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## MAGAZINE

# 10 MEDICAL BREAKTHROUGHS

MILWAUKEEANS ARE CHANGING THE FACE OF HEALTH CARE. AND THE DEVELOPMENTS COULD SAVE YOUR LIFE.

BY CAROLYN BUCIOR

THE END OF  
OPEN-HEART  
SURGERY

A WAND  
THAT  
DETECTS  
CANCER

A BLANKET  
THAT PUTS  
THE BRAIN  
ON ICE

A POD  
FOR SAFE  
CO-SLEEPING

A BANK  
THAT COULD  
PERSONALIZE  
MEDICINE

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## THE LITTLE WAND THAT COULD

**O**n a Thursday afternoon in November, a pea-sized lymph node from a mastectomy patient is brought into the crowded office of Dr. Gerald Smith, laboratory medical director at Aurora Sinai Medical Center. While the patient remains in the operating room, Smith freezes, slices, stains and microscopically examines the tissue for cancer. His conclusion will help determine if more of the woman's breast tissue or lymph nodes are removed. The process takes about 20 minutes.

Smith's possible replacement for this procedure rests atop a table near his microscope – the FastPath Residual Cancer Probe. It's a cancer-detection device that inventor and physicist Bill Gregory, the chief science officer of NovaScan LLC, compares to a metal detector. Sized and shaped like an electric toothbrush, the device is held by a surgeon to a

**WHY WAIT?**  
Dr. Jim Marx at Aurora is one of many involved in testing the FastPath Residual Cancer Probe.



patient's surgical cavity during a mastectomy. By detecting the electrical characteristics of individual cells, the cancer probe alerts doctors to remaining cancer cells. If successful, the 20-minute wait time plummets to nearly zero. "It instantaneously detects cancer," Gregory says.

The probe has kept pace with pathologists so far. In 187 tests, it recognized cancer cells 100 percent of the time. If it acers the next testing phases –

two in the United States and one tentatively planned in Europe – the future of breast cancer surgery could include not only faster surgeries but also fewer second and third surgeries to remove residual cancerous cells. Between 20 and 40 percent of breast cancer patients undergo second operations, and 6 percent have third operations to remove straggling cells, says Gregory, who is also the retired dean of the University of Wisconsin-

sin-Milwaukee's College of Engineering and Applied Science. If the cells stay in place, they may not be life-threatening, he explains. But studies show as much as 90 percent of cancer deaths are caused when these cells set up shop elsewhere in the body.

The patented device has cost \$3 million to develop, says Gregory, and it's supported in part by Aurora Health Care. He hopes it will be on the U.S. market by 2018. +