

ESTABLISHING A CAR T-CELL IMMUNOTHERAPY SERVICE Cutting-edge Cancer Treatment

An Overview of Rambam's Herta and Paul Amir Neurosurgical ICU mir ment cal ICU RAMBAN Summit RAMBAM AWARD A CONVERSATION WITH PROFESSOR RAMBAM **YEHUDA CHOWERS** Director of Rambam's Gastroenterology Unit and Division of Research

PUSHING THE

ENVELOPE From the Director

RAMBAM Health Care Campus

TAKING NEUROSURGICAL CARE TO THE NEXT LEVEL

> RAMBAM ESTABLISHES A CENTER FOR CANNABIS RESEARCH Studying the Role of Cannabinoids



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FROM THE DIRECTOR Dr. Michael Halberthal Pushing the Envelope

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LOOKING AHEAD TO A

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A DOCTOR/PATIENT

A Lifelong Connection

BRIGHT FUTURE

Dr. Esty Golan

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ESTABLISHING A CAR T-CELL IMMUNOTHERAPY SERVICE Cutting-edge Cancer Treatment



DISCOVERY OF SURVIVAL MECHANISM FOR PANCREATIC CANCER OFFERS **NEW HOPE** Researching Effective Treatment





A CONVERSATION WITH **PROFESSOR YEHUDA CHOWERS** Director of Rambam's Gastroenterology Unit and Division of Research





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RAMBAM **INTERNATIONAL** RELATIONS Snapshots







TAKING **NEUROSURGICAL CARE** TO THE NEXT LEVEL An Overview of Rambam's Neurosurgical ICU



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NEURORADIOLOGISTS IMPROVE STROKE PATIENT CARE Using AI Technology for Early Diagnosis



THE POWER OF MICROBIAL TRANSPLANTS A New Therapeutic Solution for Gastrointestinal Problems





UNDER INVESTIGATION

















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Cover Photo: A photo montage

PUSHING THE ENVELOPE

It has always been in Rambam's DNA to be innovative and seek solutions, and this is the philosophy that drives our actions and achievements - which haven't slowed down since I became the Director and CEO

of Rambam Health Care Campus nine months ago. In this issue of Rambam on Call, we take a look at some of these activities, focusing on groundbreaking research and novel cancer treatments, as well as cutting-edge Car T-Cell treatment and the opening of our Medical Cannabis Research and Innovation Center. We also write about Rambam's key role in the creation and use of revolutionary stroke management technologies, and share an unusual solution for digestive problems.

Dambam is privileged and honored to be involved Λ in numerous international collaborative efforts. One such connection is with Stanford University, and together, we received a prestigious grant from the Koret Foundation to advance cooperation in multiple areas. We are especially excited to have begun the process of becoming a Stanford-affiliated Biodesign site, as Stanford's only selected Program Development Partner in Israel. Biodesign is an ambitious, high-level program that encourages clinicians, engineers, and others to promote innovation, and teaches through experimentation. Being chosen for this unique partnership attests to the degree of commitment on the part of both institutions.

We are proud to collaborate with Memorial Sloan Kettering Cancer Center in areas of research, oncology, medical devices, and big data. As part of this collaboration and in cooperation with the Technion, we filed a joint application for a research grant to study young cancer patients under the age of 50 and the increase in cancer rates within this demographic.

Also in the global arena, we participated in a program in Shanghai, China, which saw Rambam trauma experts sharing knowledge with their Chinese counterparts. I invite you to read more about this initiative in the Global Medicine section.

Partnership

Progress on construction of the Eyal Ofer Heart Hospital and the Helmsley Health Discovery Tower-a research hub that will support innovation by serving as a platform to link Rambam, various Technion faculties, the University of Haifa, and the biomed industry-is due in large part to the support of our dedicated friends and partners around the world. Since stepping into my new role, I've had the immense privilege to meet many of these partners, as well as new supporters being brought into the fold. It is an eve-opening, moving experience to meet those who give of themselves to promote Rambam, helping us to raise awareness through events and meetings like those in which I have participated in London, Melbourne, and throughout the United States.

Another wonderful occasion for meeting our partners and supporters is the annual Rambam Summit, and my first Rambam Summit as hospital director was a fascinating event that allowed us to strengthen these important relationships. I invite you to read our coverage of the 2019 Summit in our dedicated Summit section. The 2020 Summit-whose theme is "Health: The Power of Knowledge"-promises to be equally exciting, with lectures on topics like Education and Knowledge in Health Care, The Importance of Leadership within the Organizational Culture- to be presented by Major General (res.) Eliezer Shkedy, the 15th Israeli Air Force Commander and former CEO of El Al, Big Data in Medicine, and more, including a session led by former Elbit Systems CEO Yossi Ackerman. I'm also thrilled to share that our 2020 Rambam Award recipients are Professor Peretz Lavie, former President of the Technion - who will also be one of the Summit's keynote speakers, Mr. Alan J. and Mrs. Tatyana Forman, Mr. Jonathan and Mrs. Edna Sohnis, and The Leir Foundation, for their exceptional contributions in a multitude of areas.

Facing Challenges

ROM

THE

DIRECTOR

Rambam plays an intrinsic role in Israel's security challenges, and we regularly hold drills to ensure readiness and update our emergency protocols. An audit to check emergency systems was carried out by the military and the Ministry of Health, and Rambam passed with excellence - the only hospital in Israel to do so.

While Rambam recently celebrated the grand reopening of the refurbished Department of Internal Medicine H, there is still much work to do. We must renovate the Department of Internal Medicine A, update the infrastructure in our older buildings, and purchase new, expensive, medical equipment, including two MRI machines and a PET CT.

In Closing

I'm thrilled that even though Professor Beyar has retired, he responded positively to my request to remain involved, and has taken on the roles of President of the International Friends Associations and Chairman of the Steering Committee for Helmsley Health Discovery Tower. Professor Beyar's unparalleled dedication



and commitment have ensured a smooth leadership transition, and we hope to benefit from his extraordinary talents and energy for many years to come.

I'm often asked how I deal with the responsibility of managing the hospital. My response is always, "while I have sleepless nights, I wake up with a smile on my face because we do amazing things for our patients, and because it is a privilege to work with such a dedicated, professional staff. I feel very lucky."

Lastly, I invite you to stay abreast of the innovative activities at Rambam during your next visit to Israel. The opportunities you will find for meaningful partnership are exciting!

Sincerely,

Wiley Halbertine

Dr. Michael Halberthal Director and CEO Rambam Health Care Campus



Dear Friends,

In recent months, Rambam Health Care Campus has continued to undergo transformation and tremendous arowth. It is wonderful to witness the campus developing and changing with each passing day - there is never a dull moment here! I focus my energies on two main areas - strategic development and resource development; two functions that not only complement each other - one cannot exist without the other. Without resources, it is very difficult to invest in hospital development-that is obvious. However, strategic development that realizes the vision of Rambam's administration-led by Dr. Michael Halberthal-and fulfills the constant desire to provide better medicine, is what connects our supporters and friends to us. They identify with Rambam and see it as a source of shared values, excellence and pride.

We do not take it for granted that our supporters have been loyal to Rambam for many years, partnering with us on the hospital's biggest, most urgent projects. We see a growing group of donors who have been with us for a long time, and their impact is evident in each of our initiatives, from the Sammy Ofer Fortified Underground Emergency Hospital, to Ruth Rappaport Children's Hospital and Joseph Fishman Oncology Center. Today, we also see these strong partnerships in our current projects – Helmsley Health Discovery Tower and Eyal Ofer Heart Hospital, and as always, in their generosity with regard to medical equipment purchases and research projects.

Among our most notable achievements this year are finishing the 20th floor skeleton for the Helmsley Health Discovery Tower and beginning the casing, which will be completed in early 2021. We have also completed the fortification and casing phase of Eyal Ofer Heart Hospital and are issuing a tender for the internal infrastructure phase. In addition, we have begun the process of purchasing cutting-edge equipment and technology. We completed the renovation and transfer of Internal Department H—which is a significant step for the hospital's elderly patients—and the launch of the Medical Intensive Care Unit construction project. We have also continued to purchase medical equipment, ensuring that progress is ongoing and that the medical staff has the tools it needs to be excellent, as well as to be ready for emergency situations.

Our Friends Associations around the world continue to hold fundraising events, expanding their circles of supporters, sending us delegations, and raising awareness of activities occurring at Rambam. I am proud to congratulate Mrs. Meri Barer on accepting the role of President of the AFORAM board, and I am confident that her energy and love for Rambam will continue to propel us in the right direction.

This year marks a shift in the hospital leadership. I am delighted and proud of the close collaboration between Dr. Halberthal, who serves as the new hospital Director and the Chairman of K.M.R. - Advancement Of Medical Centers Ltd., and Professor Rafi Beyar, who remains with us as President of the International Friends Associations and Chairman of the Steering Committee for Helmsley Health Discovery Tower. I feel privileged to work with both of them in total synergy for the benefit of the campus. I see this as something unusual, especially when I look at other institutions. It is definitely representative of Rambam's unique DNA.

This is a wonderful opportunity to thank the staff in our Department of International Relations and Resource Development. These dedicated professionals work together as a cohesive team, giving of themselves every day for the benefit of Rambam.

I invite you all to join us at the 2020 Rambam Summit, and promise that we will surprise, energize, and excite you, and that we will celebrate our special global friendship together for a few days.

