

EDUCATION

Rocket Science

CHEERLEADERS and **SCIENCE** might not make the most obvious pair, but the group known by those two words is working to change that stereotype — one chant at a time.

THERE'S PLENTY TO SEE AT THE annual USA Science & Engineering Festival in Washington, D.C.: National Security Agency eavesdropping equipment, a human-space-flight simulator, Bill Nye the Science Guy and all manner of robots. Robots that look and act like ocelots; robots that dance; even a group of tiny, flying drones that bounce off musical instruments, somehow playing the theme from *2001: A Space Odyssey*. There are also cheerleaders. A dozen of them in performance attire: red, white and blue spandex outfits and white go-go boots. They perform dance routines to the '80s hits "Weird Science" and "She Blinded Me With Science." They lead crowds that include dozens of young girls in chants like "Gooo Science!" and "Gimme an 'S!'"

These are pros — cheerleaders who are either current or former members of the cheer squads for NFL (including the Baltimore Ravens, the Miami Dolphins, the Oakland Raiders and the Washington Redskins) and NBA (Orlando Magic) teams. But there's something else; something an enthusiastic emcee points out: "These ladies are also scientists and engineers. Woo!"

If watching drones playing music is weird, hearing someone "woo-ing" about scientists — scientists in dance costumes who are members of a group called Science



Cheerleader — is flat-out bizarre. And it's supposed to be. "We want to playfully challenge the stereotypes that apply to both scientists and cheerleaders," says Darlene Cavalier, a former Philadelphia 76ers cheerleader who founded Science Cheerleader and has been organizing the group's appearances since 2011. Today, Science Cheerleader comprises 250 current and former professional cheerleaders, many of whom worked for NBA and NFL teams and all of whom

are either pursuing degrees in science, technology, engineering and math (known as STEM) or are already working in those fields.

Take a second if you need to absorb that number: *Two hundred fifty* professional cheerleaders are also experts in science.

Maybe it's ridiculous to be surprised by that. After all, didn't Marcia Brady (if no one else) teach us four decades ago that girls can do anything boys can do? And, yet, there's still

250

NUMBER OF CURRENT AND FORMER PROFESSIONAL CHEERLEADERS WHO MAKE UP SCIENCE CHEERLEADER

something about the idea that Dana from the Ravens is a systems engineer; that Kelly from the New England Patriots is a doctoral candidate in psychology; that Julia from the Washington Wizards has degrees in environmental science and marine biology; that Kiara from the Tennessee Titans

has a Master's in public health; and that Wendy from the Raiders is a Ph.D. candidate in biomedical engineering at the University of California, Davis.

In addition to the Raiders, Wendy

Brown has cheered for the Atlanta Falcons and the Sacramento Kings. You can't miss her. Tall and athletic, with long, bright-red hair. You — or maybe it's just me — also might not be able to understand her when she's talking about her lab work trying to bioengineer replacement cartilage for military service members who have

“But then there were these long lines of little girls and their parents wanting **AUTOGRAPHS** from the Science Cheerleaders.”

lost cartilage to injuries and subsequent surgeries. Brown believes scientists will someday discover a way to fully repair damaged cartilage and improve the quality of life for people who would otherwise suffer from pain and joint degeneration. “It's possible we'll be able to accomplish that in my lifetime,” she says. “But it's

difficult, because every time the science on that advances, the next set of problems you encounter seems to split off and get more complex. It's like a fractal, you know?”



SPREADING CHEER: Joanna Tippett, geologist and former cheerleader for the Baltimore Ravens (2011-2014), at the Philadelphia Science Festival

No, I don't. Not even a little. But I suspect the young girl with the polka-dot bow in her hair who interrupts our conversation might at least have a shot at figuring out all that fractal stuff. The girl is holding playing cards featuring many of the dozen Science Cheerleaders who have come out to the festival, and she is trying to get an autograph from each one.

