Biocon is today valued at USD 6 million, employs around 11,000 knowledge workers, and is engaged in the most promising technology of tomorrow –biotechnology for human health.
- Focused and single-minded in action; mental toughness that has no place for doubt; fearlessness, which lends firmness to your purpose; mindfulness, which makes for keen reflection on your true self; and action-orientation, which prepares one for the right actions at the right time.
- Driving a company or a group of companies to higher levels of productivity and great competitive efficiency is a valuable skill or trait, called management.
- Human beings love to control what is around them, as it gives them a sense of mastery over their circumstances.

Kiran, Biocon, and the Pharmaceutical Industry

- Modern medicine started with increasing knowledge of chemistry, biology, and zoology. The discovery of insulin and penicillin was nothing short of a breakthrough.
- Control of drugs by the big pharmaceutical players and their lack of intent to compromise with the affordability of drugs at the cost of profitability was a major challenge for Indian patients.
- She started her professional career working as a trainee brewer at Carlton and United Beverages, Australia. But she merely wanted to work as a brewmaster at an Indian factory, using enzymes.

- India is one of the largest producers of papaya in the world. But when we eat papaya, we are not aware that the juice extracted from the fruit can be made into an enzyme, called papain.
- There is a global demand for papain –particularly from the brewing industry, to improve the quality of beer.
- Her entry into business as an entrepreneur may be seen as an accident, luck, or fortune, but we judge that it was an outcome of her ‘opposable mind’ –her ability to hold together 2 opposing ideas, as she pioneered a business in an emerging sector and shaped it amidst the prevailing challenges of the unmet needs of patients.
- After registering the company in 1978, Kiran started planning to manufacture the enzyme from the garage of her rented house in Bangalore.
- Much like the many successful businesses that started out of California garages –Apple, Disney, Google, Microsoft, Mattel, and Hewlett-Packard.
- Kiran founded Biocon in India with an initial capital of only INR 10,000 Rs. Due to a lack of funds, the business was not easy.
- All banks she turned to for loans were hesitant because biotechnology was not a familiar concept in India at that time.
- Another reason was her gender. A female entrepreneur was a strange idea for Indians, and one bringing in a completely new field was stranger still.
- She even had difficulty hiring people to work for her. It is, therefore, hard to imagine how Kiran started production with 2 tractor mechanics and unskilled labourers she finally managed to hire.
- Most job applicants slinked away, as they saw no job security in working for a woman, and that too, in a business that was unknown.
- In spite of these and other constraints, like lack of uninterrupted power, inferior quality water, non-availability of Sterlite labs and imported research equipment, and lack of advanced scientific skills, Kiran despatched the first shipment of food enzymes to the US and Europe.
- Biocon became the first Indian company to export enzymes.

Biocon's Bold Journey and the Rainforest Effect

- The industry mostly manufactures off-patented drugs and has taken the lead to develop high-quality generic pharmaceuticals at affordable price points, leveraging its cost advantage in terms of innovation, scientific talent, and manufacturing capabilities compared to the costs incurred in the Western world.
- Advancement in biotechnology over the years has opened up a new opportunity for the Indian Pharmaceutical industry. Biotechnological processes help to produce a class of generics in chemistry-based drugs called bio-similar or bio-chemical molecules.
- Produced through genetically modified cells of micro-organisms such as bacteria or yeast, bio-similar, like insulin, are administered by injection or infusion because if taken orally, they would, like other proteins, be digested in the stomach and intestines and therefore be ineffective.
- Biotechnology in pharma also deals with large molecules known as biologics that are therapeutic proteins used in the treatment of major diseases.
- The large molecules produced from natural micro-organisms are thought to have an advantage over the small ones, mostly produced by a chemical process. Unlike chemical synthesis-based medicines, biopharmaceuticals use living system organisms or biological sciences to create essential drugs and are a major area of innovation.
- The journey of Biocon is a bit like going through a rainforest. The rainforest is dense and diverse, with foliage including ferns, creepers, bushes, and barks. There is no one linear path, but a variety of options, each leading to an unknown destination. The weather conditions are unpredictable. Sometimes there are gales followed by a downpour; at other times, it may be hot and humid.
- Biocon went on to make a small yet decent profit from the sales of enzymes in the first year. Encouraged, Kiran started to think far ahead, maybe too far for the position she was placed in.
- For example, after seeing a newspaper advertisement for the distress to purchase the land. This was despite the reservations expressed by her family and friends to move from a few hundred square feet garage to the 20-acre plot in one big jump.

