HERITAGE
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These Israeli scientists are giving new hope to kids with cancer

By Larry Luxner

TEL AVIV—For the past four decades, geneticist Dr. Yossi Shiloh has been researching the origins of a rare, crippling childhood disease, ataxia-telangiectasia.

Children with A-T suffer frequent infections and lung problems, and are usually wheelchair-bound by the age of 10 or 12. They're also 1,000 times more likely than healthy kids to develop cancer. The syndrome generally leads to death by the late 20s or early 30s—either from cancer or lung disease.

Though only 1 in 40,000 to 100,000 children worldwide are diagnosed with the disease, the prevalence among Sephardic Jews of Moroccan and Yemenite origin is astronomically higher: 1 in 100 have a chance at being carriers.

"There have only been a few hundred families with this disease in the history of Israel," said Shiloh, of Tel Aviv University. "We don't see too many patients these days because the families do prenatal diagnosis, and parents often prefer to terminate the pregnancies of affected children"

In Jerusalem, another Israeli scientist, Dr. Amir Eden of Hebrew University, studies the molecular processes underlying pediatric bone cancer and rhabdoid tumors. Elsewhere at the university, neuroscientist Dr. Oded Behar specializes in researching high-grade gliomas—devastating tumors that attack both adults and children.

The pioneering pediatric cancer research these three scientists are working on is a big part of the reason Israel has become a leader in the global fight against cancer.

Several key cancer breakthroughs in recent decades had their origins in Israel. Landmark drugs to treat leukemia and bone marrow cancer were the result of groundbreaking work by Israeli scientists. Researchers in Israel have been at the forefront of uncovering the role that genetic mutations play in breast cancer.

The work these three scientists are doing now on some of the fundamental causes driving cancers is giving parents around the world reasons for hope that more effective treatments for their children may be just around the corner.

Why genetic sequencing spurred a quantum leap in cancer research

The watershed moment in modern cancer research came in 2003, according to Eden, when the completion of the Human Genome Project made it possible to compare differences between the genetic makeup of cancers and healthy genomes. That led to a large-scale, international effort to study the DNA sequence of different tumors.

"For researchers, this was a revolution because until then, we were kind of in the dark," Eden said. "Many new mechanisms of cancer were discovered simply because we never knew they get mutated."

Eden's research focuses on a mutation in the SMARCB1 gene, which causes malignant rhabdoid tumor (MRT), an extremely rare pediatric tumor diagnosed in 20 to 25 U.S. babies a year. MRT generally starts in the kidneys but can also occur in other soft tissues or in the brain.

Larry Luxner

Dr. Yossi Shiloh, right, a professor of human genetics at Tel Aviv University's Sackler School of Medicine, is an expert on ataxia-telangiectasia syndrome, a pediatric cancer that disproportionately affects Sephardic Jews.

The lab Eden runs at Hebrew University's Life Science Institute with about half a dozen research assistants experiments on mice to understand the molecular mechanisms behind the development of the mutations that lead to the tumors. The hope is that by understanding the underlying molecular processes, scientists can figure out which processes to target so that treatments can be developed to alter those mechanisms.

"For example," Eden said, "our experiments with mice could show that if we eliminate a specific enzyme, the cancer doesn't occur. How to translate that into a drug that inactivates such an enzyme is someone else's job."

Eden's work, like that of so many other cancer researchers in Israel, is supporting by the Israel Cancer Research Fund, which doles out millions of dollars annually to Israeli cancer researchers.

Aborting cancerous tumors

Behar specializes in high-grade gliomas. Adults with these tumors typically develop them in the brain's cortex region, which is responsible for thinking. In kids, the tumors generally show up in the brain stem, which controls breathing and alertness.

Lacking effective therapy, these gliomas can cause death within months.

"The prognosis is terrible," Behar said.

