



**2016
RESEARCH
FACTS &
FIGURES**

- 441 new research projects
- 1,626 ongoing research projects
- 1,300 ongoing clinical trials for: drugs, medical devices, cell therapies, genetics, and more

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Innovation and Big Data at Rambam

According to encyclopedias, the Industrial Revolution began in the 18th century. Today, the world is a completely different place. Discovery led to discovery and change which has impacted societies and our world in ways no one imagined possible just a few decades ago.

Medicine too has changed. Every day we see something in the news about new drugs and medical devices that gives a whole new face to medicine. Innovation has become an integral part of medicine, for the benefit of many.

Perhaps you've been hearing about a new field of research, "big data." Big data refers to the computer analysis of huge amounts of information to uncover patterns, trends, and associations, particularly with regard to human behavior and interactions.

Rambam Health Care Campus is at the frontlines of medical innovation, including the new field of big data.

Rambam is the first hospital in the world to use Big Data technology for medical research. This innovative technology, developed by an Israeli company MDCLONE, transforms real medical records into "synthetic" information.

Professor Rafi Beyar, Rambam's director shares, "This technology puts us at the forefront of science and research; every physician who receives approval will be able to conduct research while maintaining complete patient confidentiality. This will allow for quicker and more available research, cut research costs, and most importantly ensure complete patient anonymity."

Ultimately, that research will lead to new innovative medical devices and treatments for the benefit of people everywhere—not just here in Israel.

We deeply value your prayers for our clinician-scientists and your support of our various research programs. In supporting research at Rambam, you become part of Israel's smaller blessings to the world!



Doctors learn how to use big data in their research.

Changing Lives with 3D Printers

Adam Malca, 27-years-old, from Eilat suffered from a benign tumor in his forehead for 10 years—a tumor that also flawed his facial appearance.

The tumor was not cancerous, and so, no one wanted to help him—no one that is, until he

turned to Professor Gil Ziv, Rambam's Director of the Department of Otolaryngology Head and Neck Surgery.

Professor Ziv agreed to remove the tumor and used a 3D printer to create an implant to

restore a Malca's facial appearance.

Malca was thrilled with the results. "I look in the mirror and cannot believe what I see," he cried, "no one stares at me any more."

[Read the Full Article](#)

Genetic Research Solves Mystery

It sounds like a detective story from a police series:

New genetic research conducted by partners from Rambam and abroad has revealed a new and deadly disease, and explains the enigmatic death of three babies in the 1990s. Currently, the Rambam team is following the condition of a child from another family, the only survivor of this illness, and is trying to recruit more

patients for a future study.

Everything began when baby L. was admitted to Rambam's Pediatric Intensive Care Unit. L. was born with a genetic disorder that causes severe neurological and developmental damage. Since 45 days of age, Rambam's Genetics Institute has followed her in an effort to identify the cause of her ailment. Despite repeated examinations, the team found no known disease that could be attributed to her symptoms, and the search continued.

Rambam's genetics team found the answer: a newly diagnosed disease resulting from a dysfunctional gene, essential for normal neurologic function. Amazingly, this discovery solved the mystery involving the deaths of three children from another family that had also been followed at Rambam 15 years ago. This finding recently appeared in the prestigious American Journal of Human Genetics (AJHG).

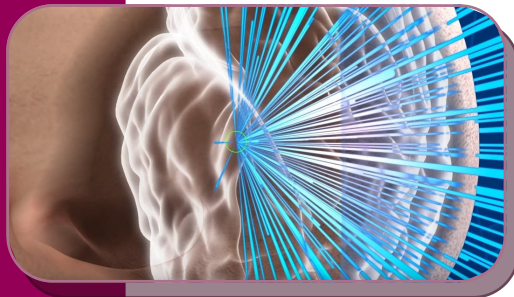
[Read the full article](#)



Professor Hagit Baris-Feldman, head of Rambam's Genetics Institute.

Photo by Miki Koren

From Bethlehem to Rambam



Simulation of FUS treatment targeting a point in the brain

-guided focused ultrasound (FUS) treatment. Salama is the first Palestinian to undergo this treatment at Rambam Health Care Campus. During this noninvasive, innovative, pain-free treatment, a surgeon directs an ultrasonic beam to the focal point of the diseased area in the brain, defined by an MRI scan. The patient remains conscious throughout the treatment. It takes only one hour, uses no knives or scalpels, and the patient remains in the hospital overnight for observation only.

Just a few minutes after the treatment; Salama looked at his steady, unshaking arm in utter disbelief and remarked that he would now be able return to work in his beloved restaurant.

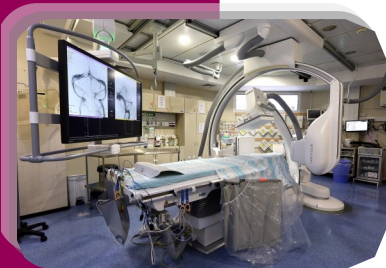
Rambam is the first hospital in Israel, and only the second in the world, to treat essential tremor with this non-invasive brain surgery, with an incredible success rate of 95%.

60-year old Saliba Salama, a Palestinian restaurant owner from Bethlehem, suffered from uncontrollable tremor in both his hands due to Parkinson's disease. He was treated recently via a unique MRI

[See for Yourself](#)

[Learn More about FUS](#)

First in Israel: The Siemens ARTIS Q with Pure Biplane Angio-Suite



Rambam's newest acquisition is a first in Israel and will markedly improve the care of stroke patients.

