

From: "AFHU" <[REDACTED]>

To: jeevacation@gmail.com

Subject: Dr. Yaakov Nahmias Wins Prize for Virus-Blocking Grapefruit Molecule

Date: Thu, 13 Feb 2014 16:20:15 +0000



 **ToA**

Biotech breakthroughs net two scientists Rappaport prize

David Shamah,
February 11, 2014

Scientists from the Weizmann Institute of Science and Hebrew University are this year's winners of the Rappaport Prize for Excellence in Biomedical Research, given out by the Rappaport Institute. Prof. Yair Reisner of the Weizmann Institute of Science will be recognized for his work in bone marrow transplant therapy, while Dr. Yaakov Nahmias of Hebrew University will receive the award for identifying a grapefruit molecule that can block viruses. The \$60,000 and \$40,000 prizes will be awarded to Reisner and Nahmias respectively on March 17.



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One of the only treatments for acute leukemia sufferers is a bone marrow transplant. Current treatments, based on stem cell insertion, require an exact match in the tissue types of both donor and recipient – meaning that, in general, only immediate family members could be donors. Reisner’s innovation, which he developed with Prof. Massimo F. Martelli of the University of Perugia, allows patients to receive stem cells from donors whose tissue type (HLA) differ from their own, without the body rejecting it.

To get around this, doctors strip the implanted stem cells of their immunity (T-cells), greatly reducing the chances of cell rejection and avoiding graft-versus-host disease (GvHD). The stem cells are implanted in massive doses, ensuring that the transplanted cells “take” in the body. But without the T-cells, patients are a much greater risk for infection, especially after a transplant, when the body is especially slow to recover.

By infusing patients with another type of T-cell, called T-regs, Reisner, who heads the Department of Transplantation Immunology at the Weizmann Institute, along with Martelli found that recovery was much faster. The cells helped keep other immune responses in check, including preventing autoimmune attacks on the body’s own cells and alleviating GvHD. Based on this research, hospitals around the world have adopted procedures to help not only leukemia patients, but also “bubble children” with severely defective immune systems. Reisner has received many awards for his work in this area.

For Dr. Yaakov Nahmias, the sour taste of grapefruit is sweet news for patients suffering from a wide variety of ailments. Working with researchers at the Massachusetts General Hospital (MGH) in the US, Nahmias identified a small molecule, naringenin, derived from grapefruit, capable of blocking viral production. In research on patients with liver disease, Nahmias and his team discovered that naringenin activates a family of small proteins, called nuclear receptors, which cause the liver to break down fatty acids. The actions seemingly mimic those of drugs like Fenofibrate, used to reduce lipids, and Rosiglitazone, an anti-diabetic drug.

An expert in nanobiology, as well as physics, engineering and biology, said the Rappaport Institute, Nahmias then developed a way to ensure maximum efficiency in naringenin use, by inserting the molecule into a ring of sugar called cyclodextrin. This system increased the absorption of naringenin by 11 times. A clinical trial at MGH was completed within almost record time (less than three years), with excellent results, the Institute said.

In addition to his clinical work, Nahmias was also a key figure in the establishment of BioDesign – Israel, a joint effort of Hadassah Medical Center and Hebrew University’s School of Business Administration and Alexander Grass Center for Bioengineering. The program promotes a multidisciplinary approach to medical innovation, drawing on disciplines such as engineering and finance.

The Rappaport Institute was established in 1982 by Bruce (Baruch) Rappaport, an international financier in the US, Switzerland, and Antigua. Along with the Institute, Rappaport was also a major contributor to the Technion’s Faculty of Medicine building. The Rappaport Prize was first given out in 2006. Rappaport himself passed away in 2010.



AFHU: One Battery Park Plaza, 25th Floor, New York, NY 10004
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