I also invite you to spend some time on our beautiful campus in Haifa! We open our doors to all of you, and no less important, to your families, friends, and colleagues. I guarantee that if you choose to invite them to come for a visit, we will be here to welcome them with love and to share the Rambam story.

Sincerely,

Esther Golan, Ph.D.

Managing Director of International Relations and Chief of Strategic Development Rambam Health Care Campus A DOCTOR / PATIENT STORY

ALIFELONG CONNECTION



Karen Leibovici Swet was just six years old when she was diagnosed with Osteosarcoma. Her parents brought her to Rambam, where she met the doctor who would save her life – Professor Myriam Ben-Arush, who today is Director of the Pediatric Division in Ruth Rappaport Children's Hospital and Director of Joan and Sanford Weill Division of Pediatric Hematology-Oncology and Bone Marrow Transplantation.



Karen:

Professor Ben-Arush was my primary doctor, and she was involved in all the treatment I received. What stood out for me the most with Professor Ben-Arush was her ability to connect with me – a six-year-old girl who had been diagnosed with very aggressive cancer. It was amazing to me that an adult was able to do that so well. She would speak directly to me, and not only to my parents. She would explain to ME what was going to happen, and it was very important to her not only that I understood, but also that I 'gave my permission'. She shared the process with me and didn't try to speak above me, just because I was a little girl.

I received treatment from September 1988 through November 1990, which is when I had my last session. The treatment was very complex, and I remember very clearly – even as a child – that when Professor Ben-Arush would enter the department where I was hospitalized, she was like this ray of light. She would come into my room and I would get excited, thinking 'the person who understands me and who I can talk to is here!' I knew that she would speak to me directly. On some level, seeing her even relaxed me. I never actually told her that personally, but that was the way she made me feel. Professor Ben-Arush would come to give me a check-up, and I would wait for her visits because I knew that she would make me feel calm and that everything would be okay when she was with me.

Towards the end of my two years of treatment, when I was nearly eight years old, the doctors believed the best course of action would be to amputate my right leg. Professor Ben-Arush came to speak to me about it, explaining the situation as though she wanted me to make the decision. She said, 'this is what we need to do. Think about it for a bit, and then come back and tell me what you've decided.' I left the room and thought about it—as though the decision was really mine to make—and then returned to the room and told her that I agreed to the operation.

After my treatment was complete, I would return to the hospital for check-ups. I finally stopped about two years ago, though I still reach out if something comes up.

I am incredibly moved by the words that Karen uses to describe our relationship. It is heartwarming to know that despite what she went through, she was able to Professor Ben-Arush came to my wedding. It was recognize that our connection was-and still is-very obvious to me that I would invite her and I really genuine. It makes me very happy that we remain in hoped she would come and help celebrate this major contact, and I am honored that she continues to share milestone in my life. After my son was born, I brought her milestone moments with me. As a doctor, there is him with me the first time I returned to Rambam for no greater reward for me than seeing a former patient one of my check-ups, because I really wanted her to doing so well, and knowing that I have had such a meet my son. meaningful impact on their life."

Our connection means a lot to me, and she really stands out as a dominant figure. When I was sick, my chances for survival at the time weren't high, but despite everything, I'm still here. This is thanks to Professor Ben-Arush – I owe her my life."



Professor Ben-Arush:

As a pediatric oncologist, trying to connect with my young patients on their level has always been a high priority, and Karen was no exception. Children can sense when an adult is not taking them seriously, and are less likely to cooperate under those circumstances. It was very important to me that she understood what was going on, and to make her feel like her opinions and feelings mattered – which they did!

Karen's osteosarcoma was very aggressive, which meant that our treatment had to be equally aggressive. At the time, we didn't have the treatment options that we have today, and Karen's situation was not easy – especially once we felt that it was necessary to amputate her leg in order to save her life. I was impressed by the way she handled each of these experiences, and was very pleased that the treatment she received was successful.

TAKING NEUROSURGICAL **INTENSIVE CARE** TO THE NEXT LEVEL



The facility contains 15 beds (including three beds in the Stroke Intensive Care Unit) and utilizes an open plan. Neurosurgical patients have either private rooms or private isolation rooms with attached prep rooms, leading to significant improvements. For example, there has been a decrease in the rate of infection, with fewer infections in the blood as well as lower rates of postoperative infections in the brain.

Notes Dr. Evgenia Mahamid, Director of the Neurosurgical Intensive Care Unit, "In the old unit, it was difficult to move between patients. Today, we have more space around the beds, and that's a huge improvement. We can easily enter a room to treat our patients, and everything we need is available."

State-of-the-art patient monitoring screens on walls throughout the unit and improved lighting allow for constant surveillance of all patients. There is also private space to meet with families. As these spaces also have monitoring screens, Dr. Mahamid and the other doctors can always monitor their patients.



As the only level 1 trauma center in Northern Israel, Rambam Health Care Campus treats severe head injuries daily, including more critical trauma cases than any other Israeli hospital. The need for a cutting-edge intensive care unit was critical, and in July 2017, the Herta and Paul Amir Neurosurgical Intensive Care Unit opened its doors.

A Dedicated Unit for Stroke Patients

In April 2019, the three-bed Stroke Intensive Care Unit, located within the neurosurgical ICU, was opened. The unit is for stroke patients who are in unstable, critical condition after undergoing endovascular thrombectomy procedures. The unit receives approximately ten patients every month, and has treated nearly 100 so far. These patients come from Rambam's Department of Emergency Medicine and occasionally from the Department of Neurology, as well as from other hospitals. Dr. Mahamid and her team treat them until their condition allows them to be transferred to the Department of Neurology.



"The new Stroke Intensive Care Unit isn't important only for us," clarifies Dr. Mahamid. "It's important for the entire hospital, especially the Department of Neurology. Before the unit opened, there was no dedicated facility for these patients. Some went to the general ICU, while others went straight from catheterization and the operating room recovery area to the internal medicine ICU, and the neurologists had to run between departments. Today, the patients are all in our unit. We are responsible for all facets of care. When a patient initially reaches either the emergency room or the shock trauma room, we know right away if they will be brought up to us after being treated, and can prepare accordingly."

Hospitalizations

The Herta and Paul Amir Neurosurgical ICU receives approximately 500 patients annually, and of those, around 60% are trauma patients. These patients arrive with very serious head injuries, and many of them have injuries to other parts of their bodies as well. However, in cases where the head injury is the most significant injury, patients are brought to the new neurosurgical ICU, where they are given complete intensive care for all injuries and not only for the neurological problems.

There are periods during the year when the unit receives an unusually high number of patients with vascular issues. In some cases, more than one treatment is needed, such as the insertion of catheters, which necessitates longer stays in the unit. Theoretically, the mortality rate for these difficult cases can be as high as 50%.

The unit also performs elective surgeries six days a week. In the best-case scenario, patients are in the unit for up to 24 hours, but may stay longer if there are complications.

Unexpected Benefits

Since the opening of the Herta and Paul Amir Neurosurgical Intensive Care Unit, the staff has seen an increase in the number of organ donations. Dr. Mahamid believes this is directly due to the conditions. In the old unit, the physical conditions were not optimal. Now, the unit's appearance is the first thing families see. When combined with the compassionate treatment they receive, even when families must face the worst, if they are asked to consider organ donation, chances are greater that they will agree.

"When taking care of patients under better conditions, our experience shows that it creates a situation where loved ones are more likely to respond positively to



requests to donate organs," says Dr. Mahamid. Since we opened the new unit, compliance from families is much higher and easier to achieve. The new conditions seem to encourage people to want to donate," adds Dr. Mahamid.

Going Paperless

A system has been designed for the unit that will allow staff to do away with paper charts in favor of computerized charts. All patient data will be available at the click of a button and accessible throughout the hospital. Doctors will even be able to view data from previous treatments.

The unit is in the final deployment stages, and is preparing for training. The staff plans to begin using the system in December while continuing to use the paper charts, and by the beginning of 2020, Dr. Mahamid hopes the transition will be complete. At a later stage, all monitoring devices will be connected to the new system as well, automatically recording patient stats in real time. This will make the unit much more efficient. "Going paperless is a huge step forward for us and for Rambam," states Dr. Mahamid.

Paul and Herta Amir

Czechoslovakia and lived there during the Second World War, emigrating to Palestine in 1946. In 1960, he moved to the United States, where he met and married Herta. The Amirs live in Beverly Hills, California, and together, they are the founders and owners of Amir Development founded an international foundation that helps support educational and cultural institutions worldwide-including Israel, and particularly Haifa, which holds a special place in Paul's heart. Paul and Herta have two married daughters, Orna and Michal, and six grandchildren.

lerta and Paul Amin Neurosurgical ICU

RAMBAM ESTABLISHING CAR T-CELL **IMMUNOTHERAPY SERVICE** FOR CANCER TREATMENT

A cutting-edge immunotherapy treatment will soon be offered at Rambam Health Care Campus using genetically engineered T-cells to kill cancer cells. Rambam will be the first and only medical center in Northern Israel to provide this service.

Dambam Health Care Campus's Department of **K**Hematology and Bone Marrow Transplantation is launching a new service to treat several different types of cancer using altered T-cells. The service will be headed by the department's director, Professor Tsila Zuckerman.

