REWARDS OF RESEA

NOVEL HEART STENT TREATMENT COULD PREVENT COMPLICATIONS

For nearly a decade, Dr. Haim Danenberg has been grappling with the complications caused by inserting stents into clogged arteries to prevent heart attacks. While a Fellow and Senior Cardiologist in the Department of Cardiology, and during the three years he spent as a Visiting Scientist at the Harvard-MIT Division of Health Sciences and Technology, he began working on a way to prevent the negative side effects.

"Medicated stents, the current treatment, produce sudden recurrent clotting of the stent causing very nasty heart attacks with a high rate of mortality," Dr. Danenberg said. "This occurs rarely, but when it does, it has a 30-40 percent mortality rate – and anticoagulant medication to prevent this happening also leads to complications."

Now Director of Interventional Cardiology in Hadassah's Heart Institute, Dr. Danenberg is hopeful that the medication he developed will succeed in the clinical trials that began this fall.

Patients receive the medication during or after the stent procedure, decreasing the risk of a recurring blockage by preventing the overstimulation of the immune system. "It pinpoints the inflammatory cells and reduces their activity, which results in a better healing process and obviates the need for blood diluting medications."

The medication has already proven successful in animal trials. The current trial involves 300 patients in hospitals throughout Israel and is expected to last a year, Dr. Danenberg said.

Hadassah and the Hebrew University hold the patent for the medication Dr. Danenberg developed in cooperation with Prof. Gershon Golomb of the Hebrew University School of Pharmacy. Hadasit, Hadassah's technology transfer company, and Yissum, the Hebrew University technology transfer company, licensed the discovery to a new company called BIOrest, which is developing the product.

NEW MEDICATION HOLDS HOPE FOR CYSTIC FIBROSIS SUFFERERS

A new medication to treat cystic fibrosis (CF), based on research conducted by Prof. Eitan Kerem, Chairman of Pediatrics at Hadassah-Mt. Scopus, and Dr. Michael Wilschanski, Head of Hadassah's Pediatric Gastroenterology Unit, has successfully passed the Stage II clinical trials.

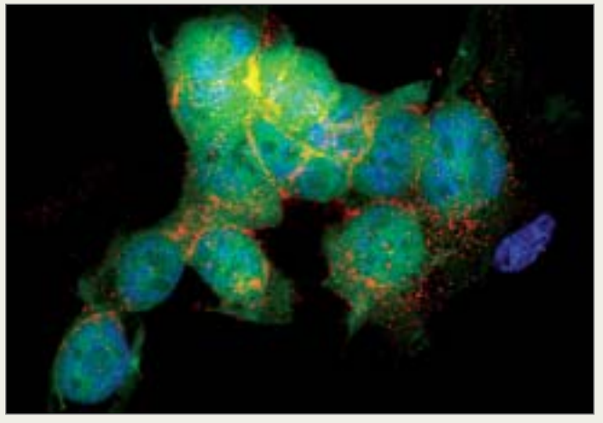
Developed by PTC Therapeutics of South Plainfield, NJ, the experimental treatment energizes the production of a deficient protein, causing it to return to its proper function. The successful results, published in the prestigious medical journal *The Lancet*, immediately attracted international attention.

The second stage of the recently completed clinical trial involved 23 adult patients with this mutation. More than 90 percent of them were in advanced stages of the disease and experiencing lung infections, diminished lung functions and failing pancreases.