That kind of reaction from girls is the last thing Cavalier expected when she got a group of Science Cheerleaders together for their first performance at this same USA Science and Engineering Festival in 2010. At that time, Cavalier was only focused on promoting something called “citizen science.” That's a movement aimed at connecting individuals with scientists and ongoing research projects. The idea is to help nonscientists find meaningful ways to contribute to scientific research — an increasingly important objective at a time when science and public policy are becoming more intertwined — and to help scientists collect more data by drawing on volunteer help to, say, collect earthbound

COURTESY SCIENCE CHEERLEADER



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microbes that will later be studied onboard the International Space Station (an effort the Science Cheerleader organization led earlier this year). To push the citizen science movement, Cavalier created a searchable, online database of scientific projects called SciStarter, in which anyone could participate. And to promote opportunities for regular people

to shape science and science policy, she decided to create a blog. All she needed was a name. A friend suggested Science Cheerleader. Cavalier balked at first. “I said, ‘Nope. No one will take a science cheerleader seriously.’” But once she relented, scientist cheerleaders started stumbling on the blog and contacting her in droves. By 2010, she’d

put together the first performance squad and prepared to debut it in Washington.

“I was nervous,” Cavalier recalls. “I thought, ‘People are really going to be freaked out by this.’ But then there were these long lines of little girls and their parents wanting autographs from the Science Cheerleaders. It was magical. And up until that moment I had no intention of ever harnessing the power of the Science Cheerleaders to inspire more young women to pursue STEM careers. For me, it was more about having the cheerleaders help get adults’

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NUMBER OF PROFESSIONAL
SPORTS TEAMS THE
SCIENCE CHEERLEADERS
HAIL FROM



FOLLOW THE LEADER: Heidi Inthavong proudly leads 1,278 enthusiastic cheerleaders in the Guinness World Record-setting Big Cheer for Science at the Pop Warner Northeast Regional Cheerleading Competition, which took place in Trenton, New Jersey, on Nov. 12, 2011.

attention to get them involved in citizen science projects and, ultimately, get people involved in policy conversations. But that event showed me we could also have an impact promoting STEM.”

Freaking people out is now a calculated part of that impact. “When we’re at events, most people look at us, like, what?” says Talmesha Richards, a Science Cheerleader who spent five years with the Redskins and three years with the Ravens. Richards has bachelor’s degrees in both mathematics and chemical engineering as well as a Ph.D. in cellular and molecular medicine from the Johns Hopkins University School of Medicine.

“People want to know, ‘How is it possible that you’re a cheerleader with a Ph.D.?’ But, you know, the things that make me a great dancer and cheerleader are the things that make me a great scientist, that make me a great colleague at work. It’s about teamwork, about discipline, about time management. Those are all skills you have to have in the normal

workforce and also as a cheerleader.”

Still, stereotypes that suggest female scientists are the dour antithesis of personable cheerleaders do have an impact on keeping women from pursuing science careers. Jenna Carpenter, associate dean in the College of Engineering and Science at Louisiana Tech University, says when those stereotypes

are combined with the ways that women are sometimes discouraged from pursuing STEM education and careers, it “erodes women’s confidence ... all the way from pre-school to the corporate boardroom.”

A 2013 report from the National Science Foundation may prove that point. It found that, although women make up 48 percent of the overall workforce, they hold just 24 percent of jobs in STEM fields. And since many STEM jobs pay better than jobs in the majority of other industries, that means

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To learn more about Science Cheerleader, visit www.sciencecheerleader.com

To learn more about the USA Science & Engineering Festival, visit www.usasciencefestival.org

To learn more about SciStarter, visit www.scistarter.com

To learn more about the National Science Foundation, visit www.nsf.gov



GREETING THE FANS: Science Cheerleader Joanna Tippet signs autographs at the USA Science & Engineering Festival in Washington, D.C.

women who turn away or are turned away from science may be losing out financially.

Whether “woo-ing” for women in science is going to change, that remains to be seen. But as long as little girls continue to line up for their autographs, Science Cheerleaders like Richards and Brown say they will keep cheering for science, even if they have to do a little explaining in the process. “I like coming to events like these science fairs because people will tell me, ‘You look out of place,’” Brown says. “I love seeing the expression on their face change when I tell them that, ‘Actually, I’m not. I’m a scientist.’”

JOSEPH GUINTO is a freelance writer who is based in Washington, D.C.