It's not clear why children get high-grade gliomas. It's not a genetic disease. Neurons comprise about 30 percent of the brain's cells and glia make up the other 70 percent. To examine the cells more closely, Behar's team purified glia from the brain stem and cortex and then tested tumorous cells from post-mortem patients. They found that tumors originating in the brain stem proliferate much faster in the presence of brain stem glial cells than in the presence of cortex glial cells.

As with Eden's work, the focus is on discovering what causes the tumor to develop so the process can be aborted.

"We're utilizing these differences between the glial cells to identify the distinct factors that promote growth of the corresponding gliomas," said Behar, whose four-person lab at Hebrew University is supported by a two-year research grant from the Israel Cancer Research Fund. "Our hope is to catch those genes that are responsible for the interaction between tumors and glia. If we can target the interaction between the glia and the tumor and basically block that interaction, we can develop treatments that will be less sensitive to the tumor."

A deadly Sephardic disease

Shiloh, 69, stumbled upon A-T syndrome in 1977, while a graduate student in search of a doctoral thesis topic. While visiting a small village in southern Israel, he met a Moroccan Jewish family with 10 children, four of whom had the disease.

"I decided on the spot that this would be the subject of my thesis," Shiloh recalled.

The A-T mutation causes severe neuro-motor disability and chronic lung disease. Sufferers also have a predisposition to leukemia and lymphomas and extreme sensitivity to radiation.

First described in 1926 by two Czech doctors, A-T is inherited much the same way as other genetic disorders. If both parents are carriers of the disease-causing mutation, their children each have a 25 percent risk of developing the disease. Marriage within the family clan, once common among Jews in the Middle East and North Africa, increases the risk tremendously. A-T is not uncommon among Sephardic Jews and Arabs, but it's practically nonexistent among Ashkenazim in Israel

After years of research, Shiloh discovered the protein that causes A-T, called ATM.

"The ATM protein turned out to have many functions," Shiloh said. "It controls the cellular response to DNA damage caused by ionizing radiation. This protein is completely missing in A-T patients, and this explains the extreme radiosensitivity."

The immediate benefit of Shiloh's discovery was that it allowed, for the first time, reliable prenatal diagnosis of A-T. That led Shiloh's lab to carry out a pilot screening program in two Arab villages in Israel's Galilee with high A-T rates.

"If you can identify a family at risk before they have their first affected child, you can help them prevent this tragedy," Shiloh said.

Leading a lab in Tel Aviv with 13 employees, Shiloh is a long-time grantee of the Israel Cancer Research Fund, currently in year four of a seven-year ICRF professorship grant. The long-term funding, he said, has allowed him to focus on his work.

"Unlike other sources, ICRF is very attentive and flexible to our needs," Eden said. "With ICRF, when I want a piece of equipment that I didn't ask for in advance, I write to them, explain what I need and why, and they will generally approve it."

Since its founding, ICRF has distributed almost $64 million to researchers working at 24 Israeli institutions.

"Few challenges evoke a more impassioned response than cancer when it occurs in a child," said Dr. Mark Israel, national executive director of the organization. "Harnessing the innovative and committed focus of Israeli cancer scientists to impact in a meaningful way on this problem is an effort ICRF is proud of and will expand going forward."

This article was sponsored by and produced in partnership with the Israel Cancer Research Fund, whose ongoing support of these and other Israeli scientists' work goes a long way toward ensuring that their efforts will have important and lasting impact in the global fight against cancer. This article was produced by JTA's native content team.

Top cancer doc turns his sights toward Israel with new post

By Ben Harris

Dr. Mark Israel has spent his entire career focused on cancer.

He has worked in medical clinics, as a laboratory researcher and as director of the cancer center at Dartmouth's medical school.

But perhaps no position Israel has occupied in four decades in medicine offers as much influence and opportunity to help cancer patients as his new job: national executive director of the Israel Cancer Research Fund. The organization provides crucial funding for cancer research across more than 20 Israeli institutions.