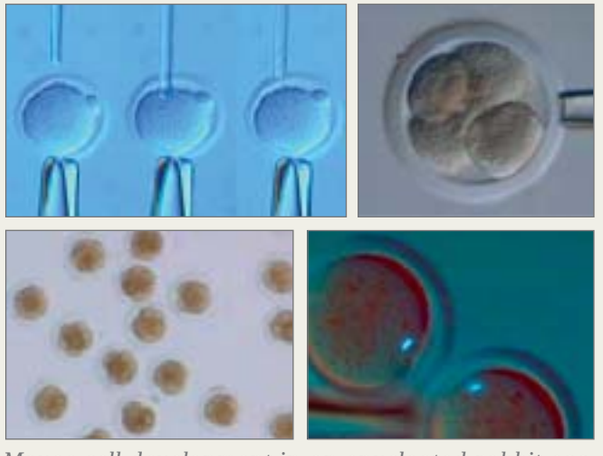
During the first cycle of the clinical trial, participants received three low doses of the medication every day for 14 days. After 14 days without treatment, they received three high doses for an additional 14 days.

In two cases, production of the deficient protein increased during the second stage; more than half of the patients already exhibited normal protein levels during the first cycle. Their lung functions improved and they gained weight.

Hadasit, Hadassah's technology transfer company responsible for the commercialization of Hadassah's intellectual property and research capabilities, orchestrated the agreement between Hadassah and PTC Therapeutics.



Human embryonic stem cells



Mouse cell development in an enucleated rabbit egg

HUMAN EMBRYONIC STEM CELLS REDUCE MULTIPLE SCLEROSIS SYMPTOMS IN MICE

Transplantation of human embryonic stem cells into the brains of a mouse with multiple sclerosis (MS) significantly slowed down the clinical symptoms and pathological manifestations of the disease, Prof. Tamir Ben-Hur, Head of the Department of Neurology and Prof. Benjamin Reubinoff, Director of the Human Embryonic Stem Cell Research Center reported recently in scientific journal of *PLoS*, a new, high-impact, peer-reviewed, open-access online publication. Their research team included Michal Aharonowiz and Dr. Ofira Einstein of Hadassah, and Prof. Hans Lassmann of the University of Vienna.

Multiple sclerosis is caused by an inflammatory reaction in which the patient's own immune system attacks the myelin sheath that envelops the nerve functions. The destruction of myelin leads to the degeneration, loss of nerve cells and permanent neurological disabilities. MS affects 2.5 million people worldwide.

Stem cell transplantation was initially used to regenerate destroyed myelin. However, this was the first time transplanted stem cells demonstrated the capability of suppressing the inflammatory mechanism.

"Human embryonic stem cell-derived neural precursors were transplanted into the brains of mice with an experimental form of MS," Prof. Reubinoff said. "The grafted human cells integrated in the mice brains and migrated towards the sites of inflammation. They suppressed the inflammatory process in the brain, consequently protecting the animals from demyelination and nerve cell extension injury, the pathological hallmarks of MS.

"We believe that the encouraging therapeutic effects in the rodent model of MS justify moving ahead to clinical studies. We also anticipate that in the future, the anti-inflammatory effect demonstrated in the pre-clinical study may be combined with the use of other human embryonic stem cell-derived neural cells to repair the myelin in the brain," Prof. Reubinoff said.

Hadasit, Hadassah's technology transfer company, announced that Cell Cure Neurosciences, a Hadasit BioHoldings Ltd (TASE: HDST) company, has started a translational research program that will lead to clinical trials in MS patients. Recruitment for baseline studies is expected to begin in the next year.

MOLECULES COULD LE

Throughout history, the desire to understand the cause of a disease has led to pioneering medical discoveries that changed medicine forever, saving millions of lives in the process. In generations past, physicians had to rely on their training and experience, what they learned from observing their patients and the results of laboratory tests.

The Human Genome Project, which mapped the human genetic code, revolutionized how doctors and scientists analyze diseases and research treatments and cures – creating the new and exciting field of molecular medicine. This new specialty focuses on the structure, composition and behavior of our cells and molecules – and how their malfunction impacts our bodies. And, in the process, enhances the practice of translational medicine, applying laboratory findings to clinical settings.

The causes of cancer preoccupy many of Hadassah's doctors and scientists, who are using molecular analysis to gain greater understanding of the disease while searching for potential treatment and cures.

