Expanding Her Horizons

AN ASPIRING PHYSICIAN-SCIENTIST LEAVES THE RESERVATION AND GOES EAST TO THE IVY LEAGUES—FOR HERSELF AND THE FOLKS BACK HOME.

SOON AFTER STARTING HER FRESHMAN YEAR at Dartmouth College, in September 2005, Cinnamon Spear received a care package with the usual fare: chocolate-covered coffee beans, a teddy bear, a postcard from her home state of Montana—and PCR tubes.

The slightly quirky gift, an essential tool for molecular biologists, came from Spear's labmates at the Center for Biofilm Engineering (CBE) at Montana State University (MSU), where she had spent the two previous summers doing research through the HHMI-supported Montana Apprenticeship Program. Not only did Spear enjoy the research—which led to her first published paper, in the May 2006 issue of *Microbial Ecology*—she also left a lasting impression.

"It's like we've adopted her, and she's adopted us," says research scientist Mark Burr, Spear's CBE lab mentor.

Spear, age 19, returned to Burr's MSU lab this past summer through a separate HHMI-supported program, the Undergraduate Science Education Program, spending 10 weeks studying water-quality issues in the campus wetlands.

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>
> CINNAMON SPEAR

Despite strong ties to her MSU colleagues and to Montana—Spear is Northern Cheyenne and grew up on the reservation in Lame Deer—when it came time for college she chose a school 2,000 miles and two time zones away.

"It was a hard decision," she allows. With plans to become a pediatrician, Spear was attracted to MSU's participation in the WWAMI program, which aims to provide high-quality medical education for the states of Washington, Wyoming, Alaska, Montana, and Idaho. By attending Montana State, she would virtually have been guaranteed admission to the University of Washington School of Medicine. But in the end, she couldn't pass up the opportunity to attend an Ivy League school.

Prestige was not the only factor. "I want to come back to the reservation for my career," she says. "But I wouldn't want to spend my whole life in Montana when there's so much more out there." Also, Dartmouth has a strong Native American Studies program, and Spear is considering a major in that field.

Distance can have its advantages, as well. "I've taken care of my brothers and sisters a lot, so I know if I were close to home I'd be leaving school to go home," says Spear, who looks out for a cousin and three siblings, ages 18, 16, 14, and 11. "As it is, I still worry about them because I feel like they're my kids. I'm always calling and checking up on them."

Jason Grow

In high school, Spear maintained a 4.0 average, took every science course the school offered, and participated in as many extracurricular activities as she could. At her high school graduation, attended by Burr and two other lab members, Spear received more than half of the 20 scholarships and awards given out.

Teacher Deeanna Williams got special permission for Spear to take her statistics course at the local tribal college when Spear was still a high school freshman. Spear aced the course. But Williams says she admires Spear for more than her intellect. Though her family has struggled with alcoholism and other challenges, "She'd stay so positive," says Williams. "Sometimes students were mean to Cinnamon because she doesn't look Native American"—she has light-colored hair and fair skin—but when those same students needed help, say, with college applications, she'd help them. "I almost couldn't believe she would do that, but she'd say, 'Well, this is what's important.'"

It was also important to Spear that she take the risk to leave the reservation and attend a school on the East Coast, in a state she'd never visited, to expand horizons—for herself, and for many others back home. As she reminds herself with a quote stuck to her computer monitor: *I'm doing what I'm doing for those who can't*. One of those who can't is her best friend. They swore they'd attend college together. "Now she works at the casino and has a baby." Another is her older brother, whose summer research experience in 2001 inspired Spear to apply to a program herself. "Now he has a baby and no school and no job."

She also wants to inspire the kindergartners on the reservation, who are less than half as likely as their white counterparts to get a college degree one day. "I want to get them thinking early about what they want to be when they grow up." More broadly, she wants to allay the fears of any kid who is anxious about leaving home. "I was scared," she admits. "I wasn't sure I could survive at Dartmouth, coming from Lame Deer High School. But I did, and I want to tell everybody they can do it too."

Burr is confident that Spear will realize her ultimate career goal and, quite likely, all others. "I introduced her to someone the other day, noting that Cinnamon wants to be a doctor. She corrected me, saying, 'Cinnamon is *going* to be a doctor.'" ■

– NANCY VOLKERS

For Those Who Couldn't

Cinnamon Spear is a gifted runner—she ran every event on her high school track team. Last year, she participated in the Fort Robinson Memorial Breakout Run, held to honor 149 Cheyenne ancestors who escaped from captivity in Fort Robinson, Nebraska, in January 1879, to return home. Most were captured or killed; only a few made the 400-mile journey back to Montana. Spear and about 90 others ran the route in relays over five bitter-cold days. A history of the run, and Spear's thoughts on it, are recounted in chapter 5 of *Sole Sisters: Stories of Women and Running*, published in paperback (Andrews McMeel) in March 2006.

The FARM Project: A Summer Science Workshop

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Chris Hildreth

For a week in July, 19 middle school students from Durham, North Carolina; Rochester, New York; Albuquerque, New Mexico; and Cincinnati, Ohio, gathered at Duke University to participate in the HHMI-sponsored FARM (Finding and Researching Mycobacteriophages) program. The students, most from disadvantaged backgrounds or underrepresented minority groups, filled their days with scientific—and not so scientific—activities. 1) They donned 3-D glasses to "dive" into a DNA molecule in a virtual reality chamber and later dived into a real swimming pool. 2) They isolated DNA from strawberries and got to wear the encapsulated goo on a string necklace. 3) And, in the ultimate quest, they isolated bacteriophages (viruses that infect bacteria) from soil samples brought from home. The students agreed they learned a lot about science, including that it can be both exciting and frustrating—"I still can't find my bacteriophage," lamented one student—while also learning a lot about each other.