T-cells are a type of immune cell whose job is to eliminate infections and cancer cells. In order to survive, cancer cells suppress T-cell activity, enabling them to bypass the immune system. To overcome this obstacle, these cells need to undergo the process of "re-education," in which T-cells acquire the specific



Car T- Cell Therapy service team

PATIENT JOURNEY: MANUFACTURING TO INFUSION

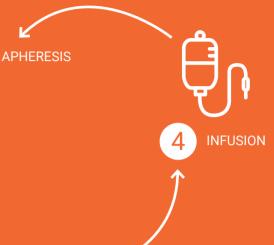
MANUFACTURING

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immunotherapy is primarily used to treat blood cancers like acute lymphoblastic leukemia and other advanced innovative approach has given rise to multiple clinical

In the procedure, a small number of immune system cells are extracted from the patient's blood, genetically reprogrammed in a special pharmaceutical lab, and entails inserting a chimeric antigen receptor (CAR)-a type of synthetic molecule designed to bind certain proteins-into the T-cells.

This treatment has been authorized by international regulatory agencies such as the FDA and EMA, as well this revolutionary treatment must undergo a rigorous accreditation process involving the Ministry of Health



LYMPHODEPLETION

blood counts need to recover from any postapheresis cytotoxicity before patients can return to the CAR T center for

and the pharmaceutical companies that perform the cellular reprogramming—Novartis and Kite-Gilead. While it will be several months before approval is given, the process is on course.

approach are under intensive investigation, attempting to target other diseases such as multiple myeloma and acute myeloid leukemia. Zuckerman's department myeloma patients annually.

provide patients with direct access to novel therapeutic options; we aim to employ the cutting-edge CAR-T technology at our center in the very near future. To that end, we have implemented all the prerequisites required by both national and international regulatory bodies to facilitate provision of this procedure," explains Department Director Zuckerman. Future plans include creating a dedicated immunotherapy institute.

RAMBAM ESTABLISHES CENTER FOR CANNABIS RESEARCH

Rambam Health Care Campus has established the Medical Cannabis Research and Innovation Center in its Research Division, led by Dr. Igal Louria-Hayon, who also heads the hospital's Leukemia Research and Cancer Signaling Lab. The aim is to study the role of cannabinoids (naturally occurring chemical compounds found in the Cannabis plant) during communication between cells under various morbidity conditions.

The center is supported by The Clinical Research Institute at Rambam (CRIR)—which is responsible for its infrastructure—and through joint research with pharmaceutical and cannabis companies from Israel and abroad. This knowledge will form the basis of the center's clinical trials and subsequent cannabis-based treatments approved by the health authorities in Israel and around the world.

Understanding the Effects of Cannabinoids

Louria-Hayon and his team will be investigating whether cell interplay can be affected by the use of cannabisderived substances. "If we understand how cannabinoid components are used in intercellular interaction, we can use them to influence this communication in the event of a disease, disrupt it, or empower the communication to deliver desirable messages," says Louria-Hayon, whose professional interests focus on cell communication and cell signaling, with an emphasis on cancer biology and immunology, and immunotherapy against solid tumors.

Since many cancer patients also use cannabis to increase their appetite, improve their mood, and relieve pain while receiving conventional treatment, Louria-Hayon and his team will study the effects of cannabis on the efficacy of other medications with regard to these aspects. "We want to reach the point where cannabis research will not look any different from classical pharma research. If we do, I believe doctors will be more comfortable prescribing plantbased therapy," he notes.

Until recently, most knowledge regarding therapeutic aspects of these chemical compounds has come from anecdotal evidence. However, the cannabis landscape is changing, and there is an understanding that research is necessary to decipher cannabis's medicinal activities. As such, Rambam's Medical Cannabis Research and Innovation Center is devoting its efforts toward discovering the biochemical interaction that triggers the pharmacological effect of cannabinoids derived from the cannabis plant. Louria-Hayon and his staff are developing technologies that enable the detection of cannabinoid mechanisms in human patients to follow the cannabinoid's pharmacokinetics (the behavior of a substance once it enters the body) and identify its receptors in human biopsies.



"As the research center is part of a hospital, our uniqueness is the direct connection to human samples and patients. In addition, we have established a stateof-the-art biochemical laboratory, where we study the cannabinoid's nexus at the molecular level of the cell and in a variety of animal disease models. These, together with the clinical laboratories that develop cannabinoid-related expertise, allow us to be a pioneering center that studies cannabinoids and their physiology under one roof – from science to clinical experiments," states Louria-Hayon.

Becoming More Mainstream

Cannabis research is also carried out in other departments. Rambam has established a Cannabis Steering Committee with the participation of highlevel department managers, the CRIR, the Division of Economics and Marketing, and more. More than 3,000 patients at Rambam have used medical cannabis, making Rambam one of the leading centers in Israel for cannabis-based treatments.

Louria-Hayon has seen an increase in the number of organizations willing to financially support advanced studies in the field of cannabis. "Our center collaborated

Medicinal Cannabis Research & Innovation Center

Translational study

Lab research on

therapeutic

potential of specific

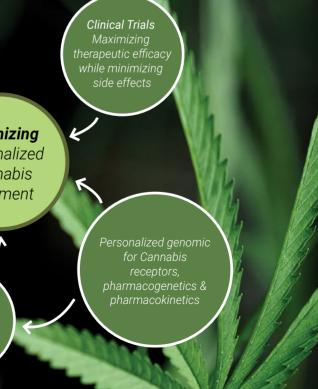
cannabinoids

Optimizing
Dersonalized
Clinical
Follow-up
Data analysis

with Raphael Pharmaceuticals INC. to establish a comprehensive scientific study to research the effects of specific cannabis strains on arthritis. This study will allow us to understand the cannabinoids' apparatus at the biochemical and molecular levels of the human cell using a mouse model of the disease, which will lead towards knowledge-based clinical experiments in human patients."

In addition to the work in the laboratory, Louria-Hayon and his team are responsible for informing other clinician-scientists in the CRIR regarding the progress of the cannabinoid and cannabis research.

We are establishing a multidisciplinary network of physicians and researchers, who will work on research both independently and in collaboration with pharmaceutical companies. This ensures that the center will be able to provide answers to research questions in the field of cannabis from the cellular level to the level of human experiments, and will hopefully result in personalized, cannabis-based treatment," he explains.



n on call December 2019

RAMBAM **NEURORADIOLOGISTS IMPROVE STROKE PATIENT CARE**

Stroke specialists at Rambam use AI technology for early identification and diagnosis of stroke patients. The platform enables larger stroke centers to be connected to smaller hospitals to ensure that these patients can be treated as quickly as possible at the most suitable medical center.

Dr. Rotem Sivan-Hoffmann is an interventional neuroradiologist in Rambam Health Care Campus's Department of Interventional Neuroradiology and the Department of Medical Imaging, a field that deals with cerebral catheterization and endovascular treatment. She is changing stroke patient care in Israel and revolutionizing early stroke patient management. For approximately two years, Sivan-Hoffmann and her colleagues have been using cutting-edge AI technology created by American-Israeli startup Viz.ai, which reads CT scans and identifies signs of stroke, especially blood vessel blockages, using CT angiography. "Our ability to improve the outcome of stroke treatment is increasing. The Viz.ai system not only enables us to guickly diagnose - it also creates a platform for rapid communication between various teams," notes Sivan-Hoffman

Cooperation between Stroke Centers

The system enables cooperation between large stroke centers like Rambam and smaller stroke centers and hospitals without stroke teams, with the large centers acting as hubs to which the smaller hospitals can quickly send stroke patients to receive the best possible care. The platform is deploved at each hospital and its app is installed on mobile devices of medical personnel at each center. When a patient suspected of having a stroke is brought in, the Viz.ai system identifies the stroke and sends a push notification to the connected mobile devices within ten minutes, providing all necessary information. Doctors can view the test results and, using the platform, discuss the best course of action. "We are trying to create a platform for cooperation

between Rambam's comprehensive stroke center and relatively close, smaller hospitals. This way, we can receive notifications from other hospitals regarding patients with arterial blockages before the local team gets caught up in deciding what to do. Viz.ai allows us to make more timely decisions, speeding up the process and ensuring patients are treated as guickly as possible," explains Sivan-Hoffmann.

Recently, a patient from the center of the country was transferred to Rambam many hours after initially showing signs of stroke. The delay was due to failure to interpret the signs and imaging, as well as subsequent communication failures between the teams. Fortunately, the patient could benefit from late catheterization, which was performed 11 hours after the onset of symptoms. He was released from the hospital with virtually no neurological deficiencies. However, most patients do not fall into this group, and delays in decision-making or transfer can negatively impact the outcome. Many times, decisions are based on screenshots from patient examinations and without in-depth discussion," she adds.



Sivan-Hoffmann, who also works with a team to develop CVAid-an app for pre-hospital stroke patient diagnosis and management-presented her work with Viz.ai at this year's American Society of Neuroradiologists Meeting during a session about digital health. She presented the results of her treatment of 1,200 patients using Viz.ai.

Stroke Systems of Care

In Israel, approximately 18,000 patients are admitted to hospitals annually due to an acute event, of which two-thirds are acute ischemic strokes. The average patient age is over 70, however, 20% are aged 60 or less. Slightly more than half of the patients are brought to hospitals by Emergency Medical Services. Nationwide, in-hospital mortality rates are 8%. The outcome of patients with major strokes treated with endovascular therapy is substantially better than before endovascular therapy was available.

