



[Home](#) > [Institute for Basic Biomedical Sciences](#) > [About IBBS](#) > [Scientists](#)

## Caren Freel Meyers



*Caren Freel Meyers*

***A passion for chemistry's puzzles and an intimate view of cancer's harsh realities led [Caren Meyers](#) to the field of medicinal chemistry.***

### **When did your interest in chemistry begin?**

**MEYERS:** In high school I enjoyed math and chemistry. So in college, I thought chemical engineering might be an appropriate blend of those disciplines. As a sophomore in college, I took organic chemistry and loved it. I liked synthesis. I enjoyed thinking about how to construct molecules, and I really enjoyed the connection of organic chemistry to medicinal chemistry.

When I was a junior in college, my father was diagnosed with lung cancer. He was taking a lot of very toxic drugs, and although they were considered state-of-the-art medicines—cisplatin and adriamycin—they made him very sick.

That intensified my interest in medicinal chemistry. A major goal of anti-cancer drug design is to improve the cytotoxic effects of drugs on cancer cells without making patients sick. My personal experience with cancer drove me to specialize in that area of science.

### **So how did you prepare for that line of research?**

**MEYERS:** As a graduate student, I joined a lab in the Department of Chemistry at the University of Rochester that had a focus on anti-cancer drug design. I wanted to train in a lab where I could use the tools of chemistry that I enjoy, but for a purpose.

It turned out that a similar personal experience had motivated my mentor, medicinal chemist Rick Borch. Decades earlier,

his mother was treated for Non-Hodgkin lymphoma with some of the very same toxic chemotherapeutic agents. She ultimately succumbed to her disease, and Rick's research focus underwent dramatic changes as a result.

**You've now developed a prodrug that kills lung cancer cells in the lab. How far away do you think you are from a drug that would be able to help a patient with your dad's condition?**

**MEYERS:** Demonstrating intracellular activation and cancer cell-killing by our bisphosphonamidate prodrugs is the first step in a long process to develop this strategy for therapeutic use. Even though bisphosphonates themselves are used clinically, the prodrugs of these compounds are sufficiently different structurally that they are considered new chemical entities. The next step is to determine the anti-tumor activity of bisphosphonamidate prodrugs in animals and assess selectivity and toxicity.

—*Interview by Melissa Hendricks*

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