Throughout the Jewish state’s history, Israeli doctors, scientists and researchers have produced countless medical advances. Whether achieved through independent research or joint projects with the United States, the medical discoveries made in Israel are improving the lives of millions of Americans and others around the globe. By encouraging advanced research and development, Israel has produced treatments for ailments ranging from paralysis to breast cancer to diabetes.

### HELPING OUR TROOPS

The IDF Medical Corps and the U.S. Army Medical Research and Materiel Command have held annual joint seminars for nearly three decades to coordinate research and development efforts in new military-medical fields. The 2012 seminar, called the Shoresh Conference on Military Medicine, welcomed representatives from the U.S. and Israeli militaries to share information about current and future medical research.

The three-day meeting offered more than 40 presentations, with topics ranging from “microbe hunting” to “physical training injuries.”

Lt. Gen. Patricia D. Horoho, commanding general of the U.S. Army Medical Command, commended the collaboration between the two militaries. “International partnerships such as this between the U.S. and Israel for military health research can build on this approach to improve health in both developed and underdeveloped countries around the world. Healthy countries are stable countries.”

“Our ties ... run much deeper than a military partnership,” said Horoho. “We can move beyond our military and political relationships and extend our health research partnerships to begin to change health. Our future for cooperative military medical research is bright. This continued sharing of our technology and healthcare research will keep both of our nations ready and resilient.”

### MEDICAL DISCOVERIES TO CHANGE OUR WORLD

#### CANCER RESEARCH

**PREVENTION**

Daniel Teper, founder and CEO of Israeli company Immune Pharmaceuticals, has found a new way to treat some cancers by using monoclonal antibodies. Currently, only a few chemo pharmaceuticals can be attached to each antibody, but Immune Pharmaceutical’s “guided missile” system sends thousands of drug molecules inside a nanoparticle, like a tiny spaceship, targeting the tumor directly for a more effective treatment with fewer harmful side effects.

**CURE**

Hezi Himmelfarb, the CEO of Israeli biomedical company IceCure, has begun trials that have successfully removed breast cancer tumors from patients using cryoablation. The technique uses patented technology to treat small cancerous tumors in the breast through an ultrasound-guided procedure that penetrates the tumor and destroys it by engulfing it in ice. The entire procedure takes about 10 minutes and requires no surgery.

**TREATMENT**

Scientists at Israeli company Vaxil BioTherapeutics have created a product called ImMucin that acts as a vaccine against cancer cells lingering in the body after surgery. ImMucin activates and enhances the body’s natural immune system to seek and destroy cancer cells already in the body—a medical advancement which will treat 90 percent of cancers and other diseases such as tuberculosis. The vaccine presents no side effects and can be taken indefinitely, like vitamins.

### PARTNERING WITH AMERICA

Doctors throughout Israel are working with colleagues in the United States and around the world in the quest to cure cancer. The Israel Cancer Center has partnered with international foundations such as Susan G. Komen for the Cure and Estee Lauder’s Pink Ribbon Campaign to increase cancer awareness and spread medical support to patients in need.

---

"We believe that our most important colleague, the U.S. Armed Forces, shares the same values, the same goals, and the way to get there. Above that, we feel that medicine is a true bridge to work on that."

— IDF BRIGADIER GENERAL YITSHAK KREISS
Developing Treatments and Cures

Eye

Researchers at the Hebrew University of Jerusalem, in collaboration with researchers at the Salk Institute in California, have discovered that a specific protein called Protein S is not only essential for maintaining a healthy retina in the eye, but also may unlock the key to understanding and possibly treating other conditions in the immune, reproductive, vascular and nervous systems, as well as in various cancers. Since Protein S is important for blood vessel formation, neutralizing Protein S in the blood vessels supplying blood to cancer growths could interfere with the cancerous blood supply.

Heart

Scientists from Israel’s Technion-Israel Institute of Technology have found a way to transform human stem cells from older diseased patients into brand-new, healthy, beating heart tissue. This means that someday heart disease could be repaired by using cells from a person’s own body, eliminating the need for surgery and transplants. The technology transforms unhealthy heart muscle cells into healthy ones by adding three genes and valproic acid to the nucleus of the cell. The new heart muscle cells grow in a lab dish with existing heart tissues and within one or two days both kinds of tissue work together as one.

Paralysis

The ReWalk is a product developed by Israeli electrical engineer Dr. Amit Goffer to enable wheelchair users with lower-limb disabilities to walk, climb stairs, and drive cars. The lightweight brace uses motors, motion sensors, and computers to restore a person’s mobility functions.

What we want to do is have the person wake up in the morning, put on clothes, put on the ReWalk, go to work and go throughout the day wearing it.”

— DR. AMIT GOFFER
Creator of ReWalk

Brain

The FDA has approved a magnetic helmet for treating depression. The helmet was created by the Israeli company Brainsway, and uses Transcranial Magnetic Stimulation (TMS). By applying the helmet for 15 to 30 minutes, repeated over several weeks, patients will find that this noninvasive procedure with no side effects is treating depression more comfortably than other treatments that target the brain directly. The helmet has already been approved in Europe to treat clinical depression, bipolar disorder, schizophrenia, Parkinson’s disease and PTSD.

Kidney

Injecting medicine through needles can be painful. To help ease the pain, Israel’s TransPharma Medical has developed the ViaDerm Drug Delivery System. ViaDerm is a pain-free, electronic applicator that pushes medication into the bloodstream through a patch. The device is ideal for diabetes sufferers and those who require daily injections. Medications adapted for ViaDerm can be time-released so patients who require multiple injections would only need to administer the patch once a day.

Stem Cells

Bonus Biogroup, a regenerative medicine company in Israel, has found a way to grow human bone from a patient’s own fat taken during liposuction. By taking the cells from fat instead of bone, the operation will be less painful and the healing process for patients will be faster. Using a 3-D imaging scan of the area of missing or damaged bone, Bonus builds a “scaffold” of the correct shape. A live culture of cells is introduced onto the scaffold inside a bioreactor that mimics the cellular environment of the body. After a few months, the bone is ready to be implanted into the patient’s body. Bonus has proven that the technology works in animal models, and expects it will be a success in human clinical trials.

For more details, visit www.aipac.org/strategicpartner