Rambam has the biggest stroke center in Israel, and in 2017, one-quarter of all brain catheterizations performed in Israel were performed at Rambam. The center provides stroke treatment 365 days a year, and receives referrals from hospitals in the center of the country as well as from hospitals in the north. Rambam recently opened a three-bed stroke intensive care unit within the Herta and Paul Amir Neurosurgical Intensive



Care Unit. "Rambam is not only building a large, very impressive stroke center - it is also becoming a regional center of cooperation with other hospitals in the periphery using the Viz.ai platform," notes Sivan-Hoffmann. "A widely used term in our specialty is 'stroke systems of care'. When we build systems like Viz.ai and CVAid and create regional cooperation, we are laying the foundation for our stroke system of care. This allows us to see the big regional picture and improve early diagnosis for stroke patients throughout the north."

The first phase of the VIZ.ai system deployment in secondary stroke centers is being completed, and a trial run is expected to start shortly.

RAMBAM OFFERS NEW THERAPEUTIC SOLUTION FOR GASTROINTESTINAL PROBLEMS



THE POWER **OF MICROBIAL** TRANSPLANTS

Rambam has inaugurated a microbiome service, based on the therapeutic potential of microbes obtained from human feces from healthy individuals. The final product does not resemble the source - it comes in small capsules, and it's clean, safe, and effective.



∩lostridium difficile (CD) is a rather cruel bacterium Uthat causes extensive diarrhea and negatively impacts quality of life. In the elderly or in individuals suffering from chronic diseases, Clostridium can also be life-threatening. People who have been treated with antibiotics lose their gut balance (the "good bacteria" balance) and become prone to developing CD infections.

RESTORING THE BACTERIAL BALANCE

While the common treatment for CD is antibiotics, the more antibiotics taken, the greater the risk of infection recurrence. In recent years, it became clear that one successful approach to dealing with this bacteria is to restore the balance in the microbial composition of the digestive system by transplanting the "good bacteria" (healthy fecal microbiome transplants) from a healthy individual to the patient with diarrhea. By achieving microbial balance, CD loses its ability to continue harming the patient's gut. Studies have shown that this treatment has a 90% cumulative success rate in recurrent CD infection, which is much higher than the success rate for antibiotic treatment.

At Rambam, capsules containing the healthy bacteria are manufactured using pre-processed raw fecal matter. These white capsules are innocent-looking, and do not resemble the original material. Each capsule contains millions of good bacteria aimed at restoring balance to the patients' diseased digestive systems, and has been approved by the Ministry of Health for the treatment of CD infection.



THE CONNECTION BETWEEN DISEASE AND UNHEALTHY MICROBIOMES

Microbiomes play an important role in human health. In addition to CD infections, there are a number of diseases and conditions that negatively impact microbial balance. As such, there is a direct relationship between disease and unhealthy microbiomes. There are a multitude of research studies that explore the therapeutic potential of healthy microbiome transplants in the development and course of disease. Clinical trials are being conducted at Rambam in different fields of medicine.

At Rambam, hospitalized patients suffering from recurrent CD infections-and following failed antibiotic treatment-are routinely treated with microbial transplants. The patients ingest the "good bacteria" capsules produced at Rambam and are usually released a few days later, feeling well, no longer suffering from diarrhea, and without experiencing serious side effects. "Many of our patients are benefiting from this new standard, as we begin a new era at Rambam in dealing with resistant bacteria," says Dr. Milena Pitashny, the director of the Clinical and Research Microbiome Center at Rambam.

COLLABORATIVE RESEARCH. DISCOVERY OF SURVIVAL MECHANISM FOR PANCREATIC CANCER **OFFERS NEW HOPE**

Research conducted by scientists from Israel and the US shows how pancreatic cancer cells, considered among the most lethal of human cancers, undergo a kind of metabolic "reprogramming" for their survival. This discovery will contribute to research into more effective treatments for pancreatic cancer.



Desearchers at Rambam Health Care Campus, the Technion–Israel Institute of Technology, and the University of California have uncovered a critical defense mechanism for pancreatic cancer cells, which provides them with protection from the lack of oxygen and nutrients. This discovery could help treat one of the deadliest cancers.

A recently published study (February, 2019) in the prestigious scientific journal, Nature Communications, demonstrated how pancreatic cancer cells actively "reprogram" to enable their development and survival in both humans and in mice.

"Over the past 40 years, medicine only succeeded to improve the survival rate of pancreatic cancer patients by one percent," says Professor Ziv Gil, Director of Rambam's Department of Otolaryngology, Head and Neck Surgery, and head of the Laboratory for Applied Cancer Research in the Technion's Faculty of Medicine. Professor Gil led the study, in collaboration with Professor Mei Kong of the University of California's School of Biological Sciences. He explains, "Currently, all we can offer pancreatic cancer patients is tumor resection for early stage disease, and chemotherapy in the advanced stages. Pancreatic cancer does not respond to more innovative treatments such as immuno-oncologic drugs. There is much research being done, but to date, there have been no breakthroughs for these patients."

Difficult to Treat

Pancreatic cancer is the fourth leading cause of cancer deaths in the Western world. The survival rate among patients within five years after diagnosis is approximately eight percent. In Israel, some 500 patients are diagnosed annually, and it is the third leading cause of cancer-related death in Israel.

Pancreatic cancer is complex for a number of reasons. An internal organ, the pancreas is hard to monitor in routine examinations, making early detection of the cancer-critical for treatment-nearly impossible. In addition, the cellular composition of pancreatic tumors makes treatment difficult. Professor Gil noted that pancreatic cancer is characterized by significant involvement of supporting cells that make up most of the tumor. They develop into a dense mass that presses on the cancer cells and blood vessels, and reduces the amount of oxygen and food available for growth. He added, "This cellular envelope is one of the reasons why chemotherapy does not reach the tumor."

More about the Research

The study dealt with a fundamental question regarding cancerous tumors: How do they develop in a hostile environment, when the body is attempting to isolate them and reduce their sources of energy, and survive?

The researchers tried to track alternative metabolic pathways of cancer tumors. This guestion relates to the biological mechanism that allows the existence of cancer cells and tumors in general. Although this mechanism exists in many types of tumors, Professor Gil explained that the research team believed pancreatic cancer was best suited for the study, due to the conditions under which it grows.

"This is a situation characterized by a particularly high level of stress for the cells," he said. "The body itself tries to fight: it isolates the growth environment and creates a capsule environment, which affects the growth environment. The capsule reduces available essential amino acids, and generally limits the ability of nutrients to reach the cancer cells. The cancerous cells abandon the glycolysis pathway, which is the standard metabolic pathway for providing energy to the body's cells."

However, despite the sophisticated efforts of the body and the depletion of the living environment of the tumors, pancreatic tumors are able to survive and develop. Professor Gil and his colleagues found that the resistance of pancreatic cancer stems, among other things, from the ability of tumor cells to find new ways to supply energy by what they call "reprogramming" of their metabolic pathways, that is, metabolism and energy production in the cell.

The researchers found that the lack of nutrients especially essential amino acids – causes pancreatic cancer cells to produce microRNAs that suppress production of oxygen-dependent energy (aerobic glycolysis) in the production of energy without oxygen (anaerobic glycolysis). This, in turn, reduces their dependence on essential amino acids and oxygen. "In the study, we discovered an unknown pathway - a bypass route where cancer cells respond to a lack of nutrients and oxygen by converting the usual energetic pathways into alternative pathways that allow them to continue to thrive." Professor Gil concluded by explaining the direct application of their research. "Based on our research, more effective treatments using a combination of chemotherapy and microRNAs could be developed."

A CONVERSATION WITH **PROFESSOR YEHUDA CHOWERS**

Professor Yehuda Chowers is the Director of Rambam Health Care Campus's Gastroenterology Institute as well as the Director of the Division of Research. He started working at Rambam in 2008 after he was offered the opportunity to establish the Service for Inflammatory Bowel Diseases (IBD).

Over the course of his career, Professor Chowers has co-authored more than 160 papers in professional journals including basic research articles, clinical research articles, guidelines, case reports and review papers. He has also been a lead presenter and quest speaker at conferences worldwide, and served on the organizing committees for a number of international professional conferences.

Staff Is The Most Important Aspect

When Professor Chowers is asked to talk about his work at Rambam, his responses are peppered with praise for the staff in both the Gastroenterology Institute and the Division of Research

"These units are excellent on every level, but I can't take sole credit - I feel very lucky to have an extraordinary group of doctors here. Our staff is excellent - professional, dedicated, and we have many researchers who are extremely capable. One of my greatest pleasures is to see doctors who were once my students at the beginning of their careers, and to be able to learn from them after they've completed their studies and developed expertise. We have some of the top doctors in the field. It's a privilege to work with them," says Professor Chowers.

On Cooperation

Professor Chowers is a proponent of fostering cooperation between different bodies involved in research, and while he believes that there have been improvements in this regard, there is always room for more. He places great importance on Rambam's unique cooperation with the Technion, sharing that one of the challenges of the Division of Research is to strengthen its cooperation with the Technion for the mutual benefit of both institutions.

Research Interests

Professor Chowers' research interests are focused on personalized therapy of inflammatory bowel diseases, and as a doctor, he still plays an active role in the IBD clinic. It weighs very heavily on him that after many years of experience, there is still a great deal of "trial and error" in trying to find the right solution.

In that vein, along with several colleagues, he launched a long-term study approximately six years ago, researching immune system characterization prior to and during treatment in order to understand how medications and treatments need to be changed. They have raised millions of dollars for this study, and have uncovered a number of interesting findings.

"The work is very challenging because it changed the direction and focus of my research," he reveals.