Dr. Avi Nissan is a surgical oncologist specializing in gastrointestinal and colon cancer. Along with a full daily patient schedule, he heads the Surgical Oncology Laboratory at Hadassah-Mt. Scopus, where he explores the causes of the disease he treats and applies what he learns to his patients.

Dr. Karen Meir is a pathologist and Manager of the Israel National Tissue Bank at Hadassah. In their effort to create a national network of resources and information and establish an extensive database on patients throughout Israel, she and her colleagues are initially concentrating on colon and breast cancer.

Dr. Eli Pikarsky, a physician with a Ph.D. in molecular biology, heads the Laboratory for Molecular Pathology at the Hadassah-Hebrew University School of Medicine and is a member of the team that established the Tissue Bank. Using molecular techniques, he is also exploring the causes of cancer.

THE POWER OF PATHOLOGY

"We are looking for specific alterations that signify a specific disease," says Dr. Eli Pikarsky, M.D. and Ph.D., who heads the Laboratory for Molecular Pathology and is a member of the team that established the Tissue Bank. "Pathology is a very powerful diagnostic tool because it is based on a fundamental aspect of biology – the structure-function relationship. The form of the cell or tissue tells the tale of its function."

The advent of molecular pathology transformed how doctors and scientists approach a disease. Using tools developed by molecular biologists, they examine the molecular aspects of the tissue to find aberrant expressions and discover mutations, Dr. Pikarsky explained. "This changes the treatment the patients receive. This is the revolution that will enable tailored treatment and tailored prevention to reduce the chances of developing cancer."

Dr. Pikarsky is uniquely qualified to pursue this new form of pathological research. He holds a medical degree from the Hebrew University-Hadassah School of Medicine and a Ph.D. in molecular biology from the Hebrew University.

Most of his research on cancer aims at understanding the tissue mechanisms that are important in the

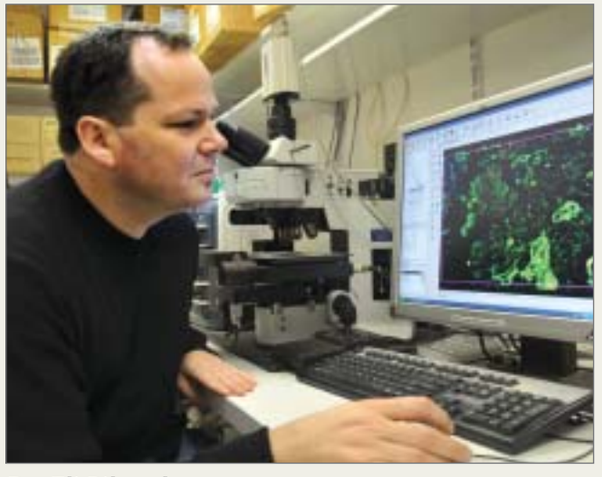
AD TO MIRACLES

different stages of the malignant process.

"Complex organisms such as humans are endowed with safety mechanisms that constantly prevent cancer. Cancer only develops when a mechanism – or several mechanisms – fail," he says. "Some of the mechanisms are tissue mechanisms whose interaction is responsible for implementing the safety mechanisms. Safety mechanisms are very powerful. If you understand the mechanisms, they can then be augmented by new or existing drugs."

Using mice genetically modified to develop tumors similar to those humans develop, Dr. Pikarsky is investigating signaling pathways that activate the malignant cells. By uncovering the steps to the transformation process, he hopes to identify specific molecular events that can be stopped, thus preventing cancer.

His target population is liver diseases. "We are succeeding in mice with liver cancer," he says, "but we have to make sure that what's happening in mice happens in humans. Before we test on humans, we need to test and demonstrate a causative role for a specific event." Down the road, he hopes to explore the molecular aspects of prostate, bladder, colon and testicular cancer.