Another Israeli First

The new device exposes patients to a considerably reduced dose of radiation (compared to older systems) while significantly improving

image quality and providing advanced 3D imaging tools for the Neuro-Intervention staff.

[Read the full article](#)

Maimonides and Innovation

The Rambam, Moses ben Maimon, for whom our medical campus is named, was among the greatest of innovators. Recognizing that the Talmud, books of Jewish law, was far too voluminous for most ordinary people to absorb, Rambam wrote a summarized masterwork, his *Mishneh Torah*, which became a worldwide standard for the Jewish people. While some criticized the Rambam for making the constitution of the Jewish people accessible to all people, by clearly summarizing its text, others saw this as democratization, and as a strengthening of the law and of the people bound by these laws. Perhaps the same could be said of the Internet today: that in facilitating a remarkably abundant amount of information available to anyone with a smart cellphone or home computer, that knowledge becomes publicly available worldwide. The diversity of those

who can access and read the *Mishneh Torah* strengthens all of us. The Rambam’s innovation—the *Mishneh Torah*—is here to stay.

Innovation is a natural strength of Rambam Health Care Campus. The director of our hospital, Professor Rafi Beyar, encourages us all, in word and by personal example, to innovate medical practice for the benefit of the current and future generations. My personal enthusiasm and motivation to invent solutions for medical problems has resulted in patents for more ergonomic, safe, and effective medical practice.

People view problems in a variety of ways. Combining various perspectives, from realistic to imaginative approaches for making medicine better through invention and innovation, can create a better future. Ultimately, medical invention is a collaborative effort: physicians, engineers, legal, and

business people work pursuing amazing new and innovative medical devices and pharmaceuticals—a win-win achievement for patients and the innovators.

Today, anyone acting on their imagination can become an inventor, or can support inventors with the aim of creating better medicine—just like the Rambam made his work available to all through the democratizing of knowledge. An exciting joy-filled ride awaits those who invent, create, and/or support innovators. Perhaps you would like to join the frontier-expanders? What better place than at Rambam Health Care Campus—Creating the Future of Medicine!

Professor Jesse Lachter
Head, Endoscopic Ultrasound
Service, Rambam HCC



Moses Maimonides, also known as Rabbi Moshe Ben Maimon (the Rambam)

*Language,
Culture,
and
Rambam*

Repair: Not What it Seems To Be

The word “Repair” in the King James English appears around 60 times, but different words are used for it in Hebrew. These differences are not apparent to English speakers, but in Hebrew they provide an interesting nuance to the verse and to the word.

In Judges 21:23, the sons of Benjamin “repaired” the cities. Here the word is *banah* (בָּנָה)—built.

In I Kings 11:27, when Solomon “repaired” the breaches of the city, he actually *closed* them (*sagar*, סָגַר).

The word *chazeq* (חָזַק, strong) is translated “repair” in II Kings 12:5–

14 when referring to the repair of the Temple. The same word is used in Nehemia, and refers to the repairing of the temple and the walls of Jerusalem. However in I and II Chronicles, the words that are used relate to life (*chayah*, חָיָה) or a foundation (*yesod*, יְסוּד).

One unusual translation occurs in I Kings 18:30, where it is written that Elijah repaired the alter of the Lord, the word used here is “healed” (*rafa*, רָפָא).

Bringing all of these nuances of meaning together, one gets a very different picture of the word “repair” than we normally visualize.

Rather than a word for fixing things, it has a depth of meaning.

Repairing something in the Bible builds, closes what needs closed, strengthens, makes new, gives life, provides a foundation, and can even heal.

Medical practice is often thought of as the art of healing. However, innovation seeks to do more than that. Medical innovation seeks to build, to leave behind what is obsolete (close it off); it provides an exciting new way to do things, to promote life, and to heal.

May this spirit permeate all of innovation here at Rambam.



RAMBAM Health Care Campus

Creating the future of medicine.

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You Can Help Seeds for Innovation

The generosity of others is helping us replace old equipment, build new facilities, perform research, and care for our patients. Every gift counts and is appropriately honored via our donor recognition program. Click on the links below for more information on how you can help support the people of Israel via Rambam Health Care Campus.

Pray for Us and Tell Others About Us: Visit our [Christian Friends of Rambam Facebook page](#) often for prayer requests and regular updates about what is happening at Rambam.

Friends Organizations: Tax-deductible donations can be made via a Friends organization near you (listed above).

Giving: Please [visit our webpage](#) for more information about how you can make a difference in the lives of the people served by Rambam Health Care Campus.

Medical innovation begins in the mind of a clinician-scientist. He or she is faced by a real medical problem and they want a solution—now!

Rambam has several programs to help doctors and nurses take their ideas and turn them into a medical reality.

This includes the following programs:

- The **Foundations Program**, providing clinical research grants for Residents
- The **Horizons Program**, providing basic and translational research grants for young senior physicians.
- The **Future Program**, providing basic and translational research grants for residents.

- The **Spark Program**, providing guidance to develop prototypes, feasibility, and IP protection for medical innovations.

- The **Guardian Program**, providing grants for research and innovative nursing practice.

These and many other programs at Rambam are supported partially, or in whole, by generous people who believe in our research. A donation for medical research is an investment that benefits future generations.

For more information on how you can leave a legacy of innovation, [contact our Christian Friends representative by email](#).

“The righteous gives and does not hold back...”

Proverbs 21:26