MILESTONE MEETINGS

Scientific conferences are usually staid affairs. Presenters share their latest findings to polite, short-lived applause. But a talk can leave a lasting mark — a new disease treatment, a challenge to accepted paradigms, or the dawn of a new field.* Nature *spoke to four scientists about conference presentations that changed their careers.

QUARRAISHA ABDOOL KARIM

Associate scientific director, Center for the AIDS Programme of Research in South Africa, Durban.

Speaker at the XVIII International AIDS Conference in 2010, Vienna, Austria.

My husband, Salim 'Slim' Abdool Karim, and I undertook one of the first population-based surveys of the acquired immune deficiency syndrome (AIDS) epidemic in Africa. We established that while the prevalence of infection was less than 1% of the population, there were four times as many women infected as men.

Subsequent studies established that prevention technologies initiated by women were urgently needed, because the ability of younger women to negotiate condom use or faithfulness with often-older male partners was limited in that society. This put them especially at risk of acquiring the human immunodeficiency virus (HIV). We pioneered a vaginal gel that contained the antiretroviral drug tenofovir, which must be applied before and after sex.

During the first week of June 2010, we got results that demonstrated the protective benefits to prevent transmission of HIV. We found a 39% decrease in HIV infections in women who used the gel over two years. In addition, the gel resulted in a 51% reduction in herpes infection. It was six weeks before the XVIII International AIDS Conference was due to be held in Vienna, so we called the meeting organizers to inform them of our findings. They put together a special session.

We wrote the paper quickly so that the data could be published in *Science* at the same time. Following a press conference the day before our presentation, someone broke the journal's embargo and we were inundated with interviews. We didn't go to bed until 3:00 or 4:00 the morning before our conference presentation.

There was a lot of buzz before we presented at midday. We walked in and were shocked: there was not a single empty seat in the roughly 3,000-seat venue. The organizers created overflow areas for around 2,000 more and carried the talk on all the television screens at the venue. I had never experienced anything like that. I got applause on the first slide that showed the outcome of the trial. After we finished our 15-minute back-to-back presentations, Slim and I received a standing ovation. It was very moving and emotional. Scientists are very conservative. There's usually some applause at the end and maybe a few questions, but you rarely have people crying. At that stage, there had been 36 late-stage HIV transmission prevention trials evaluating 38 interventions. Our findings became global news and revitalized the prevention field by opening a discourse on women-initiated technologies.

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DREW ENDY

Bioengineer, Stanford University, Stanford, California.

Hosted the Synthetic Biology 1.0 Conference in 2004 at Massachusetts Institute of Technology.

In the early 2000s, biology was transitioning from discovery to synthetic science. Synthesizing and constructing DNA was about engineering biology. The overarching questions were how best to develop this new technology and how should we first use it. At the time there was a leadership vacuum and there were no government policies or oversight.

While planning the first synthetic biology meeting in 2004, we thought we'd get about 150 people to come together to discuss how to get better at engineering biology. We booked a room that allowed 293 people. As the meeting got closer, buzz started to build. A week or two before the meeting, it sold out. Important researchers from major institutions were ringing us to get a ticket, but we had to say no to avoid violating the building's fire code.

The room was packed. We organized the meeting so that graduate students — the next generation — chaired the sessions. Everyone was equal. There were no keynote or plenary talks. Because the field was being shaped at

ILLUSTRATIONS BY PADDY MILLS

this meeting, we made it so that everyone was in the same room, heard what was said, and bore witness to the community being formed. Together we needed to talk about what is real, what is not real, what we'd likely be able to do, and how we can best work together to achieve common goals we identified. We also discussed the consequences of our success.

I opened the conference with a short talk in which I said: "We are going to be able to write DNA. What should we say, what do we have to say, and are we worried about what other people might say?" During three discussion periods we asked hard questions about property rights, risk, and ethics — topics we had to address at this nascent stage or risk a leadership vacuum that could lead to the establishment of policies that could hamper a budding field. Some people didn't want to be distracted by ethics and policy debates, and that's valid, but we still needed to have the discussion. The real value of this meeting — I can say now, 15 years later — was bringing together a mass of people who were all excited about forging this new path.

JILL BOLTE TAYLOR

Neuroanatomist, public speaker and author, Indiana University, Bloomington.