- Kiran admits, 'When you are a pioneer, you are steeped in difficulties, but you also get the first-mover advantage'.
- Biocon perfected the solid-state, koji fermentation technology within the first 10 years of its operations, but it took all of 10 years, a significant entry barrier for any competitor.
- Biopharmaceuticals are biological medical products, or biologics, extracted from living sources –human, animal, plant, fungi, or microbes –to create breakthrough drugs for the healthcare industry.
- When Biocon leveraged its technology platform to enter biopharma in 1996, its focus on enzymes gradually shifted and tapered off and in 2007 Kiran sold the enzyme business and the proprietary technology.
- The name 'Syn + gene' donated the healthy mix of chemistry and biology for the purpose of business.
- Biocon IPO was announced in 2004 and was oversubscribed 32 times. Biocon, thus, became the second Indian company, after TCS, to cross the \$1 billion mark on the day of listing.
- Looking back at the significant achievements in the Biocon journey, the key action that has made the organization a trailblazer is 'taking the path less traveled.'
- This line from this famous poem *The Road Not Taken* by Robert Frost would be appropriate, to sum up, the Biocon journey: '...two roads diverged in the woods, and I took the one less travelled by... and that's what made all the difference.'
- Since 2002, Biocon has been listed amongst the top 20 biotech companies in the world.
- It is unique in many respects. It is the only integrated biotech company in India that caters to drug development, manufacturing, commercialization, and marketing. It has invested in biosimilar, ignoring the shorter, more profitable option of restricting itself to generics.
- It has attempted global reach through its alliances and partners, to understand and handle the challenges of regulatory norms in the fast-paced globalizing environment.

- It has demonstrated a considerably higher risk appetite while being financially prudent on the spending.
- Biocon's keenness to learn and adapt and its ability to look beyond the horizon has helped make the company a global player in biopharma.

Shaping Global Growth

- Biocon was among the early movers in developing a portfolio of fermentation-derived statins, a group of drugs, then referred to as the 'wonder drug of the 25 century', that act to reduce levels of bad cholesterol in the blood. This gave the company a leadership position in this segment.
- As Biocon's expertise in microbial fermentation advanced, the company recognized the potential advantages of combining its skills in solid-state fermentation and submerged state fermentation technologies.
- The R&D program to develop a novel hybrid bioreactor combining the 2 culminated in a patented invention, PlaFractor –Biocon's proprietary bioreactor that was granted a US 2001 worldwide patent.
- PlaFractor was a unique bioreactor that enabled solid-state fermentation and extraction in the same vessel, resulting in the manufacture of highly contamination-sensitive products like immunosuppressants.
- Today, **Biocon is the largest supplier of immunosuppressants globally.**
- Globally, Biocon has one of the largest and deepest pipelines of a biosimilar, spanning insulin analogs, monoclonal antibodies, and other recombinant proteins.
- Even as other pharmaceutical companies move into biosimilars, Biocon believes that it has an early mover advantage in this space and that it would be able to disrupt the global market with more affordable versions of expensive innovator biologic brands that will immensely benefit patients the world over.
- As part of its branded formulation business, Biocon has generics, novel biologics, and biosimilars in its product portfolio, which is a unique combination in a biopharma.

- In fact, Biocon leveraged its cutting-edge science and technology capabilities to initiate work on mammalian cell culture-based expression systems, to explore opportunities to develop complex novel biologics in India.
- Biocon has 15 years of experience in developing biologics for diabetes, oncology, and autoimmune diseases, which are chronic therapy areas.
- However, biologics manufacturing is far more complex as it deals with large molecules, unlike the small molecules involved in generics.
- Till date, Biocon has developed and launched in India 2 novel molecules from its pipeline: Nimotuzumab, a drug for head and neck cancer that was launched in 2006, and Itolizumab, the first-in-class novel drug for the treatment of psoriasis that came into the market in 2013.
- Biologics call for rigorous commitment to quality as well as skilled and experienced scientists to ensure the highest standards of safety and effectiveness of drugs.
- These drugs have to be of high quality as it becomes a matter of life and death. It is important to have a high level of monitoring and consistency in the final product, requiring several rounds of tests to be performed to develop a single-originator biologic.
- Biologics, thus, provide good global opportunities but are a high investment business.

Readiness for Risk and Critical Thinking

- About 10 years ago, Kiran acquired a small profitable German company near Frankfurt, which was in the business of generic drugs and had shown interest in licensing her insulin products.
- Thinking that this company could become a vehicle for expansion into European markets, she acquired a 75% stake in it. However, 2 years later, much to her chagrin, she realized it was not going to work.
- The company used to track prices of the same drug in different markets and was into price arbitrage. It would trade in medicines and just change the labels.

