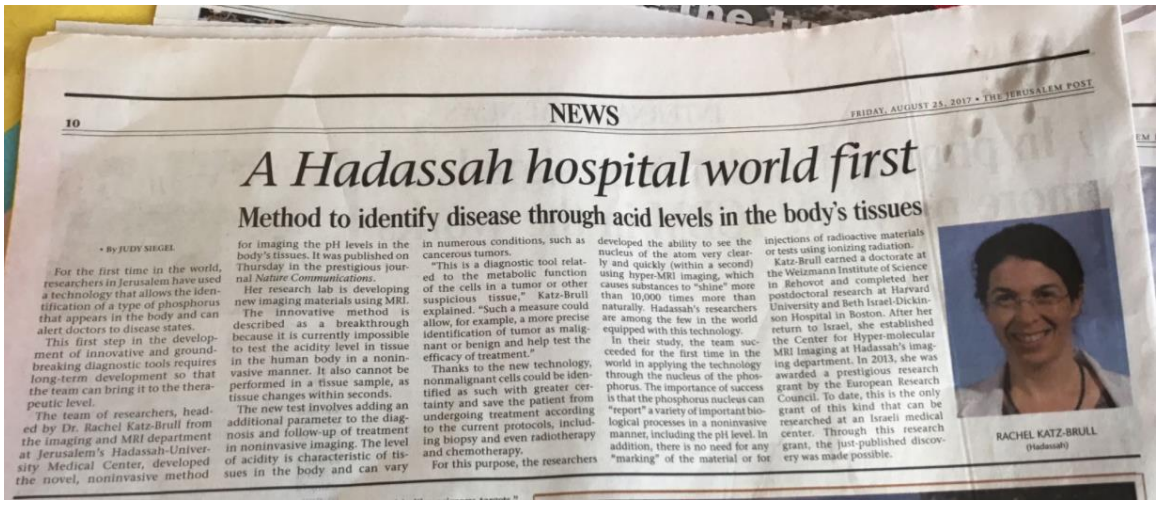

10 NEWS FRIDAY, AUGUST 25, 2017 • THE JERUSALEM POST

A Hadassah hospital world first

Method to identify disease through acid levels in the body's tissues

• By JUDY SIEGEL

For the first time in the world, researchers in Jerusalem have used a technology that allows the identification of a type of phosphorus that appears in the body and can alert doctors to disease states.

This first step in the development of innovative and groundbreaking diagnostic tools requires long-term development so that the team can bring it to the therapeutic level.

The team of researchers, headed by Dr. Rachel Katz-Brull from the imaging and MRI department at Jerusalem's Hadassah-University Medical Center, developed the novel, noninvasive method for imaging the pH levels in the body's tissues. It was published on Thursday in the prestigious journal *Nature Communications*.

Her research lab is developing new imaging materials using MRI.

The innovative method is described as a breakthrough because it is currently impossible to test the acidity level in tissue in the human body in a noninvasive manner. It also cannot be performed in a tissue sample, as tissue changes within seconds.

The new test involves adding an additional parameter to the diagnosis and follow-up of treatment in noninvasive imaging. The level of acidity is characteristic of tissues in the body and can vary in numerous conditions, such as cancerous tumors.

"This is a diagnostic tool related to the metabolic function of the cells in a tumor or other suspicious tissue," Katz-Brull explained. "Such a measure could allow, for example, a more precise identification of tumor as malignant or benign and help test the efficacy of treatment."

Thanks to the new technology, nonmalignant cells could be identified as such with greater certainty and save the patient from undergoing treatment according to the current protocols, including biopsy and even radiotherapy and chemotherapy.

For this purpose, the researchers developed the ability to see the nucleus of the atom very clearly and quickly (within a second) using hyper-MRI imaging, which causes substances to "shine" more than 10,000 times more than naturally. Hadassah's researchers are among the few in the world equipped with this technology.

In their study, the team succeeded for the first time in the world in applying the technology through the nucleus of the phosphorus. The importance of success is that the phosphorus nucleus can "report" a variety of important biological processes in a noninvasive manner, including the pH level. In addition, there is no need for any "marking" of the material or for injections of radioactive materials or tests using ionizing radiation.

Katz-Brull earned a doctorate at the Weizmann Institute of Science in Rehovot and completed her postdoctoral research at Harvard University and Beth Israel-Dickinson Hospital in Boston. After her return to Israel, she established the Center for Hyper-molecular MRI Imaging at Hadassah's imaging department. In 2013, she was awarded a prestigious research grant by the European Research Council. To date, this is the only grant of this kind that can be researched at an Israeli medical center. Through this research grant, the just-published discovery was made possible.

RACHEL KATZ-BRULL (Hadassah)

- Jerusalem Post
- HEALTH & SCIENCE

A HADASSAH HOSPITAL WORLD FIRST

BY JUDY SIEGEL-ITZKOVICH

AUGUST 24, 2017 23:55

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