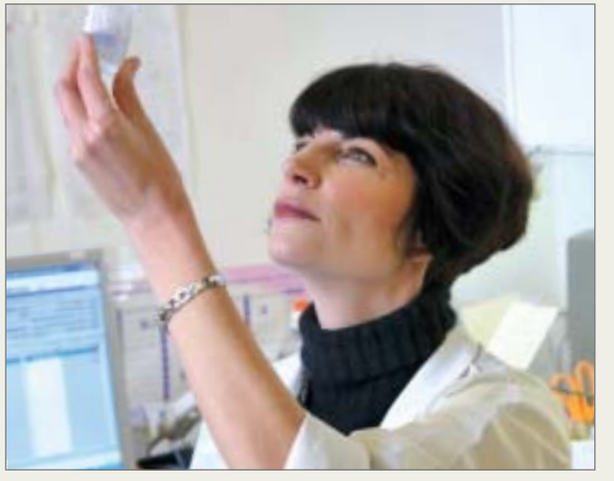


Dr. Eli Pikarsky

TRACKING THE TROUBLE SPOTS

"Pathology is literally the study of suffering to gain a basic understanding of the disease process," says Dr. Karen Meir of HMO's Department of Pathology and Project Manager of the Israel National Tissue Bank located at Hadassah-Ein Kerem.

In her subspecialty, the diagnostic pathology of the placenta and fetus, she looks for reasons why a pregnancy failed. "Everyone wants a healthy child," she says, "and pathology is one of the tools to make that possible."

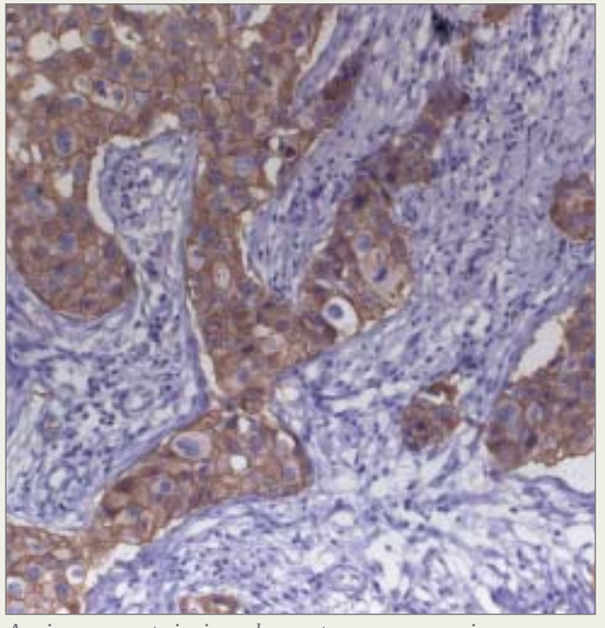


Dr. Karen Meir

All of pathology is moving to molecular medicine, she explains, which is why she works closely with Hadassah's geneticists, who examine the molecular structure and look for irregularities. "We are finding more things to identify and therefore, more things to test for in the future."

A native of Montreal, Dr. Meir credits an inspirational professor during her medical training in Canada with her decision to specialize in pathology. After her residency at Hadassah, she completed a fellowship in Embryofetal Pathology at the British Columbia Children's Hospital in Vancouver

MOLECULES COULD LEAD TO M



An immunostain in a breast cancer specimen

– and returned to Hadassah, where she is also responsible for managing the newly established Tissue Bank.

"The best thing about pathology is its multi-disciplinary nature," she says. "We work with many types of doctors and learn about many specialties. "The most sobering aspect of pathology is knowing that the patient's treatment will be based on the diagnosis we send back. It is a great responsibility."

TESTING TISSUE TO SAVE LIVES

Hadassah was selected to be the first site of Israel's National Tissue Bank and to coordinate a national effort so that other sites can be established in coming years.