Facing Challenges

Professor Chowers believes that Rambam has a very "We need to worry about all of this, while remembering that good research infrastructure, though leading the division the ultimate goal is to provide cutting-edge medicine. We is not without its challenges. He cites resource challenges, think of ourselves as an institute that provides solutions, including a shortage of resources for investing in research. but it is an ongoing struggle to ensure that all of this takes "One of the goals we've set is to do activities that generate place, and to make sure that our institute has the latest income that will enable us to fund activities for the entire equipment and technology," says Professor Chowers. division." he explains. Despite the challenges, Professor Chowers is optimistic.

As head of the Gastroenterology Institute, he deals with "Even with the difficulties and limitations, there is a desire ongoing challenges such as integration of the institute's here at Rambam to look at the big picture, identify the right activities from an organizational standpoint. Another path, and move in that direction. I really believe that. This challenge is ensuring that the doctors on staff will be able is special at Rambam. My personal instincts tell me that to continue their professional development, and that they Rambam is run with the goal of achieving success for have the proper equipment for doing so. evervone."





UNDER INVESTIGATION TWO RAMBAM SCIENTISTS SHARE THEIR RESEARCH



Dr. Itay Maza

Dr. Itay Maza is an attending physician in Rambam's Gastroenterology Center of Excellence and his laboratory's PI in our Clinical Research Institute. His research interests include colorectal cancer (CRC), tumor heterogeneity, and epigenetic landscapes.

CRC is one of the leading causes of cancer-related mortality in Western countries. It results from genetic and epigenetic changes of the colonic epithelium. Genetic alterations include mutations in tumor suppressor genes and oncogenes--driving factors in the initiation and progression of CRC. Epigenetic mechanisms (heritable alterations in gene expression) can also lead to malignant cellular makeovers.

Previous CRC methylation profiles studied in laboratories provide limited genomic coverage. The biological data were comprised almost solely of CRC samples, ignoring pre-malignant adenomas.

Dr. Maza will use methylation profiling techniques on a genome-wide scale, to better understand the role of methylation changes in the carcinogenesis of CRC from normal tissue, to adenoma, and finally through invasive adenocarcinoma.



Dr. Shiri Soudry

Dr. Shiri Soudry is an attending physician in Rambam's Ophthalmology Department and her laboratory's PI in our Clinical Research Institute. Dr. Soudry's research focuses on protein aggregation processes and molecular self-assembly in the eye, and their impact on the pathogenesis of ocular diseases.

Dr. Soudry's team is exploring molecular self-assembly processes occurring in disease states in the eve. and their importance in major retinal disorders. They hypothesize that various peptides and metabolites accumulating in retinal degenerative and other disorders can self-assemble into complex toxic structures. One of the team's major ongoing research directions, with in vivo experiments on rats, focuses on amyloid-β-mediated retinal toxicity. This peptide, linked with brain neurotoxicity in Alzheimer's disease, may be implicated in age-related macular degeneration, the leading cause of severe vision loss among elderly subjects in the developed world. Modulation of amyloid-ß aggregation could ameliorate progression of retinal neurodegeneration, and may merit further investigation as a therapeutic strategy for this blinding disease.

GLOBAL MEDICINE

RAMBAM LEADS MASS CASUALTY TRAINING IN SHANGHAI

A delegation from Rambam Health Care Campus consisting of Director and CEO Dr. Michael Halberthal, Director of Nursing Gila Hyams, Director of Trauma and Emergency Surgery Dr. Hany Bahouth, and 2004 Nobel Prize Laureate Professor Aaron Ciechanover took part in a training project on trauma care with Shanghai, China's Ruijin Hospital.

In the first phase, members of the Rambam delegation participated in a seminar in Shanghai. During the second phase, a delegation from Ruijin visited Rambam for training. The third phase, in Shanghai, included a symposium and a large-scale mass casualty trauma drill. "We were pleased to work with our Chinese counterparts. By sharing Rambam's trauma experience, we can help other institutions," stated Dr. Halberthal.

RAMBAM PROVIDES TRAINING FOR AFRICA-BOUND STUDENTS

A group of Israeli medical students visited Rambam Health Care Campus to receive intensive ultrasound training using a high-end medical simulator prior to departing for Uganda for a humanitarian medical aid mission.

They were trained by Dr. Danny Epstein, a resident in Department of Internal Medicine B; Department of Internal Medicine H resident Dr. Erez Marcusohn; and Department of Medical Imaging resident Dr. Erez Klein. This training ensured that these students will be able to perform sophisticated diagnostic procedures.

Accompanied by Dr. Epstein, the students joined the staff at Kiboga Hospital, assisting with trauma patients and patients with other health disorders.

RAMBAM DOCTOR TRAVELS TO INDIA TO PERFORM SURGERY

Dr. Tzach Sharoni, a senior physician in Rambam's Department of Plastic Surgery, visited India with Operation Smile, which helps those suffering from congenital malformations, especially of the lips and palate. They have treated 200,000 patients.

The multinational delegation focused on patients whose previous procedures failed, and 90 were found to be suitable. The delegation found itself operating for six straight days—with the help of local volunteers—in multiple operating rooms.

"These surgeries are relatively rare and extremely complex. Sometimes, additional procedures are necessary," explains Dr. Sharoni. All surgeons meet strict standards to ensure the best possible outcome and leave these young patients smiling.





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10TH RAMBAM Summit AN EXCITING SCIENTIFIC CONFERENCE AND GLITTERING GALA EVENING

THE 2019 RAMBAM SUMMIT WAS DEDICATED TO THE FIELD OF INNOVATION IN THE WORLD OF HEALTH AND MEDICINE. HELD ANNUALLY SINCE 2010, THIS INTERNATIONAL EVENT EMPHASIZES THE INTERTWINING OF MEDICINE, TECHNOLOGY, AND HUMANITY. HUNDREDS OF RAMBAM'S FRIENDS IN ISRAEL AND FROM AROUND THE WORLD ATTENDED, TOGETHER WITH LEADING EXPERTS IN MEDICINE, INDUSTRY, AND THE ECONOMY.

∧ n integral part of the Summit is its annual "The AHealth of Tomorrow Conference", which focused on innovations in medicine. Deputy Mayor Nakshon Tzuk spoke about the municipality's commitment to reduce morbidity in Haifa and Rambam's role. Professor Ron Rubin, President of the University of Haifa, presented the Haifa Multiversity vision, and said that the university is currently collaborating with a number of institutions in fields like marine research, environmental planning, and more.

As befits a meeting highlighting developments and innovation, the conference topics were presented as 10-minute lectures. Topics ranged from innovations in the war against diabetes and in treating patients at risk for post-traumatic stress disorder to biotechnology. Guest lecturers Professor Marcelle Machluf, Dean of the Faculty of Biotechnology and Food Engineering at the Technion, and Professor Lloyd B. Minor, Dean of the Stanford University School of Medicine, provided fascinating updates on medical innovation.



L-R Shari Golan, Adam Emmerich, Dr. Michael Halberthal, Dr. Esty Golan, Liora Ofer, Ariela and Eitan Wertheimer



L-R Liora Ofer, Dr. Esty Golan, Eli and Effi Goldhar, Ilana Gavron

The conference concluded with a panel discussion about innovation moderated by Professor Rafi Beyar, President, International Friends Associations; and included the participation of Director and CEO Dr. Michael Halberthal; researchers Professor Minor, Professor Karl Skorecki, Professor Yehuda Chowers, and Dr. Ruth Perets; Director of Nursing Gila Hyams; and Professor Alon Wolf of the Technion. Professor Wolf explained that in the near future, Olympic athletes will swallow a "smart pill" that will monitor their bodies, providing information about their performance.

Summit events culminated in Rambam's traditional gala. Hundreds of guests attended the glittering event held in the Spencer Auditorium.

The audience included long-time friends and supporters, such as: Eitan and Ariela Wertheimer; Israel Greidinger, Chairman of the Israeli Friends of Rambam; Liora Ofer; senior managers from ISCAR; Professor Daniel Hershkowitz, State Service Commissioner; Effi and Eli Goldhar; Professor Peretz

Lavie, President of the Technion: Nobel Laureate Professor Dan Shechtman; Avi Abekasis; the family of Joseph Fishman; Uzia Galil, one of the founders of the Israeli high-tech industry; Levy Gerzberg, founder of technology giant Zoran; Meri Barer, President of the American Friends of Rambam; Professor Eliezer Robinson. Chairman of the Israel Cancer Association: and Or Shahaf, CEO of the Haifa Economic Corporation. Dr. Halberthal opened the evening on a personal note,



Dr. Michael Halberthal, Professor Rafi Beyar

sharing that he is the first Director who performed all of his medical training and career advancement at Rambam. He also thanked the donors who facilitated the hospital's rapid development over the last decade. Dr. Halberthal pointed out that, "Rambam would not have achieved such impressive achievements without its devoted staff."



Linoy Bar-Geffen, a popular Israeli television reporter and journalist, emceed the evening, which included an innovative presentation of Rambam's latest medical discoveries. The Summit concluded with a thrilling performance by "Shalva" Band.



The Shalva Band



THE 2019 RAMBAM

MR. JACOB HARPAZ

Mr. Jacob Harpaz is the hands-on leader of ISCAR, whose actions speak louder than words. Mr. Harpaz shows unwavering commitment to the people of Israel, and is known for his outstanding ethical and inspirational leadership of ISCAR with a people-centered business acumen.

