Biophysicist in Profile



Dorothee Kern

It is often thought that sports enhance National team all through high school education. In the case of Dorothee Kern, Howard Hughes Medical Institute Investigator and Professor Biochemistry at Brandeis University, sports enabled education and, together with science, have provided balance in her life. "The more balance in life that you have," she explains, "the happier you are."

Born on January 19, 1966, in Halle, formally East Germany, Kern was the school as a straight "A" student. middle child, sandwiched between two brothers. Both of her parents were bio- were her entry ticket to Martin Luther who were opposed Communism, which made for a difficult "Everyone was harder on me because life. For political reasons, her father was they knew my father," she explains. denied promotion to professorship, while She studied biochemistry at the uniher mother was fired. Through this diffiversity. cult time, the family remained close-knit Luther to pursue her master's degree. and competitive.

that Kern, born Huebner, had an aptitude on the structural basis using NMR for athletics, particularly swimming and spectroscopy. In the communist envibasketball. Swimming was an Olympic ronment, however, Kern did not have sport in East Germany and the training access to high-field NMR instruments was intensive. In addition, athletes were but was able to conduct experiments required to attend special sports schools on smaller machines during the and often were given steroids. Well aware chemist's off-hours. Kern quickly real-

of these dangers, Kern's father encouraged her to pursue basketball, which was an "amateur" discipline with no Olympic participation and, therefore, did not involve sports schools and steroid use.

When applying to high school (only 1% of the students were selected), Kern was initially denied access because her family "did not support the communistical system." After her parents spent months fighting to get her into school, Kern was allowed to enter high school when her membership on the Junior National Basketball Team was deemed a help to the country. She continued playing basketball and captained the East Germany ized that her desire to study proteins in this setting was not practical. Continuing to study peptides, Kern learned biochemistry NMR on her own since no one had done this type of work in Halle. Kern found role models in some honest professors that did not push a political agenda, which was common in the German education system. These mentors gave her a solid foundation in the sciences and allowed her to grow personally.

The fall of the Berlin Wall in November 1989, just one month after she began work on her PhD, was "amazing," she says, and gave her freedom to direct her life. Her research ideas were no longer limited. International travel was now an

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and college. At the same time, she managed to graduate from high

Kern's grades and basketball skills to University, where her parents worked. Kern remained at Martin She worked on the structure of pep-It became apparent early in her life tide activities on the brain, focusing option, and Kern took advantage of opportunities in the countries around her. Kern's work brought her to study enzyme catalysis and dynamic NMR spectroscopy, when Professor Sture Forsen at Lund University in Sweden heard about Kern and invited her to his lab. Kern traveled for several years back and forth between Germany and Sweden, sleeping during the overnight seven-hour train ride and three-hour ferry ride. Thankfully, she laughs, she only requires "four hours of sleep!" In Sweden, Kern had access to better equipment and she could attend international biophysical conferences. It was at one of these conferences that she met her husband, Gunther Kern.

During this period of time, Kern also continued to pursue her love of

> sports. She played basketball with the professional league of United Germany, the Bundesliga, and was selected as the

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only player from the East Germany team to join the National team of United Germany.

a year off to care for her infant daugh-

ter, but continued her research.

Together with her father and hus-

band, Kern studied the mechanism of

vitamin B1 activation and soon pub-

lished her results in Science. She also

used the time to apply for a postdoc-

States. Both she and her husband

received postdoctoral fellowships at

the University of Califor-

nia, Berkeley.

position in the United

After finishing her PhD, Kern officially took

"I like the social component of science . . . "

ing on new approaches and meth-

ods." He notes that "it's exhausting

just to watch her in action." Another

of Kern's colleagues, Ad Bax, Chief of the Section on Biophysical NMR, at the National Institute of Diabetes and Digestive and Kidney Diseases, NIH, states that Kern is "highly focused, motivated, and sees the big picture."

The difference in science between Germany and America, Kern notes, is that, people in the US are evaluated

"My advisor Davis Wemmer gave me a lot of freedom," she states. At Berkeley, she worked on NMR spectroscopy in a signaling protein. Science in America was very inspiring to her. "It's much faster paced," she explains. Kern also appreciated the open-minded and tolerant environment found in the US. Wemmer explains that Kern provided a great example for others. She demonstrated "determination, persistence, excellent intuition in scientific problems, and was fearless in undertaking new methods," says Wemmer.

Originally, she and Gunther planned to complete their postdocs in the US and then move back to Germany.

However, after she gave a talk on vitamin B1 at an international conference, a representative from Brandeis University persuaded Kern to apply for a position at the University, which she did, and where she remains today. Professor of Biochemistry at Brandeis University, Christopher Miller, says that Kern possesses "tremendous creativity, energy and fearlessness in takby their performance and not by factors like age, gender, or race. "The job opportunities that I got offered here (in the US)," she explains, "I would have not gotten in Germany as a young woman. I think it is important to acknowledge how much equal opportunity I have experienced here in America. I never had a disadvan-

tage of being young, being a woman,

a foreigner and having a family with children. My experiences in Germany were very different. This is a

> huge strength of science in America."

> > Kern has

come to love biophysics because of proteins. She is excited about learning and understanding how proteins work and how that could lead to a drug used to combat diseases like cancer and Alzheimer's. She became a member of the Society when she realized that this is where her peers are. "I like the social component of

> science," she adds, admitting she does not want to close herself off in a lab all day. The passion for people led her to become active in the Society. She was recently elected to serve on the Biophysical Society Council and was also named the 2009 National Lecturer.

Kern has two daughters, Nadja, 15, and Julia, 10. Both are following in their parents' footsteps, enjoying science and sports. They also spend a significant portion of their summers in Germany, and Nadja has even worked in her grandfather's lab for two weeks. Kern remains active in sports, including coaching her daughter's teams and playing basketball in men's

leagues in America and with the Masters National team in Germany. She and Gunther, who works at Astra-Zeneca, share a passion for the outdoors. Enjoying the intellectual and geographical freedoms she once did not have, Kern has found the happy balance that science, sports, and family create.