Prof. Eithan Galun, Head of Hadassah's Goldyne Savad Institute for Gene Therapy, provided the impetus for this national project when he expressed his need for an infrastructure to connect the patient with the tissue so he could identify biomarkers of the diseases he is researching, explained Dr. Karen Meir, a senior pathologist at Hadassah and Tissue Bank Project Manager.

The Tissue Bank team is building a network of resources and collecting information to create an extensive patient database by encouraging surgeons to obtain the patient's "informed consent" to donate tissue specimens and biopsies related to specific malignant diseases and access to the patient's medical data. With a sufficient number of samples, doctors and researchers will be able to identify and study different markers, examine the origin and development of the disease, follow its progress and analyze its outcome using molecular biology and molecular-medicine tools.

Currently, they are collecting tissue from large solid tumors, including tumors of the breast and colon, with plans to add lung and pancreatic tumors in the future. As the Tissue Bank expands, so will the roster of diseases it encompasses.

The Tissue Bank is vital to the development of Tailored Treatment, where patients' genetic profiles are matched with the molecular profiles of the disease to determine the most effective therapies and develop new ones. Ultimately, it is believed, doctors will be able to predict the development of a disease based on biological markers and take measures to prevent it.

Nobel Laureate Prof. Aaron Ciechanover of the Technion-Israel Institute of Technology Rappaport Faculty of Medicine heads the central steering committee, which includes Prof. Galun, Dr. Meir,

Prof. Eithan Galun

IRACLES

Prof. Tamar Peretz, Head of Hadassah's Sharett Institute of Oncology, and Dr. Eli Pikarsky of HMO's Department of Pathology and the Hebrew University-Hadassah Faculty of Medicine.

DEDICATED TO UNDERSTANDING CANCER

"I see patients as patients – and the disease as a disease," says surgical oncologist Dr. Avi Nissan, who divides his time between treating patients at Hadassah-Mt. Scopus and heading the Surgical Oncology Lab he established there.

"When I look at surgery, I truly believe you can't just be a skilled and brilliant surgeon. You must understand both the disease and the patient. Unlike other surgical patients, cancer patients must first deal with the fact that they have cancer and then with the operation, which may or may not be successful. If you're not treating a patient, you're going to fail sooner or later," he says.

Dr. Nissan studied surgical oncology to "understand the disease, its biology and history." Then he spent two years at the Ludwig Institute for Cancer Research at New York's Memorial Sloan-Kettering Cancer Center conducting research in tumor immunology and the discovery of new targets for therapy. His patients benefit from his determination to learn more and do more.

When all else has failed, Dr. Nissan takes an aggressive approach to people with peritoneal metastasis – cancer that has spread into the lining of the stomach – combining radical surgery with intra-operative heated chemotherapy. "We can at least double their life span, however long that may be." And he saves about a third of the people who were told there was no hope.

He applies the same dedication in the lab, where he and his team are currently involved in researching the role of "non-coding RNA fragments" in the development of tumors; developing methods for the early diagnosis and detection of colon and breast cancer; the genetic mutations in Palestinian women with breast cancer; genetic profiling of colorectal cancer in young patients; molecular targets for cancer immunotherapy; molecular staging of sentinal lymph nodes in breast and colon cancer; and the expression of other transciptional regulatory sequences in human colon cancer.

They are conducting 15 clinical trials and, in the process, practicing translational medicine – taking what they have learned in the lab and using it to treat patients.

One of their projects involves looking at targets for biological therapy. Based on their molecular findings, they identified a molecule that can be detected in blood samples, lymph nodes and stool samples of colon cancer patients. "We are trying to use this molecule for real-time diagnosis," he says. "When combined with dye, we can

Dr. Avi Nissan

spread it on the suspected area and it will show presence of the molecule."

And they are developing a kit that will give doctors the ability to diagnose the disease with simple blood and stool tests. "This molecule is only for colon cancer patients and pre-malignant polyps. If a pre-malignancy is discovered, we send the patient for a colonoscopy, remove the polyp and spare the patient colon cancer."

