

NBJ Award: Education

At NCNPR, Ikhlas Khan conjures critical cross-industry education and collaboration

By Sara Lovelady

If there is one theme that runs through the life of Ikhlas Khan, a doctor of pharmaceutical biology who heads up the National Center for Natural Products Research (NCNPR) at the University of Mississippi, it's that he is a connector, a man who bridges communities that are often at odds with one another.

Dr. Khan grew up in the East, where his grandfather was an herbal practitioner, but studied and works in the West, pouring three decades into building one of the world's leading botanical research centers. He is a trained chemist who believes whole herbs have something greater to offer than isolated molecules. And he has earned the trust of both industry and the FDA regulators who oversee it, turning combatants into collaborators.

"He's a go-between," says Loren Israelsen, founder and president of the United Natural Products Alliance (UNPA). "He can say things to both sides that neither one can say to each other as efficiently or effectively." That might look like telling the FDA that demanding supplements have drug-level clinical trial data on ingredients they can't patent is unrealistic. Or telling industry that it's undermining its own credibility by tolerating adulteration and cutting corners on quality.

Perhaps the greatest example of Khan's role as a connector is the International Conference on the Science of Botanicals (ICSB), an annual event hosted by NCNPR that advances the science of natural products research and development. Typically, conferences are an insular affair, gathering people from the same discipline. As the organizer of ICSB, Khan breaks down barriers by putting researchers, regulators, industry leaders, lawyers and farmers in the same room.

"Education, education, education. Everyone needs more education," says Khan. "Whether we are scientists, regulators or consumers, everybody should have the right information." It's a simple yet radical idea. Executing it has been his life's work—and the reason he is this year's rightful recipient of NBJ's Education Award.

NBJ Takeaways

» Ikhlas Khan has built NCNPR into the gold standard for botanical research, bridging industry, regulators and academia through prolific science and the International Conference on the Science of Botanicals

» NCNPR's FDA Center of Excellence status and 766-plus publications under Khan's leadership have elevated natural products science from belief-based to evidence-driven industry practice

» Through ICSB and the Botanical Adulterants Prevention Program, Khan connects diverse stakeholders to advance botanical quality, safety and traditional medicine research

From East to West

Herbs have been a part of Ikhlas Khan's life since early childhood. Like many Indian children, he was given fennel for indigestion, golden milk for wound healing and garlic-infused mustard oil for earaches. As an adult, he didn't doubt that natural remedies worked. But he wanted to know why. So, Khan followed his curiosity and pursued his master's degree in organic chemistry from Aligarh Muslim University in Aligarh, India, and his doctorate in pharmacy from the Institute for Pharmaceutical Biology at the University of Munich in West Germany. He wrote his thesis on echinacea.

After completing his postdoctoral work at the Swiss Federal Institute of Technology in Zurich, Switzerland, Khan got his lucky break. He had been working as a research scientist at the Research Institute of Pharmaceutical Sciences, School of Pharmacy at the University of Mississippi for three years. In 1995, the university opened a new center for natural products research under the guidance of Alice

Clark, a leading researcher in pharmacognosy.

Khan moved over to the nascent center, where he employed analytical methodology to identify the chemistry and assess the quality of natural products. "Not many people were trained in this area at that time," he says. "I felt at home and started working on it." In 2001, he began teaching at both the School of Pharmacy and at NCNPR. In 2002, he became the assistant director of the center. Fourteen years later, he was running the place.

"His appointment as director was not automatic, because typically in university settings, they like to conduct more open searches," says Larry Walker, who acted as director of NCNPR from 2001–2016. "But there was no other candidate who could match his record, his success, his knowledge of the program and his ability to engage others in large collaborative projects."

The gold standard

Simply talking to Khan, it would be hard to grasp the

immensity of what he has built over his tenure as director of NCNPR. “There’s really no ego that gets in the way, where the message gets lost because it’s all fluffed up in personality,” says Israelsen.

But don’t let that humility fool you. “He’s probably one of the most—if not *the* most—connected person to the global botanical academic and scientific community,” he continues. “He’s built NCNPR into the gold standard.” So much so that similar programs from around the world visit NCNPR, an FDA Center of Excellence, to see how things are done.

“Ikhlas Khan is the only person to date that has received two of ABC’s awards,” says Mark Blumenthal, founder of the American Botanical Council (ABC): the Norman R. Farnsworth Excellence in Botanical Research Award, for the quality and quantity of his research, and the Mark Blumenthal Herbal Community Builder Award, for creating a tight circle of U.S. and international scientists. “He has more publications under his belt than almost any other scientist in the field of pharmacognosy and natural product research,” Blumenthal notes. Seven hundred and sixty-six, to be exact, according to a PubMed author search.

That body of research has lifted up the industry as a whole. “The natural products industry is a belief-based industry,” says Israelsen. “Science has always had a role to play, but it’s been secondary.” Thanks to the research foundation laid by NCNPR, he believes the new generation of supplement companies will take science more seriously—with a place to learn how to do it and a pipeline of trained people to hire.

Khan led the development of the center’s FDA-CFSAN (Center for Food Safety and Applied Nutrition) program. “He diligently saw to it that our program would be valuable to them [FDA]—anticipating how our science could inform their regulatory work, and building relationships with key CFSAN leaders,” says Walker.

But perhaps dearest to Dr. Khan’s heart is ICSB. The goal of the conference, he says, is to get a community of stakeholders together in the same room so they get a chance to hear each other’s stories. To that end, he invites people from various fields. There’s “somebody talking about cultivation, somebody in plant authentication, somebody in chemistry, somebody in safety and regulation,” he explains. Not to mention toxicologists, regulators, trade organizations and media. Once together, attendees discuss everything from regulatory updates and adulteration prevention to clinical trials, cannabis research and the science of traditional medicines.

A truth teller

As kind as he is, Khan is not afraid to say the controversial thing out loud. He openly talks about the industry’s adulteration problem, and NCNPR—in concert with ABC and the American Herbal Pharmacopoeia—works to combat the issue through the Botanical Adulterants Prevention Program.

“He’s a truth teller,” says Israelsen. “He has been very open with the industry about cleaning up quality and has said, ‘You’re hurting yourselves because you can do so much better and you choose not to.’”

Khan also freely voices his opinion about the herbal industry’s move away from traditional remedies and toward single molecules—an approach that is decidedly drug-like. “Any time you play with the natural [composition] and try to purify it, it becomes more physiologically active, but at the same time, then you have to think about safety,” cautions Khan. Single molecules are easier to produce, he says. But easier doesn’t mean better. “You left the traditional medicine behind, you took that knowledge, and you converted it into the product, which most of the time is not really what it’s supposed to be,” he explains.

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The man behind the science

Scientists aren’t typically known for their sense of humor, but those who know him agree: Khan is hilarious. Both Israelsen and Blumenthal detailed how at the end of every ISCB conference, Khan mercilessly roasts his colleagues. Throughout the four days, his staff take photographs of attendees. “He’s trying to find people in weird, dumb positions and looking silly, and then he’ll put bubble captions on them,” Israelsen chuckles. But because of his kind nature, Blumenthal notes, it’s never mean—just entertaining.

The humor goes both ways. Blumenthal recalls a time when a scientist on Khan’s staff sent ABC a video of his award acceptance speech. Acknowledging his boss’s heavy accent, he joked, “Do you want me to add subtitles?” Blumenthal laughs recalling the incident. “It was so funny because it’s his own people making fun of him.” That’s the kind of work environment Khan fosters. “I think he brings a high degree of scientific rigor and seriousness in a very non-serious manner.” 