

Jon Gilbert Fox



## DIANE GILBERT-DIAMOND, SCD

**A**LTHOUGH SHE DIDN'T REALIZE IT AT THE TIME, Diane Gilbert-Diamond (DC'98) was set on her professional path while still an undergraduate in biology at Dartmouth. As a Tucker Foundation Fellowship recipient, Gilbert-Diamond engaged in a community service project on the White River Apache Reservation in Arizona, witnessing for the first time the impact that social determinants can have on obesity. "It got me thinking about how opportunities and environment could affect health," she recalls.

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After graduating, Gilbert-Diamond's interests grew in the ways that genetics could predispose individuals to health risks that environmental factors might either ameliorate or exacerbate. A stint at the Whitehead/Massachusetts Institute of Technology Center for Genome Research, followed by a teaching position in a wealthy private high school, offered Gilbert-Diamond further insight into genetic and environmental factors related to health. And when her sister, a student at the Harvard T.H. Chan School of Public Health, began talking about her studies, Gilbert-Diamond realized that there was a way to pursue her interests academically. She too enrolled in the school, earning a ScD with a focus on nutritional epidemiology, then completed a postdoctoral research fellowship where she trained in genetic and environmental epidemiology at the Geisel School of Medicine, and was appointed to the faculty in 2012.

Today, Gilbert-Diamond continues to explore the variables that affect obesity. "In our county, over two-thirds of adults are overweight or obese and one-third of children are in this category," she notes. "When it gets to numbers like that, we need to be looking at environmental factors that we can

change, rather than just leaving it to individual responsibility."

In one recent study, Gilbert-Diamond collaborated with Todd Heatherton, PhD, and William Kelley, PhD, colleagues from Dartmouth's Department of Psychological and Brain Sciences, and James Sargent, MD, a professor in the Department of Biomedical Data Science at Geisel, to explore the ways in which a genetic obesity risk factor could predispose people to be more responsive to food cues. In work recently published in the *International Journal of Obesity*, they discovered that food ads elicit more overeating in children with a genetic risk for obesity compared to those with low genetic risk. Then through a functional magnetic resonance imaging (fMRI) study recently published in the *Proceedings of the National Academy of Sciences*, they also saw that genetically at-risk children had greater activity in a reward region of the brain in response to food ads when compared to low-risk children. "The results are very exciting because they help us to unravel why, in the same environment, some people gain weight and others don't. Our findings can help to explain why one person can walk by a tray of cookies without taking one when another can't—the reward response elicited in some people is simply stronger than that triggered in others."

Another area of Gilbert-Diamond's research explores the effect of how in utero arsenic exposures can affect fetal child growth. Her recent work in this area has generated excitement in the scientific community. Gilbert-Diamond's co-authored paper, "Effects of low arsenic levels during pregnancy and fetal growth," published in *Environmental Health Perspectives*, was recognized by the National Institute of Environmental Health Sciences as a '2016 Paper of the Year,' and the study was cited as one of the first to report an association between low-level exposure to arsenic during pregnancy and birth outcomes.

Gilbert-Diamond is delighted to be making her mark as a member of the Dartmouth community. "I grew up all over—I was born in Hawaii, lived in New Jersey, and was drawn to New Hampshire and Dartmouth by the personal and professional environment," she says. "Dartmouth is a unique institution. It's relatively small, which makes cross-disciplinary collaborations easier, yet large enough to support world-class research. I also love Dartmouth's focus on teaching in the college and graduate schools. It's such a beautiful place to live with so many opportunities to enjoy the outdoors and lots of wonderful people—it's just a very special place."

LORI FERGUSON