Avi Nissan is enthusiastic about his work and his workplace. "Hadassah provides more funding to its researchers than the Chief Scientist's Office provides to all of Israel. Hadassah's focus on research is an exception. That's what makes it a great institution."

GIFTS FROM THE H

Elaine and Mel Weiser by their plaque in the Judy and Sidney Swartz Center for Emergency Medicine

A FAMILY CELEBRATION

It was a gala celebration at Hadassah-Ein Kerem when Elaine and Mel Weiser of Great Neck NY, had the exceptional experience of showing their children and grandchildren through the Medical Center they have supported with love throughout the years.

Accompanied by Dr. Yair Birnbaum, HMO Associate Director General and Head of Medical Services, they visited many of the sites that attest to their dedication. Mr. and Mrs. Weiser are Hadassah Guardians of the Dream. Mrs. Weiser, a member of Hadassah's National Board, is National Special Gifts and Donor Relations Chair.

FROM GENERATION TO GENERATION

During the Great Neck NY Family Mission they led, Miki and Steven Schulman had the great pleasure of joining their son and daughter-in-law Douglas and Ellen Schulman, in the dedication of their name on the Founders Wall in the Charlotte R. Bloomberg Mother and Child Center.

Miki and Steven Schulman are members of Hadassah's Society of Major Donors. Miki Schulman has held many positions during her years of dedicated service as a member of Hadassah's National Board. She currently serves as Centennial Coordinator for Hadassah's 100th anniversary in 2012.

Ellen Schulman, Miki Schulman, Steven Schulman and Douglas Schulman by the Founders Wall

Jerry and Aimee Ostrov with members of their family in the Judy and Sidney Swartz Center for Emergency Medicine

SHARING THE LEGACY

When Jerry and Aimee Ostrov of Long Branch NJ came to Israel to celebrate the Bat Mitzvah of their niece, Adina Goldstein, HMO Director General Prof. Shlomo Mor-Yosef accompanied them as they took some members of their family on a tour of Hadassah-Ein Kerem. Mr. and Mrs. Ostrov are members of Hadassah's Society of Major Donors. Mrs. Ostrov is past National Hadassah Chair of Major Gifts. Pictured by their plaque recognizing their gift of a triage room in the Judy and Sidney Swartz Center for Emergency Medicine are, from left: Adina Goldstein, Aimee Ostrov, their son-in-law Dr. Boris Veysman, Jerry Ostrov, Prof. Mor-Yosef, and Marjorie Goldstein, Aimee's sister.

EART

A SPECIAL GIFT FOR SPEECH THERAPY

Donna and Ron Bender of Encino CA, Hadassah Chaverim, have a special interest in helping people with speech and hearing problems. During their visit to Hadassah-Ein Kerem, they met with Haya Levi, Director of the Speech and Learning Center in HMO's Dept. of Otolaryngology, Head and Neck Surgery. The Center is the only one in the Jerusalem area and one of the few in Israel.

They are pictured unveiling the plaque honoring the Bender Family's contribution of a Speech Therapy Room in honor of her mother, Sylvia Orel.

Donna and Ron Bender unveiling their plaque in the Speech and Learning Center

Philippe and Catarina Amon with their son, Benjamin (right) with the paper cut created especially for them, with Dr. Yair Birnbaum (left) and Prof. Shlomo Mor-Yosef

SARAH WETSMAN DAVIDSON TOWER CORNERSTONE CONTRIBUTORS FROM SWITZERLAND

Accompanied by HMO Director General Prof. Shlomo Mor-Yosef and Dr. Yair Birnbaum, HMO Associate Director General and Head of Medical Services, Philippe and Catarina Amon of Geneva, Switzerland, toured Hadassah-Ein Kerem and received a comprehensive update on the progress of the Sarah Wetsman Davidson Tower and celebrated their commitment to the new facility, which will be dedicated in 2012.