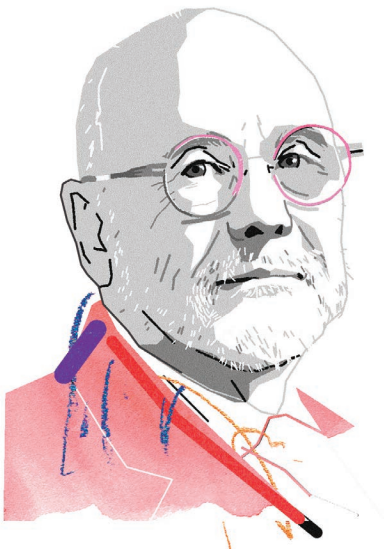
Delivered the 2008 TED Talk 'My stroke of insight', Monterey, California.

As an early-career scientist, I specialized in severe mental illness, studying the neurotransmitters at work in brain tissues. On December 10, 1996, at age 37, I had a stroke in the left hemisphere of my brain. I couldn't walk, talk, read, write or recall any of my life. It took eight years for me to recover my cognitive and physical abilities. Then I wrote and, in 2006, self-published a book called *My Stroke of Insight*.

I had never heard of TED, a media organization that posts talks on "ideas worth spreading" online. I shared my story at a dinner party in Indiana with people who had a connection to the folks at TED. They subsequently contacted me and wanted me to tell my story from memory in 18 minutes or less. I'm an ad libber when I give talks. To memorize a script was not me. I'm not a performer. I decided to choreograph the presentation so even if my brain wandered, based on where my body was, I always knew how to recover.

With so little time, instead of telling them about my stroke, I had to take the audience on a journey to feel it. I described in detail each stage of the stroke, from my jerky, deliberate movements as my left brain bled to feeling peace and at one with the universe as the right side of my brain took over. In 2008, I delivered the first TED talk to 'go viral'. Within six weeks, my world exploded. I was included in *TIME* magazine's list of the 100 most influential people in the world, Penguin publishers bought the rights to my book and Oprah Winfrey interviewed me. The TED talk has now been viewed more than 22.7 million times.

I will say my TED talk raised the bar for what they wanted a TED talk to be. I feel a little bad about that. Now everybody has to be scripted. It was the end of my academic career, but it allowed me to travel the world and talk about the ability of the brain to recover.



JACK SCHULTZ

Chemical ecologist and senior executive director for research development, University of Toledo, Ohio.

Attended the 1982 American Chemical Society meeting, Las Vegas, Nevada.

As a postdoc from Dartmouth College in Hanover, New Hampshire, I was at the American Chemical Society meeting in Las Vegas in 1982 to present my research. A former lab-mate of mine at the University of Washington, Davey Rhodes, gave a presentation that would have an enduring impact on my career. Several hundred people filled a single room for a chemical ecology symposium, focused largely on how plants defend themselves against insects. Rhodes presented data indicating that the trees he was studying traded information about being eaten by insects: the trees were communicating with each other through chemical signatures. Jaws dropped. I, too, was taken by surprise as the mixture of astonishment and laughter rippled through the room.

It was really controversial, not only because it seemed like a crazy idea, but his data were also 'noisy'. We'd later realized that this was because he relied on field experiments with wild trees. My student and I decided we could do these experiments much more effectively in controlled lab settings. We subsequently produced better data, statistics and controls. The press went wild. We were on evening TV news shows, on radio, and in print, from *The New York Times* to *People* magazine.

But the findings continued to be ridiculed among our peers. We took abuse from well-established ecologists who would mock the findings or even suggest we were lying. When we got our initial results I searched for any existing information that could help to prove our findings were real, but there wasn't anything. It's nice to be on the frontier of science, but you are all alone out there. It's scary.

When I moved to Pennsylvania State University, I did not focus my first grant proposal on the plant communication story because it was still so controversial. After a few years, however, I was part of a team that secured a multi-year grant from the Defense Advanced Research Projects Agency to develop methods to use plants' volatile compounds as an early-warning system for bioterrorism. The goal was to have plants report on what they had been exposed to — for example biological or chemical warfare agents such as anthrax. I also pursued ways to develop a precision agriculture tool to identify early signals of insect infestations in crop fields.

The overall experience changed two things for me. First, I became the 'talking tree' guy, and remain so. I counsel students not to be afraid of 'crazy' ideas and not to be surprised if scientists, conservative by nature, are slow to embrace research that challenges accepted views. I also realized the difficulty and importance of communicating science to the public and press. In subsequent years I have spent as much time on science communication training as on my regular research. ■

INTERVIEWS BY VIRGINIA GEWIN

These interviews have been edited for clarity and length.