"Israel is the center of so much pioneering cancer research," Dr. Israel said. "When I think about the science that's transforming cancer care, so much of it comes back to Israel. There's no place I'd rather be."

The focus of Dr. Israel's own research has been to understand the molecules driving the growth of cancerous tumors so that drugs to inhibit them can be developed.

This work is painstaking. It can take years for researchers to identify a target, and then many more before targeted drugs are developed. Breakthroughs are rare, and when they do occur they are often the result of the work of many researchers toiling individually in labs across the world.

In some key areas, those breakthroughs have come from Israeli researchers, who have made an outsized contribution to the cancer fight. Two Israeli researchers—both funded in part by the Israel Cancer Research Fund—won a Nobel Prize for work that led to a breakthrough drug to treat multiple myeloma, a blood cancer. ICRF-funded Israeli research also contributed to the development of the miracle drug Gleevec, used to treat a particularly aggressive form of cancer called chronic myelogenous leukemia. The list goes on.

Among the avenues of Israeli research Dr. Israel considers promising are immunotherapy, which seeks to harness the body's own defense system to fight cancer, and growth regulation and signal transduction, which attempts to identify how damaged genes drive tumor growth. The Israel Cancer Research Fund distributes about $4 million annually in grants.

Dr. Israel will spend the bulk of his time at the organization fundraising to support Israeli research projects, and the remainder evaluating grant proposals and determining which scientists to support.

"I see my role as providing the opportunity for people who want to make a difference in impacting the cancer problem," Israel said.

A native of Newburgh, New York, who has been married to his childhood sweetheart for 48 years and is a father to three grown children, Israel never wanted to do anything other than practice medicine. Throughout his career, he continually sought to place himself in areas of medicine where he could have the greatest effect on people's lives.

After graduating from the Albert Einstein College of Medicine, Israel worked as a pediatric intern at Boston Children's Hospital. Then he spent the next four decades focused on studying the ailments he saw in those hospitalized children.

"While treating children with cancer in the clinic, I realized that even the brutal, toxic treatments in use were oftentimes ineffective," Israel said. "I decided I could have a more substantial impact doing research that might provide an enhanced benefit for a much larger number of patients."

As a fellow in pediatric oncology at the National Institutes of Health, Israel developed a special interest in neuroblastoma, a type of tumor that affects nerve tissue and occurs almost exclusively in children.

Israel eventually rose to become the director of Dartmouth Medical School's Norris Cotton Cancer Center, where he was in charge of delivering comprehensive clinical care to more than 30,000 patients every year.

The cancer center in New Hampshire has an annual research budget of approximately $50 million and is one of only 69 U.S. facilities designated by the National Cancer Institute as a comprehensive cancer center. In Israel's 15 years there, the center grew to encompass 16 outreach centers across New England that brought advanced cancer care to rural communities and small regional hospitals. It also made significant advances in research capacity, particularly the development of a bioinformatics program—an approach to research that mines enormous data sets to identify patterns useful to researchers.

"I have known Mark for more than 20 years and have followed his many important contributions to science," said Dr. John Mendelsohn, past president of the MD Anderson Cancer Center in Houston. "Mark is a superb choice to lead ICRF. He is uniquely positioned to understand the science and to advance ICRF's mission to discover new and more effective treatments in the battle against cancer."

In his new position in New York, Israel is not only raising money for some of the most promising cancer research being done in the Jewish state, but also providing a counterpoint to those who seek to isolate Israeli scientists as part of the Boycott, Divestment and Sanctions movement against Israel, known as BDS.

"Today's efforts by many in many countries to manipulate Israeli science and universities to force political change was abhorrent to me," Israel said. "When thinking about my next job, I wanted to find something that would support Israeli science and Israeli scientists."

Dr. Mark Israel, once director of cancer care at Dartmouth in New Hampshire, where he was responsible for care of 30,000 patients per year, now is focused on supporting cancer research in Israel.