As the CEO of ISCAR since 1994, Mr. Harpaz has subsequently received numerous awards honoring him for excellence in manufacturing and marketing campaigns. His commitment to quality includes a strong focus on staff retention, team work, educational advancement, and philanthropy. These standards permeate the ISCAR culture and have impacted Rambam Health Care Campus through the company's long-term and essential support of the hospital's needs. In acknowledgement of all the aforesaid, the Honorary Awards Committee has found Mr. Jacob Harpaz deserving of the 2019 Rambam Award.

PROFESSOR KARL SKORECKI

The only son of Holocaust survivors, Professor Karl Skorecki was born and educated in Toronto, Canada. A world famous nephrologist and geneticist, his research appears in leading professional and scientific publications.

Professor Skorecki has received several prizes, including the Lifetime Achievement Award from the Israeli Society of Nephrology and Hypertension and the Jewish National Fund Elkeless Prize for Excellence in Medical Research. He has annually received awards for his teaching for more than two decades, and students consistently praise his ability to make complex concepts easy to understand. Professor Skorecki's seamless weaving of faith with science has permanently raised the bar for translational research both worldwide and here at Rambam Health Care Campus. In acknowledgement of all the aforesaid, the Honorary Awards Committee has found Professor Karl Skorecki deserving of the 2019 Rambam Award.

AWARD RECIPIENTS

PROFESSOR LLOYD B. MINOR

Committed to clinical research, Professor Lloyd B. Minor is an expert in balance and inner ear disorders. He discovered superior canal dehiscence syndrome and developed a surgical procedure to correct and alleviate the condition.

Professor Minor led the development and implementation of an innovative model for cancer research and patient care delivery at Stanford Medicine and has launched an initiative in biomedical data science to harness the power of big data and create a learning health care system. He is a strong proponent of translational research, pedagogical innovation, and proactive personalized healthcare. As dean of the Stanford University School of Medicine, Professor Minor's visionary leadership is leveraging Stanford's strengths in scientific discovery to pursue use of genetic information, big data, and international medical and scientific collaborations to transform health care. In acknowledgement of all the aforesaid, the Honorary Awards Committee has found Professor Lloyd B. Minor deserving of the 2019 Rambam Award.

MRS. PATRICIA AND MR. ALBERT FRANK

Mrs. Patricia (z"l) and Mr. Albert Frank have shown lifetime commitment to the Jewish people and to the State of Israel. Philanthropy targeted towards the Jewish community, Israel, health, education, and quality of life were a joint mission for the Franks. As cofounders of IMPACT! in 2002, a scholarship program for Israel's combat soldiers administered by the Friends of the IDF, the Franks have enabled a new generation to pursue academic and career success.

Establishment of the Frank Family Nephrology Fellowship at Rambam, and their support of Rambam's Hematology and Bone Marrow Transplantation Institute is further enabling excellence in medical care. In acknowledgement of all the aforesaid, the Honorary Awards Committee has found Mrs. Patricia and Mr. Albert Frank deserving of the 2019 Rambam Award.



RAMBAM SWIM The HEART SWIM FROM THE HEART RAISES FUNDS FOR SUDDEN CARDIAC DEATH PREVENTION

"Swim From the Heart - Cape Carmel", an international non-competitive event jointly initiated by Rambam Health Care Campus, the Municipality of Haifa, Shvoong, and others, took place in Haifa. The swim is held to raise awareness of and mobilize funding for research for preventing sudden cardiac death in children and adolescents. More than 400 professional and amateur swimmers participated.



Dr. Halberthal and Professor Beyar with the winners

The Swim was launched in 2016, and the main attraction was Guy Cohen, who lost his daughter Neta almost 20 years ago on her first day of school, when she collapsed and died of cardiac arrest. Cohen became the first Israeli to swim for 24 hours straight in open water for more than 70 kilometers, all with the goal of raising awareness of sudden death in children. On July 18th, 2019, Cohen successfully swam across California's Catalina Channel. The Channel was Cohen's final leg of the "Triple Crown of Open Water", which also includes the English Channel and the Manhattan Island Marathon Swim. Cohen became the second Israeli swimmer and the first Israeli male to join this club.

Rambam Director Dr. Michael Halberthal launched the swim with Professor Rafi Beyar, President of International Friends Associations. Dr. Halberthal, who worked as a pediatric intensive care physician and established and managed the Pediatric Cardiac Critical Care Unit, said the years he spent caring for children contributed to his understanding of raising awareness for the prevention of sudden cardiac death. Dr. Halberthal and Professor Beyar accompanied the swimmers in a boat, tracking their progress. Participants included Dr. Arthur Kerner, Director of Rambam's Interventional Cardiology Unit, and Levy Gertzberg, one of Israel's high-tech industry founders.

During the Swim, an information booth was set up on the beach by Dr. Miri Blich of the Department of Cardiology, which is working to increase awareness of genetic testing to prevent cardiac arrest in young people.



Dr. Michael Halberthal and Professor Rafi Beyar accompany the swim

RAMBAM INTERNATIONAL RELATIONS

Marcus Mandie, CEO of the Australia-Israel Chamber of Commerce (Vic), and Elizabeth Proust visited Rambam for several meetings and a tour of the Sammy Ofer Fortified Underground Emergency Hospital. Mandie was given an overview of Rambam



by Dr. Michael Halberthal, and held meetings with Professor Eytan Blumenthal, Director of the Department of Ophthalmology, and Dr. Yair Feld, an attending physician in the Unit of Coronary Care, and the Director of the Innovation Lab. Rambam MedTech.



Janis and Dr. Rich Popp, Miriam Donoho, Dr. Yona Vaisbuch, Dr. Daria Mochly Rosen

n Palo Alto, California, Professor Irit Ben-Aharon, Director of Joseph Fishman Oncology Center, led a presentation on "Oncology in View of Time: What does the future hold?" The event was hosted at the home of Dr. Liora Schultz, a pediatric hemato-oncologist. Professor Ben-Aharon's presentation was well attended, reflecting cancer's predominance as a major health risk for families across the world.



L-R Marcus Mandie, Dr. Esty Golan, Dr. Michael Halberthal, Elizabeth Proust, Inbar Shahaf

I losted at the home of David and Miriam Donoho, AFORAM gathered for a program highlighting Rambam's collaboration with Stanford Medicine. Notable Stanford quest speakers

included Dr. Rich Popp, Dr. Eben Rosenthal, and Dr. Daria Mochly Rosen, who spoke about the opportunity to incorporate Stanford's educational programs at Rambam. Professor Rafi Beyar and Dr. Yona Vaisbuch, leading the effort at Rambam, concurred that Stanford's Biodesign and Spark Global programs will be a strong complement to sustaining a thriving life sciences and biotech hub in Haifa.



Sari Arshadnia, Dr. Eben Rosenthal, Dr. Liora Schultz, Merry Sherman



AFORHA event



Dr. Michael Halberthal, Dr. Esty Golan, Larry Wolfe



Professor Rafi Beyar at The Jerusalem Post Conference



L-R Abigail Zohar, Michael Sendowsky, Inbar Shahaf and Linda Sendowsky

FHORA (French Friends of Rambam) held A a fundraising event at Café de la Danse in Paris. The highlight of the evening was a performance by French lyricist and singer Frédéric Zeitoun. Proceeds from this successful evening were used to help cover costs for a one-week visit to Paris for a young pediatric patient from Ruth Rappaport Children's Hospital and his mother.

arry Wolfe visited Rambam Health Care Campus, representing the D. Dan and Betty Kahn Foundation. During the visit, he received an overview of Rambam from Professor Karl Skorecki and Dr. Esty Golan, and discussed cardiac electrophysiology and regenerative

medicine with Professor Lior Gepstein. Mr. Wolfe also toured The D. Dan and Betty Kahn Foundation Pediatric Pulmonary Unit, Joseph Fishman Oncology Center - Outpatient Clinic, and Sammy Ofer Fortified Underground Emergency Hospital.

Professor Rafi Beyar spoke at the Jerusalem Post Conference, telling audience members about all of the exciting developments and innovations happening on Rambam Health Care Campus. During his presentation, Professor Beyar spoke about cuttingedge medicine and innovation at the hospital's Ruth Rapaport Children's Hospital, Joseph Fishman Oncology Center, and The Eval Ofer Heart Hospital.

inda Sendowski and Dalia Melamed visited Rambam Health Care Campus with Linda's sister and brother-in-law. While at Rambam, the group met with Dr. Esty Golan and Inbar Shahaf, who presented them with a certificate, and were then

given a tour of the Rabbi Yechiel Eckstein Z"L Shock Trauma Room by Dr. Hany Bahouth, Director of Acute Care Surgery, and Director and Medical Director of the Teaching Center for Trauma, Emergency and Mass Casualty Situations. They also toured the Sammy Ofer Fortified Underground Emergency Hospital.



Dritish Friends of Rambam took Bpart in this year's Maccabi GB Fun Run. 3000 runners, 4500 supporters, and more than 60 charities participated in the Run. Gil Rustin, who was born at Rambam Health Care Campus with two club feet and was unable walk unaided, ran five kilometers with his surgeon Professor Mark Eidelman, Director of the Pediatric Orthopedics Unit. Anoushka and Sophia, the



grandchildren of Anita Alexander-Passe, Director of BFORAM, also ran five kilometers, all raising funds for the treatment of children with brittle bone disease.

 \bigwedge meeting was held between Barry Alper, Dr. Michael Halberthal and Dr. Esty Golan at Rambam. During the visit, Barry received a certificate and spent time in the Myra and Joel York Garden, near the entrance to Joseph Fishman Oncology Center. Inbar Shahaf and Shirley Erulkar gave him a tour of the Radiation Therapy Wing and the Sammy Ofer Fortified Underground Emergency Hospital. Barry was accompanied by his partner, Sarah Heller.







