

Hail the (Biotech) Queen

By Willet T. Suñga

There are several notable names in the field of biotechnology—James Watson, Francis Crick, and Maurice Wilkins, who together made remarkable discoveries of the DNA structure. And then there’s John Craig Venter who is instrumental in mapping the human genome.

But whoever said that biotech is a man’s world only?

Despite the fact that biotechnology has been dominated by men, a woman, Kiran Mazumdar-Shaw, rose above the rest. Her impressive contributions in the field of biotechnology have earned her the titles “India’s Biotech Queen” from *The Economist* and *Fortune*, and “India’s mother of invention” from the *New York Times*.

Humble Beginnings

Dr. Shaw was educated at the Bishop Cotton Girls School and Mount Carmel College in Bangalore, India. After completing her Bachelor of Science degree in Zoology from Bangalore University in 1973, she went to Ballarat Institute of Advanced Education (now University of Ballarat), Australia to study brewing and qualified as a master brewer in 1974. Kiran Mazumdar Shaw started her professional career as trainee brewer in Carlton & United Beverages in 1974. In 1978, she joined as a Trainee Manager with Biocon Biochemicals Limited in Ireland.



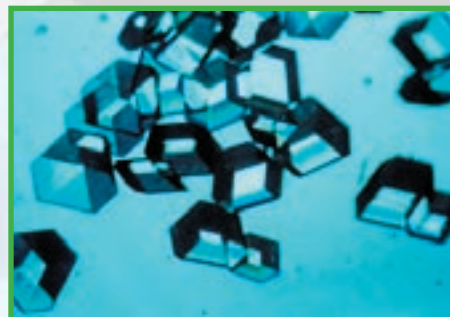
Kiran Mazumdar-Shaw

Later on, she collaborated with the same Irish firm and founded Biocon India. The initial operation was to extract an enzyme from papaya. One of her earliest products is papain, a proteolytic enzyme from papaya, which prevents chilled beer from turning hazy. She as well produced and patented novel products such as a new enzyme to clarify tea.

Manufacturing enzymes continues to form the core of Biocon's business. Today, a quarter of the world market in pectinase, an enzyme that breaks down the pectin in fruit juice, is supplied by Biocon.

Biocon's Breakthrough

Spearheaded by no less than Dr. Shaw, Biocon's biggest breakthrough came in the 1990s. The company invented a new fermentation technology to replace the conventional tray-based culture of microorganisms. Known by its trademark name, the PIFractor is a bioreactor. In simplified terms, it enables all the different stage processes involved in the cultivation and extraction of microorganisms to be carried out within fully enclosed system and under precise computer control.



Insulin crystals

Moreover, Biocon was able to cross from industrial enzymes into pharmaceuticals. The company became a well-respected industry with its impressive list of products like antidiabetic agents, antihypertensive agents, anti-inflammatory agents, antioxidants, cardiovascular agents, digestive aid enzymes, haemostatic agents, hepatoprotective agents, immunosuppressants and nutraceuticals.

Biocon today is India's biggest biotech company.

Moving Forward and Beyond

Among Biocon's current priorities is a program to develop an orally deliverable insulin. Dr. Mazumdar-Shaw believes that doing this will be for a good cause. "Just imagine if the world's diabetics could get their insulin in tablet form instead of having to inject it. Think what a difference that would make to them each day," she said.

Sources

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Unscramble It

Unscramble the letters to form a word that refers to the clue.

HIOENLOOBYTC

1. It refers to the use of biological processes in the development or manufacture of a product or in the technological solution to a problem

RKNIA AZMDMARU HSWA

2. She is known as the Biotech Queen

DININA

3. Kiran Mazumdar Shaw's nationality

WEBRER

4. Kiran Mazumdar Shaw's first job

NBOCOI

5. Name of the biotech company that was established by Dr. Shaw

NAPAPI

6. A proteolytic enzyme from papaya, which prevents chilled beer from turning hazy

PMUOSUPIESNTSMNAR

7. Are used to reduce the risk that transplanted organs will be rejected by the body's immune system

CETINSEPA

8. An enzyme that breaks down the pectin in fruit juice

YNZEME

9. Any of various proteins originating from living cells and capable of producing certain chemical changes in organic substances by catalytic action

NILNISU

10. A hormone used in the treatment of diabetes to restore the normal ability of the body to utilize sugars and other carbohydrates

Answers: biotechnology, Kiran Mazumdar Shaw, Indian, brewer, Biocoin, papain, immunosuppressants, pectinase, enzyme, insulin,

Word Smith

Name as many words as you can that can be formed from the word

BIOTECHNOLOGY

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Possible Answers: biology, technology, theology, log, big, bit, boot