In an intimate gathering with some of their family members present, Prof. Mor-Yosef and Dr. Birnbaum praised Mr. and Mrs. Amon for their dedicated involvement in Hadassah Switzerland's activities and their generous contribution to the Sarah Wetsman Davidson Tower. The highlight of the emotional ceremony was the unveiling of their Cornerstone and the presentation of a paper cut to mark the special occasion.

DEDICATED DONORS

Arnold and Elizabeth Berman and their daughter, Alyssa, of Glastonbury CT in the Day Care Unit in Pediatric Hematology Oncology, a gift of his parents, Rose and Edward Berman of Pittsburgh PA, Hadassah Guardians of Tomorrow.

Karen and Gordon Oppenheimer of Larchmont NY, Guardians of the Dream, toured Hadassah-Ein Kerem with Prof. Neri Laufer, Chairman of the Dept. of Obstetrics and Gynecology (left) and HMO Director General Prof. Shlomo Mor-Yosef (right). Mr. Oppenheimer is trustee of the Jean and Jula Goldwurm Memorial Foundation.

Dr. Albert and Laurie Kleinhaus of Woodmere NY, their daughter Michelle Schachter and their grandchildren, toured Hadassah-Ein Kerem with special stops by the names of her parents Gerry and the late Alfred Meyers, Hadassah Guardians of the Dream.

Malka and Robert Beren, of Wichita KS and Palm Beach Gardens FL, Guardians of Life, by the Israel Henry Beren Intensive and Intermediate Cardiothoracic Surgery Unit. Mr. Beren is Trustee of the Israel Henry Beren Charitable Trust.

Atty. Barry Laufer and his wife, Debra, of New York NY point to the name of his client Renee Sacks during their visit to Hadassah-Ein Kerem. Renee Sacks of New York is a Hadassah Guardian of the Dream.

Michael Gaffin (right) and Arnold Nemiroff of Boston MA, in the Dept. of Pediatrics at Hadassah-Ein Kerem. Mr. Gaffin and his wife Leslie, a member of Hadassah's National Board, are Hadassah Guardians of Tomorrow.

Marlene and Howard Kaplan of Highland Park, IL, Guardians of Tomorrow, during their tour of Hadassah-Ein Kerem with the Hadassah Associates Mission. Mrs. Kaplan is the National Hadassah Society and Guardian Donors Chair and Mr. Kaplan is President of the Hadassah Associates.

Barbara and Paul Fleischer, of Little Silver NY, with their daughter and son-in-law Laura and Peter Fisher, and their grandchildren Jonah, Sophia and Benjamin, in the lobby of Hadassah-Ein Kerem.

Frank and Hannah Cahn of Palm Springs and Los Angeles CA, members of Hadassah's Society of Major Donors, dedicate their gift in the Dept. of Pediatric Oncology and Hematology.

Cookie Shevin of Lincolnshire IL during her visit to Hadassah-Ein Kerem. Mrs. Shevin's name and that of her late husband, Jack, appear on the wall honoring members of Hadassah's Society of Major Donors.

Robin Stein of Bellaire, TX by the plaque at Hadassah-Ein Kerem honoring her relatives Mimi and Leon Toubin of Brenham TX, members of Hadassah's Society of Major Donors.

Hubert Guerrand-Hermès and Carol Anne Bundy of Paris at the site of the Sarah Wetsman Davidson Tower with HMO Director General Prof. Shlomo Mor-Yosef.

Karen and Jay Bycer of Paradise Valley AZ, members of Hadassah's Circle of Founders, with Prof. Shlomo Mor-Yosef in Ben-Gurion Square at Hadassah-Ein Kerem.

Irving and Muriel Berzon of Naples FL, members of Hadassah's Society of Major Donors, by the model of the Sarah Wetsman Davidson Tower at Hadassah-Ein Kerem.