∧ German state Reheinland-Pfalz delegation, led by Minister of the Interior and Sport Minister Lewentz Roger $oldsymbol{\mathsf{A}}$ Günter Josef, visited Rambam. Dr. Michael Halberthal presented an overview of Rambam, and Director of Nursing Gila Hyams spoke about the Teaching Center for Trauma, Emergency and MCS. The delegation also toured the Department of Neonatology and Neonatal Intensive Care, Sammy Ofer Fortified Underground Emergency Hospital, and the Rabbi Yechiel Eckstein Z"L Shock Trauma Room.



Professor Mark Eidelman and Anita Alexander-Passe



L-R Barry Alper, Sarah Heller and Dr. Michael Halberthal

Delegation of the State Reheinland-Pfalz and the Rambam staff



Archbishop Mata Delegation with Rambam staff

A delegation led by Father Joseph Mata, Archbishop of the Greek Catholic Church in the Galilee, visited Rambam. Delegation members met with Dr. Michael Halberthal and Professor Myriam Ben-Arush, Director of Ruth Rappaport Children's Hospital. Father Mata presented the Joan and Sanford Weill Division of Pediatric Hematology-and Bone Marrow Transplantation with a donation collected from Church members. The delegation also met with some of Rambam's Christian staff members.



L-R Dr. Michael Halberthal, Harry Lederman, Dr. Esty Golan



Joel York, his children and the Rambam staff

During a visit to Rambam Health Care Campus, Harry Lederman spent time meeting with Dr. Esty Golan, Inbar Shahaf, and Abigail Zohar, who gave him a tour of the campus. He also met with Dr. Michael Halberthal, and Dr. Miri Blich gave a presentation on the Women's Heart Health Clinic, which he and his wife Sandi Gooch had donated to Eyal Ofer Heart Hospital.



Joel York and his two children visited Rambam in August. They met with Dr. Michael Halberthal, Dr. Esty Golan, and Inbar Shahaf, and toured the Myra and Joel York Garden as well as the Radiation Therapy Wing. During the visit, Joel was presented with a framed photograph of his late wife Myra as she planted the garden's final tree.



Professor Rafi Beyar and Ellen Pomerantz held a meeting with Robert Zarco and his sister Zelda Zarco in Miami, Florida. During the meeting, they discussed possibilities for holding events to raise awareness of Rambam Health Care Campus.



David Silvers, his fiancée, Hali Utstein, and her business partner, Jake Bergmann, spent time at Rambam Health Care Campus. They met with Dr. Esty Golan and the Department of International Relations and Resource

Development, and also held meetings with Dr. Igal Louria-Hayon, Director, Medical Cannabis Research and Innovation Center, and Roee Atlas. They also toured the Sammy Ofer Fortified Underground Emergency Hospital.

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Dr. Michael Halberthal and Professor Rafi Beyar met with visionary medical inventor and entrepreneur Dr. Patrick Soon Shiong and Dr. Lennie Sender in Los Angeles, California. They discussed opportunities



for collaboration with Rambam spanning digital health, cancer research and medical innovations.



NSW Delegation with Dr. Michael Halberthal



L-R Ellen Pomerantz, Robert Zarco, Professor Rafi Beyar



L-R Hali Utstein, David Silvers, Dr. Esty Golan and Jake Bergmann



Dr. Patrick Soon Shiong, Dr. Michael Halberthal, Professor Rafi Beyar, Dr. Lennie Sender

A n Australian Healthcare and Innovation Delegation from New South Wales visited Rambam. During their visit, they heard from Professor Yehuda Chowers, Dr. Michael Halberthal, and Dr. Esty Golan, and attended a panel discussion with Ronit Hirshberg, CEO, Rambam Health Corporation and Director,

Division of Marketing & Business Development; Roee Atlas, CEO, Rambam MedTech Ltd., Technology Transfer; and Dr. Ronit Almog, Director, Epidemiology Unit and Biobank.





Brazilian Soccer Players delegation

ormer Brazilian soccer players Cafu, Emerson, Aldair, César Sampaio, Amoroso, and Anderson Polga, and Brazilian footvolley player Natalia Guitlerwho were all in Haifa for a "Peace Game" against former Israeli players-came to Rambam Health Care Campus to visit with children hospitalized in

Ruth Rappaport Children's Hospital. The visit to Rambam was arranged by the Haifa Economic Corporation on behalf of the Haifa municipality and the medical center's administration.



Orna Amir Wollens, Raguel Wollens and Rambam staff

ackslashrna Amir Wolens and her daughter Raquel visited Rambam Health Care Campus, where they met with Dr. Michael Halberthal, Dr. Esty Golan, Professor Rafi Beyar, Professor Yehuda Chowers, and Professor Lior Gepstein. They also toured the Herta and Paul Amir Neurosurgical ICU, the Herta and Paul Amir Pediatric Cardiology Institute, Sammy Ofer Fortified Underground Emergency Hospital, Helmsley Health Discovery Tower, and Eval Ofer Heart Hospital. Orna is the daughter of Herta and Paul Amir.



L-R Inbar Shahaf, Dr. Esty Golan, Merav Weitzman and Noam Gdalyahu

n a celebratory meeting held at Rambam Health Care Campus, Noam Gdalyahu, Director of Social Responsibility for Aroma Espresso Bar, and Merav Weitzman, franchisee

of Aroma Espresso Bar at Rambam, met with Dr. Esty Golan and Inbar Shahaf and presented them with a donation earmarked for the purchase of a ventilator to replace older equipment.





L-R Gila Hyams, Dr. Michael Halberthal, Ariye Berkoviz, Dr. Esty Golan, Dr. Eval Braun, Professor Rafi Bevar

Adedication ceremony was held to celebrate the opening of the newly renovated Department of Internal Medicine H. AThe ceremony was held in the presence of members of Rambam's administration, including Dr. Michael Halberthal, Professor Rafi Beyar, Dr. Esty Golan, and Gila Hyams, as well as other Rambam employees.

Professor Kant Ravi, Director and CEO of AIIMS Hospital in Rishikesh, India, visited Rambam, accompanied by his wife, Dr. Bina Ravi, and two senior physicians from his hospital's Trauma Unit. They met with Dr. Michael Halberthal, Gila Hyams, Dr. Hany

Bahouth, Professor Yehuda Chowers and Professor Lior Gepstein, who talked about research initiatives and innovation projects. The guests were given a comprehensive tour of various treatment units and research laboratories.





Deborah Hemstreet, Bishop Paul Lanier, Inbar Shahaf, Safwan Marich and Abe Truitt







Professor Kant Ravi and Dr. Bina Ravi with Gila Hyams, Dr. Tomer Charas and Dr. Michael Halberthal

Bishop Paul Lanier, Chairman of the Board of the International Fellowship of Christians and Jews (IFCJ), visited Rambam accompanied by Safwan Marich and Abe Truitt, from the IFCJ. They toured the Rabbi Yechiel Eckstein Z"L Shock Trauma Room,

the Sammy Ofer Fortified Underground Emergency Hospital, the fortified command center, and the Pediatric Imaging Unit. They were hosted by Inbar Shahaf, Shirley Erulkar, and Deborah Hemstreet.



Rambam on call | December 2019



Purple Cow ceremony



Bryan Shuy and his delegation with Rambam staff

A ceremony was held at Rambam Health Care Campus to honor the memory Rafi Yogev, the father of Purple Cow co-owner Ran Yogev. Purple Cow has been donating gifts to the pediatric patients in Ruth Rappaport Children's Hospital for a long time. Asaf Smadar, who co-owns Purple Cow with Ran, decided to surprise his partner, making a donation in memory of his

partner's father. Those in attendance included Tamar Shochat, the Administrative Manager of Ruth Rappaport Children's Hospital; Inbar Shahaf; and members of Rafi Yogev's family.



Bryan Shuy, the United States Deputy Assistant Secretary and Chief of Staff and Assistant Secretary for Preparedness and Response, led a delegation to Rambam. They met with Dr. Michael Halberthal, Sara Tzafir, and Dr. Hany Bahouth, who spoke about Rambam

as a level I trauma center. The delegation toured the Sammy Ofer Fortified Underground Emergency Hospital and fortified command center, the Department of Emergency Medicine, and the Rabbi Yehiel Eckstein Z"L Shock Trauma Room.





Rambam Ride in Melbourne

A pproximately 70 cyclists participated in the second annual Rambam Ride – Cycling from the Heart with Maccabi Cycling Club that took place in Melbourne, Australia.

The ride was held to promote awareness of and raise funds for cardiovascular care at Rambam Health Care Campus. The event was opened by Member of Parliament David Southwick, and was also attended by Maccabi Victoria President Brian Swersky.

RAMBAM HOLDS SUCCESSFUL GALA FUNDRAISING EVENT IN LONDON

On May 21st, a gala was held by British Friends of Rambam Medical Centre at London's Cineworld Empire in Leicester Square, with all donations benefitting the Cardiac Catheterization Laboratory in Eyal Ofer Heart Hospital. The highlight of this red-carpet event was the world pre-premiere of "Rocketman". VIP ticket holders and other dignitaries were treated to an exclusive cocktail party.

