

Improving Cancer Care and Reducing Costs

Surgeons love to fix things. Often that means removing a tumor or repairing a joint. But for Richard Barth, MD, a surgical oncologist at Dartmouth's Norris Cotton Cancer Center, that also means improving the entire approach for one of the most common surgeries he does: lumpectomy, removing a tumor while leaving the breast intact.

Approximately one in three women who undergo a lumpectomy need a second surgery to remove cancerous tissue that was missed the first time. Barth believed better outcomes were possible. So he teamed up with biomedical engineers from Dartmouth's Thayer School of Engineering, Venkat Krishnaswamy, PhD, and Keith Paulsen, PhD, the Robert A. Pritzker Professor of Biomedical Engineering. With seed funding from a generous donor, the trio invented a highly effective, low-cost device called the Breast Cancer Locator.

"It became obvious that we needed to form a company to further develop this device," says Barth, professor of surgery at Geisel and section chief of general surgery at Dartmouth-Hitchcock. "That's where we found a lot of help here at Dartmouth."

Barth received the 2015 Dartmouth SYNERGY Clinician-Entrepreneur Fellowship, providing him with time and mentorship to pursue commercial development of the Breast Cancer Locator. In addition, the team secured a patent through Dartmouth's technology transfer office and consulted with Tuck School of Business students to build a plan for their company, CairnSurgical. Even the team's manufacturing space is conveniently located—in the Dartmouth Regional Technology Center, less than a mile from the Cancer Center and Dartmouth-Hitchcock Medical Center, where Barth practices.

Early clinical trials of the Breast Cancer Locator demonstrate near perfect accuracy and no need for repeat surgeries, even while removing a minimum of breast tissue. That's better for patients and could potentially save the healthcare system more than \$300 million annually by avoiding repeat surgeries.



Surgical oncologist Richard Barth, MD (right), performs hundreds of surgeries per year, in addition to conducting research to improve breast cancer treatments.

CULTURE DRIVES INNOVATION

Innovating to improve care for patients is part of the culture at Dartmouth's Cancer Center. With faculty from 21 departments across Dartmouth, multi-disciplinary teams pursue scientific and medical advances while ensuring that all care remains intensely personal—aligned with the needs and values of patients. In fact, many discoveries now revolutionizing the prevention and treatment of cancer can be traced back to Dartmouth.

"Cancer Center investigators have launched a wide variety of startup companies based on Dartmouth discoveries, ranging from new immunotherapy drugs to new imaging devices," says Steven Leach, MD, the Preston T. and Virginia R. Kelsey Distinguished Chair in Cancer and director of Dartmouth's Cancer Center. "This is the way that our cancer center will ultimately have the biggest impact, by bringing Dartmouth's discoveries to market for the benefit of all. But we can't do that without the seed funding made possible through philanthropy."

New philanthropic support of \$100 million—a critical part of Geisel's \$250-million campaign—will leverage the Cancer Center's unique culture to spur advances in both the discovery and delivery of cancer care and prevention.

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Director, Norris Cotton Cancer Center

JENNIFER DURGIN