

Meet...Richmond Sarpong

SYNTHETIC CHEMIST, *Berkeley, California*



GREW UP IN: Ghana,
Zambia, Botswana

JOB SITE: University of California, Berkeley

ALTERNATE CAREER CHOICES: Professional track athlete or tennis player. I ran Division III NCAA track in college. It taught me to be humble, support my teammates, work hard and persevere.

FAVORITE AUTHORS AS A CHILD: Growing up, I loved Louis L'Amour westerns as well as *The Hobbit* and *Lord of the Rings* books by J.R.R. Tolkien.

OUTSIDE THE LAB: I have a young family so I like to spend as much time as I can with them. I like to challenge myself with a 3-mile run or play some tennis or soccer.

What He's Doing

As a child, Richmond Sarpong followed his father's travels as a medical doctor for the World Health Organization. Along the way, he heard of ivermectin, the medication that is used to treat river blindness, a disease common to Sub-Saharan Africa that is spread by blackflies. He looked up the compound in his father's copy of the Merck Index and immediately knew what he would do with his life.

"In my naïve way, I wanted to learn how to put together these 'wonder drugs,'" Sarpong says. "That began my love affair with organic chemistry."

Today, Sarpong's laboratory investigates how to more efficiently synthesize chemicals that look like complex natural products. If chemists are able to build these molecules using less energy and fewer reaction steps, they can increase the yields of individual reactions and speed development of new drugs. In many of their experiments, Sarpong and his lab have been working on alkaloids, the compounds found in plants that are often the basis for medications or other chemicals such as caffeine.

Sarpong's goal is for his team to use their methods to build large amounts of specialized molecular probes that can investigate cellular function and unlock mysteries about the cell, in addition to developing more effective medications that have narrower targets and fewer side effects.

"Deliberately designing and implementing function of small molecules, especially in biological systems, stands as the ultimate challenge of our field," Sarpong says.

Personally, however, Sarpong believes his most important role is as a leader and teacher. His daily inspiration comes from the people he works with and mentors.

"Seeing the excitement on their faces when they get that amazing result they have been chasing for many months or years is what gets me going," he says. "Or when they understand something better than I do and come explain it to me."

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His Findings

Using metals like tungsten and palladium to speed reactions, Sarpong and his lab managed to create new compounds, mimic naturally-occurring ones and discover new targets for insecticides. Among these successes, they have created synthetic versions of several alkaloids from the fern-like plant *Lycopodium* and developed alterations of common organic compounds called imidazoles. All of these techniques may prove useful to new and faster drug development.

Thinking about ways to assemble complex compounds has pushed his lab to be a tighter, more cohesive unit, he says. "What I have found along the way is that chemical synthesis provides a platform to be very creative and innovative in solving scientific problems."

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