The gala was supported by Cineworld cinemas and event sponsors XT Group, Barclays, Ernst & Young, LRC Group, The Jacob & Gitla Zukier Medical Fund, Teddy Sagi's company LABTECH, Jewish News, Bank Leumi, and First Class Protection. Attendees included more than 400 members of the local Jewish and Israeli communities and Rambam supporters from Israel and the United States. Circulating among the attendees were Israel Greidinger, Chairman of the Israeli Friends of Rambam and Director of Cineworld group: Rambam Director Dr. Michael Halberthal: Managing Director of International Relations and Chief of Strategic Development Dr. Esty Golan; Inbar Shahaf, Rambam's Head of Market Development and Donor Relations; and Gabriella Alexander-Passe and Anoushka Alexander-Rose of The British Friends of Rambam. Also in attendance was Ronny Rosenthal, a London-based, former Israeli soccer player who played for several European teams.



L-R Shari Golan, Dr. Esty Golan, Meri Barer, Dr. Michael Halberthal, Inbar Shahaf

Rambam 🐽



L-R Dr. Esty Golan, Dr. Michael Halberthal, Meri Barer



L-R Naomi Greidinger, Dr. Michael Halberthal, Israel Greidinger

"This gala event enabled us to raise awareness of Rambam in the British Jewish community. We are pleased by the number of people and sponsors who

supported us, and believe this event provided a greater understanding of what it means to be a world-class hospital in Northern Israel and the challenges we face. The funds will help us to move forward with our new cardiac catheterization laboratory, and to continue serving cardiac patients in Northern Israel and beyond," noted Greidinger.



RAMBAM HONORS DAVID GREEN AND DAPHNE WAGNER

David Green is the founder and President of Canadian Friends of Rambam, and he and his wife Daphne Wagner live in Toronto, Canada, with their children Lita and Mikey. David and Daphne are long-time supporters, and David serves as the driving force in raising awareness of Rambam throughout the country, facilitating and hosting meetings and special events, and galvanizing support among friends, family, and colleagues – all in a voluntary capacity.

David is involved in property development and management. Daphne is a lawyer by profession, however, following a tragic accident involving an automobile in which Lita and her cousin Hadas were seriously injured when they were babies, Daphne chose to put her career on hold in order to devote her life to caring for her daughter.

An unwavering passion for giving has always been a cornerstone of the Wagner-Green family, and was instilled in David from a young age by his mother, philanthropist Goldie Feldman, and father, Abraham "Al" Green (z"l), a businessman, philanthropist and artist whose philanthropy benefitting the city of Toronto earned him induction into the Order of Canada in 2002. Dr. Michael Halberthal, Rambam Health Care Campus's Director and CEO, is David's cousin and close friend, and it was his parentsespecially his mother-who initially drew David's attention to Rambam and convinced him to become involved.

Members of the Green family, among them Goldie Feldman, Herbert Green, Cary Green and David's siblings Barry, Donna, Karen, and Lindy, have been partnering with Rambam for many years, benefitting the residents of Northern Israel and beyond. Their generosity can be felt throughout the hospital and especially in Ruth Rappaport Children's Hospital, including the Wagner-Green Pediatric Intensive Care Unit, the six classrooms they donated together with several other Canadian donors, and the Goldie Feldman Pediatric Emergency Trauma Unit. They have also made an impact in the Medical Intensive Care Unit in Sammy Ofer Tower, and





Marlene and Dr. Michael Halberthal, Hana Halberthal,

by purchasing equipment for the Sammy Ofer Fortified Underground Emergency Hospital and the Department of Cardiology. David, Daphne, Goldie, Lita, and Mikey are part of the prestigious Maimonides Friendship Circle, and David, in recognition of his family's generosity and his tireless work on behalf of Rambam, received the 2013 Rambam Award - Rambam's highest, most exclusive honor.

The family has visited Rambam many times over the years, and often make the trip to Haifa when they travel to Israel. They have participated in several Rambam Summits and attended the farewell party for Professor Rafi Beyar when he retired from his position as hospital Director. For the Green family, Rambam Health Care Campus is clearly a family affair - and the feelings are mutual.

SPECIAL EVENTS

amily members, friends, and Rambam staff came together for the dedication ceremony of the Rabbi Yechiel Eckstein Z"L Shock Trauma Room. Rabbi Eckstein, founder of the International Fellowship for Christians and Jews (IFCJ), was a devoted friend of Rambam and 2012 Rambam Award winner who passed away in February 2019. Those in attendance included Rabbi Eckstein's daughter Yael, who now serves as President and CEO of the IFCJ: his widow Joelle: Dr. Michael Halberthal. Director of Rambam Health Care Campus: Professor Rafi Beyar, President of Rambam International Friends Associations; Dr. Esty Golan, Managing Director of the Department of International Relations and Chief of Strategic Development; Sheik Mowafag Tarif, the spiritual leader of Israel's Druze community; General (Res.) Yoram Yair, Chairman of The LIBI Fund; and Nava Barak, President of Elem.



L-R Dr. Esty Golan, Dr. Aziz Darawsha, Joelle Eckstein, Yoram Yair, Nava Barak, Dr. Michael Halberthal, Yael Eckstein, Dr. Hany Bahouth, Gila Hyams

n June 2019, Canadian Friends of Rambam (CFRAM) cosponsored the Celebrity Sports Dinner for the Rady Jewish Community Centre (JCC) of Winnipeg, Manitoba, Canada. The annual dinner is a fundraiser that attracts the Jewish community of Winnipeg as well as the general public, and many local personalities were in attendance. The quest of honor was former Major League Baseball star, Alex Rodriguez (aka A-Rod)-a talented and extremely inspirational athlete and celebrity.

This was an excellent opportunity for CFRAM to make itself and Rambam's wonderful work known to the Winnipeg philanthropic community. Representing CFRAM were Natalie and Guy Halberthal (son of Rambam Director Dr. Michael Halberthal); CFRAM Board member, Kerry Auriat; his daughter, Olivia; his partner and Rambam supporter, Cynthia Carr and her children, Zach and Charlotte; and David Green, President of CFRAM, his wife and Rambam supporter, Daphne Wagner, and their daughter. Lita.

The ceremony was moderated by Gila Hyams, Director of Nursing, and speeches were made by Dr. Halberthal: Dr. Hanv Bahouth. Director of Trauma and Emergency Surgery and Medical Director of the Teaching Center for Trauma, Emergency and MCS; Dan Lahat, a former trauma patient; Yael Eckstein: and Joelle Eckstein. A video about Rabbi Eckstein and prerecorded tributes from Jewish Agency for Israel Chairman Isaac Herzog; Israeli businessman and philanthropist Lev Leviev; Professor Beyar; Israeli-American businessman Haim Saban; Nava Barak; and Sheik Mowafag Tarif were also shown.



L-R David Green, Lita Green, Alex Rodriguez, Daphne Wagner

In co-sponsoring this event, CFRAM's goal was to raise awareness in Winnipeg about Rambam's important work in Israel. The message was delivered to more than 1,500 attendees, including the Premier of the Province, Mr. Brian Pallister. All agreed the evening was a wonderful success.

Rambam Health Care Campus Director Dr. Michael Halberthal Rtraveled to Melbourne, Australia, to raise awareness of Rambam. During his visit, which was hosted by Australian Friends of Rambam. Dr. Halberthal attended events held in his honor, met with leaders and members of the local community. and toured Alfred Hospital and Monash Medical Centre. A highlight of the visit was an event at Raheen, the residence of philanthropist Jeanne Pratt, in the presence of approximately 100 attendees as well as Israeli Ambassador to Australia, Mark Sofer. Professor Jeffrey Rosenfeld, President of Australian Friends of Rambam, addressed quests before inviting Dr. Halberthal to speak. Sofer and Pratt spoke warmly about Rambam.

A luncheon was hosted by the Australia-Israel Chamber of Commerce at downtown Melbourne's Crown Casino Hotel. During the event, Dr. Halberthal presented an overview of Rambam.

dedication ceremony was held to celebrate the A September 2018 inauguration of the Mesriani Inpatient Waiting Room in Joseph Fishman Oncology Center's Radiation Therapy Wing. The guests of honor were members of the California-based Mesriani family - Ramin, Mersedeh, Maya, and Millad, whose generous gift provides a quiet, calming space for cancer patients preparing for radiation therapy.

Those in attendance included Dr. Esty Golan; Dr. Salem Billan, Director of the Radiation Therapy Unit; Dr. Michal Mekel, Rambam Deputy Director; and Dr. Tomer Charas, Head of the Genitourinary Radiation Oncology Unit, who acted as moderator. In their greetings, all cited the importance of the facility and spoke of their gratitude for the Mesriani family. Cancer patient Ori Kuper also shared his moving personal story.



Mesriani family with Rambam staff





Dr. Michael Halberthal greets Ambassador of Israel to Australia Mark Sofer while Vered Harel, Director of Australian Friends of Rambam, looks on

In addition, Dr. Halberthal met with Victoria's Minister of Health, Jenny Mikakos, to discuss Rambam's groundbreaking work as well as opportunities for collaboration. "I was pleased to travel to Australia to raise awareness of Rambam and all the important work we do. These meetings and events have strengthened ties with the local Jewish community as well as with the Australian medical community," said Dr. Halberthal.



Vered Harel, Ambassador. Mark Sofer, Dr. Michael Halberthal, Minister of Health Jenny Mikakos, Professor Jeffrey Rosenfeld

Members of the Mesriani family addressed the audience as well, telling the story of Millad's battle with cancer and how his illness sparked their passion to ease the suffering of people around the world who were also affected by the disease. Following the ceremony, the family toured the Radiation Therapy Wing, unveiling the plaques that were mounted in their honor.

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