

C&EN

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SPECIAL
ISSUE



TRAILBLAZERS

In this first annual issue, C&EN celebrates badass women entrepreneurs in chemistry

P.30

With guest
editor
Jennifer
Doudna



ACS
Chemistry for Life®

PHARMACEUTICALS

KIRAN MAZUMDAR-SHAW

Considered one of the most powerful businesspeople in the world, the entrepreneur is focused on affordable health care

VITALS

> TITLES:

Chairperson and managing director, Biocon, and cofounder, Immuneel Therapeutics

> COMPANIES:

Immuneel Therapeutics, founded in 2019, and Biocon, founded in 1978

> MOST RECENT FUNDING:

\$15 million from high-net-worth individuals for Immuneel Therapeutics

From a 25-year-old seeking finances for a small start-up to a billionaire businesswoman, Kiran Mazumdar-Shaw has come a long way. That small start-up in India, Biocon, is now a globally recognized biotech company, and Mazumdar-Shaw is the recipient of numerous honors in India and worldwide, including a membership in the US National Academy of Engineering.

"I don't think I had planned to be an entrepreneur," Mazumdar-Shaw says. "I call myself an accidental entrepreneur." Famously, during her early days, Mazumdar-Shaw studied to be a brewer. But because she was a woman, no one would hire her as a master brewer in India, stalling her nascent career. "I was very dejected when I couldn't pursue brewing as a profession," she says.

But then she met an Irish entrepreneur, Leslie Auchincloss, who was looking for an Indian partner to produce enzymes. Fermentation, which uses enzymes to carry out chemical reactions, is central to brewing. So Mazumdar-Shaw thought enzyme production would be a good fit for her. She launched Biocon India in 1978 as a joint venture with Biocon Biochemicals, based in Ireland, retaining a 70% stake in the company.

Because she was a young woman with no personal money to finance her fledgling company, credibility was a major hurdle she had to overcome, Mazumdar-Shaw says. Initially, she worked from her garage in Bangalore, India. About a year after launch, she began extracting, manufacturing, and exporting papain, an enzyme in papayas used as a meat tenderizer, and isinglass, a substance from fish that can clarify beer. Slowly, Mazumdar-Shaw's confidence grew, and she started investing in research, developing solid-state fermentation technology that enabled the company to expand from manufacturing enzymes to making active pharmaceutical ingredients.

"She has an amazing capacity to visualize the future," says Devi Prasad

WHAT'S YOUR ADVICE FOR NEW ENTREPRENEURS?

"I always tell people to learn to challenge the status quo, learn to have a sense of purpose, learn to differentiate, try not to be a me-too. Imitation is very easy; innovation is much tougher. As an entrepreneur, take the harder route; take the road less traveled. That's a much more exciting journey."



Shetty, a cardiac surgeon who has known Mazumdar-Shaw for more than 25 years. Mazumdar-Shaw sits on the board of Shetty's company, Narayana Health, which operates a chain of hospitals across India.

Under her leadership, Biocon India grew steadily over the years, and Mazumdar-Shaw ventured into biopharmaceuticals. Unilever acquired Biocon Biochemicals in 1989. When Unilever decided to sell its specialty chemical business, including Biocon India, to Imperial Chemical Industries, Mazumdar-Shaw, with help from her then fiancé, John Shaw, purchased Unilever's stake in Biocon, finally making Biocon an independent company in 1998. Today, the firm develops and manufactures biologics—large, complex molecules produced in living organisms—for diabetes, cancer, and autoimmune diseases.

Her purpose is clear: to make health care affordable for all. This goal is evident in her most recent undertaking: cofounding in 2019 the start-up Immuneel Therapeutics, which is engineering T cells to seek and destroy cancer—a technology known as CAR-T therapy. Her hope is to make this cutting-edge therapy affordable and accessible. According to Mazumdar-Shaw, “[Health care] is not about billions of dollars but about benefiting billions of patients around the world.”—LAKSHMI SUPRIYA, special to C&EN

TRAILBLAZERS

IN CELEBRATION OF WOMEN'S HISTORY MONTH, C&EN IS PROUD TO DEBUT ITS FIRST EVER TRAILBLAZERS ISSUE.

THIS ISSUE IS FOCUSED ON WOMEN ENTREPRENEURS WHO ARE CHANGING THE FACE OF CHEMISTRY.

DON'T MISS C&EN'S TRAILBLAZERS EVENTS AT #ACSPHILLY.

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HIGHLIGHTED EVENTS AT #ACSPHILLY

POWER HOUR: HOW TO DIVERSIFY CHEMISTRY'S STARTUP LANDSCAPE

MARCH 23 | 8:00AM-9:20AM

Join C&EN and Gordon Research Conferences for their second annual Power Hour breakfast to discuss how to pave a more inclusive path for entrepreneurs in chemistry.

MEET C&EN'S 2020 TRAILBLAZERS: THE WOMEN RESHAPING CHEMISTRY'S STARTUP LANDSCAPE

MARCH 23 | 9:30AM-12:05PM

This event will feature power players who have launched companies to solve the world's most pressing problems.

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