- These actions were against Kiran's ethics, and in spite of losses, she gave up her stake in the company.
- **Nearly 90% of immigrant Mexicans use insulin manufactured by Biocon.** No wonder then, that the grapevine suggests that Biocon medicines are being smuggled to the USA across its border with Mexico.
- Just to give a perspective, the insulin produced by Biocon costs about USD 5 per unit, while that produced by big US pharma companies costs USD 200-250 per unit in the USA.
- Kiran has always believed that with collaborations one learns faster and better –just like Shapers, who do not act alone, especially in our highly networked environment, where people join their ecosystem because they want to be part of the journey.
- Whether it is through a movement, a company, or a community, shapers unite people around them with a shared purpose.
- Kiran did not hesitate to transform her business from enzymes to pharma. She did not want to starve the enzymes. Rather, she used the fermentation technology to produce statins that gave her 10-fold higher revenues.
- In 2007, 9 years after entering the biopharma space, Kiran sold off the enzyme business.
- Somebody asked Kiran why she was spinning off a subsidiary –Biocon Biologics. Why can't Biocon raise capital, given that it is, ultimately, the holding company?
- She explained, 'I create businesses and then I unlock value for those businesses. I look at Biocon as a company with a balanced portfolio because we have different businesses.
- Each company has its management and the ability to raise capital on its own. If they are not allowed to spin-off and raise capital on their own, then you are not doing justice to those businesses.
- That is why I took Syngene public. I will now unlock the value out of Biocon Biologics. The old Biocon will be there in API and the generic business and also have a 70% stake in both these companies. Biocon also has novel products in its portfolio.

- Without these spin-offs, businesses will get buried within Biocon without receiving the talent and attention they deserve, which could make it a large, unwieldy bureaucracy. You cannot manage through the allocation of resources.
- It is the responsibility of management to build a business. Only when you give a business a life that is its own, does it grow? Both these companies –Biocon biologics and Syngene –have different CEOs and are independent, yet interdependent.

Managing Talent

- During the selection process for key positions, where Kiran is involved, she is the first person who meets the candidate during the interview –unlike most organizations, where the interview with the managing director is kept at the end, often as a mere formality.
- Kiran states, ‘One of my strengths is to choose people. I always look for those who are much more competent than me. They are more talented, knowledgeable, and analytical. These talented people think differently than me and this is important for growing and innovating. I realize that I only have a vision, intuition, and the knack for spotting an opportunity. They are the ones who will execute and deliver the vision. My team has amazing capabilities’.
- Kiran tells her scientist in the town hall meetings, ‘We must learn by introspecting on the failures.’
- For instance, 2 years ago, Biocon failed during the clinical trial of Anti-CD-6 molecules. Ramakrishnan had worked on the molecule for 9 years. But Kiran simply advised the then R&D head, Chirmule, to publish the failure so that the world knows what surprises Biocon underwent during the development of the molecule.
- Today, when the disproportionate salaries of CEOs is often debated, Kiran still draws a salary lesser than that of her other senior colleagues.
- Biocon has never faced any strike or chaos due to employees not being satisfied in its more than 40 years of history.

The Biocon Way

- Growth is not about revenues and profitability, but about a mindset of leadership.
- Leadership does not mean being the best but making everyone else better.
- Biocon has dared to grow in the space of biologics and biosimilars, which are high-risk areas where success can be ensured in the long term through capability building and raising credibility.
- Kiran is among the only 2 Indians to have signed the giving pledge of the bill and Melinda Gates Foundation to donate half her personal wealth, the other being Azim Premji.
- Biocon is moving forward with a zeal that is central to Kiran's vision and passion for providing affordable healthcare solutions to the global markets as well as in India, for the millions who cannot afford it. This goal also translates into Biocon's CSR activities.
- Kiran firmly believes that philanthropy is for the greater good of humanity and avoids publicity. A large part of her philanthropy is not spoken about, even though it could encourage and inspire others.
- To validate our research on institution-building, we asked Kiran: What, according to her, 'Biocon way'? 'The "Biocon way" is about being creative, innovative, and empowering. We are a problem-solving and not a task-driven organization.'
- If we juxtapose modern-day businesses with biological science, there are important lessons for building long-lasting institutions. For instance, no degree of micromanagement of researchers' behavior can guarantee higher productivity in R&D departments; controlling processes cannot guarantee innovation; one cannot predict success, one can only manage a portfolio of bets; small changes can have a large impact; looking at new goals, rather than just problem-solving tools; and relying on pragmatism, resilience, and experimentation, rather than mere efficiency.

- In a business, leaders must ensure that the company is sufficiently diverse along 3 dimensions: people, ideas, and endeavours. This may come at the cost of short-term efficiency, but it is essential for building robustness.
- The diversity of people can be impacted through the selection process. The diversity of ideas would need a culture of openness and an acceptance of failure.
- Biocon has a culture of innovation, scenario planning, networking across partners and collaborations, and a system of monitoring start-ups, which help it to predict the downside of the business and improve its ability to react in time.
- Clearly, Biocon anticipates a social movement in the US that will reduce the influence of the Big Pharma companies and policy changes that will make it easier to introduce more effective biosimilars of novel molecules in the US markets.
- These principles of biological thinking highlight that we need to 'shape' rather than control unpredictable situations. The critical thinking and de-risking strategies adopted by Biocon support the tenets of biological thinking in shaping its future.
- Kiran is confident that Biocon will last at least another 30 years, as she has already sowed seeds that hopefully will yield results.