National Institutes of Health
Turning Discovery Into Health

Improved Breast Cancer Treatment Through Gel-Based Markers

29 December, 2019

Breast cancer is diagnosed through a biopsy because it continues to be the best way to determine whether cancer is present in an area of the breast that shows cancerous signs. However, if a breast biopsy tests positive for cancer, it is difficult to find the area again for surgical removal of the lesion.

To help address this public health problem, the company Biopsy Sciences began researching better ways to perform ultrasounds in breast tissues. The founding of this NIH-funded company didn't start in a lab or a hospital though—it started on a soccer field.

Fred Ahari was watching his son's soccer game when he sparked a conversation with fellow soccer dad John Fisher, a radiologist who would soon become Ahari's business partner. With Ahari's background in medical devices and engineering and Fisher's background in radiology, the two started brainstorming solutions to biomedical problems. It wasn't long before they were drawing up a business plan and in 2000 they founded the company Biopsy Sciences in Clearwater, Florida.

> **"Biopsy Sciences developed a gel material that is inserted in the tissue during initial biopsy to flag the area."**

Because it is tough to relocate the area using ultrasound alone in order to remove the cancer, patients must receive a pre-surgical procedure in which a radiologist inserts a wire into the breast. To eliminate this uncomfortable and invasive step, Biopsy Sciences developed a gel material that is inserted in the tissue during the initial biopsy to flag the area. The product, which the company named HydroMARK, expands by 90 percent in 24 hours by absorbing water and is visible by ultrasound for up to one year.

Ahari says the ***Phase I SBIR*** grant from the National Cancer Institute (NCI) that the company received in 2002 helped them find the best gel material for the product, which ultimately led to the sale of HydroMARK to Devicor Medical Products, Inc. in 2014.

The researchers at Biopsy Sciences are exploring new uses for the material

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Biopsy Sciences

Biopsy Sciences
4900 Creekside Drive, Suite C,
Clearwater, Florida, 33760

State-District
FL - 13

Technology
Drug

Primary Institute
Cancer (***NCI***)

Project Details from NIH RePORTER
Biopsy Sciences

Contact
Fred Ahari
fahari@me.com

used in HydroMARK. “We believe that this hydrogel could have other beneficial applications for the body,” says Ahari and adding, “[it’s] a very friendly material that we are going to explore further.”

To Ahari, the public health benefits of this product are clear. HydroMARK not only eliminates an uncomfortable pre-surgical procedure for women, but Ahari notes it also aids surgeons in preserving as much healthy tissue as possible during partial mastectomies.

Ahari says NIH funding—which the company has also received from the National Institute of Diabetes and Digestive and Kidney Diseases as well as the National Heart, Lung, and Blood Institute—was important in helping explore solutions to this difficult biomedical problem.