

## Could breast milk hold clues about your breast cancer risk?

**I**T BUILDS HEALTHY brains, bolsters the immune system and can lull a fussy baby to sleep. Now, scientists are researching breast milk's ability to predict your risk of breast cancer, too.

"Established risk factors, such as family history, are just blunt instruments when it comes to predicting a woman's chances of developing breast cancer," says Kathleen Arcaro, Ph.D., an environmental toxicologist at the University of Massachusetts in Amherst. "We think we can use the cells present in breast milk to better assess individual risk."

Funded by the Avon Foundation for Women and other agencies, including the Congressionally Directed Medical Research Programs, Arcaro has spent a decade studying fresh breast milk samples from nursing mothers across the country in search of subtle cellular changes that may hint at cancer years before it materializes. Her research is rooted in epigenetics, the study of how chemical tags on the DNA—often influenced by environment and diet—affect gene expression. Previous epigenetic research has shown that long before a tumor forms, a chemical shift called methylation occurs, essentially switching off "tumor suppressor genes" responsible for keeping healthy cells from becoming cancerous. The good news, explains Arcaro, is that methylation potentially can be reversed via diet, lifestyle changes and medications—if you catch it early.

That's where breast milk comes in. While other tests for breast cancer (such as fine needle aspiration) collect only a few hundred cells from one of many ducts, a bottle of milk contains millions shed from throughout the breast tissue. And unlike a surgical



*Breast milk could hold a key to early cancer prediction, increasing your chance of recovery.*

biopsy, typically only done after there is suspicion of cancer, breast milk could provide a pain-free, inexpensive window into what may lie ahead.

### Assessing your risk

Until now, the normal breast has been a "black box" with few ways to explore what's going on inside, says Mark Sherman, M.D., chief of the breast and gynecological cancer research group at the National Cancer Institute. In 2013, it's estimated that among U.S. women about 230,000 will be diagnosed with breast cancer, and only about 64,000 cancers will be caught before they begin invading the body's tissues. According to the American Cancer Society, less than 15 percent of women diagnosed have a family history; the remaining cases are "sporadic," making it exceedingly difficult for a healthy woman to know her true risk.

Arcaro predicts that a breast milk test could be available within five to 10 years. She doesn't see it as a replacement for mammograms, however. Rather, a positive test might prompt a woman in her 30s (i.e., too young for routine mammograms) to start having the procedure earlier, or to switch to a cancer-preventive diet and lifestyle. — LISA MARSHALL