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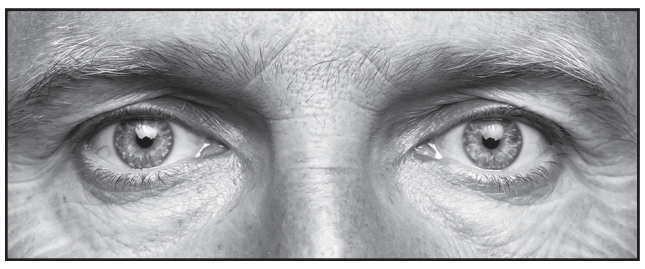
Compound protects against cell damage that leads to macular degeneration



GAINESVILLE—For macular degeneration patients, blurry vision emerges slowly as cells in and around the retina get damaged. Now, University of Florida Health researchers have found that a chemical compound improves eyesight in mice with macular degeneration and helps to protect human retinal cells.

The compound produced an antioxidant effect on human retinal cells, protecting them against the cell-damaging effect that occurs when oxygen is metabolized. In mouse models, the compound produced sharper vision and preserved the structure of support cells that are crucial to eyesight, researchers found.

Those findings suggest that the drug, and others like it, could be useful in preventing so-called "dry" macular degeneration, according to Alfred S. Lewin, Ph.D., a professor in the UF College of Medicine department of molecular genetics and microbiology and a faculty member of the UF Genetic Institute. The results were published recently in the journal Experimental Eye Research.

There is no current treatment for the "dry" form of macular degeneration, a disease of the retina that causes blurry central vision and sometimes leads to blindness. It accounts for up to 90 percent of the 15 million cases of age-related macular degeneration in the United States, according to the Macular Degeneration Partnership.

During initial testing on human retinal pigment epithelium cells, the compound known as 8-OH-DPAT induced a suite of enzymes that provided protection against damage from oxidation, researchers found. Cell survival improved from 10 percent to about 65 percent when increasingly larger doses of the chemical were used.

Healthy retinal pigment cells are especially important in preventing dry macular degeneration because they help to support light-sensitive photoreceptor cells that are critical for vision.

Following the testing on human cells, Lewin's team then studied how the chemical worked in a mouse model. After deleting an enzyme to make the retina age faster, researchers treated the mouse models with the chemical for four months. Not only did they find that the retinal tissue was protected, the mouse models also developed sharper vision, Lewin said.

The chemical appears to protect both the retina and its supporting epithelium cells by boosting the production of antioxidant and detoxification proteins, researchers found.

"The most important thing is that there is a class of drugs that may protect against a disease that affects 6 percent of the people over age 50, and a large number of people in Florida. Among this class of drugs, we may be able to find a tolerable dose that slows down retinal degeneration for people with dry macular degeneration," Lewin said.

While the chemical used in the research has yet to be tested in human clinical trials, researchers said the class of drugs that includes 8-OH-DPAT appear to be safe and worthy of further study. The doses of 8-OH-DPAT used in the research would be considered tolerable in humans, Lewin said.

Now, researchers are studying an oral form of a similar drug that provides the same protective benefits to the retina and surrounding tissue, Lewin said. That drug could be tested in humans relatively soon because it has already undergone a large clinical trial, he added.

Research funding was supplied by grant M2012019 from the BrightFocus Foundation and an Alcon Laboratories Inc. grant. Other support was provided by the Shaler Richardson Professorship endowment and National Eye Institute core grant P30 EY02172.

Vision-improving nanoparticle eyedrops could end the need for glasses

High-tech eyeglasses can give blind people the ability to see, but could the development of eyesight-improving eyedrops help eliminate the need for glasses altogether? Quite possibly, suggests new research coming out of Israel's Shaare Zedek Medical Center and Bar-Ilan University.

A team of ophthalmologists at these institutes have invented and tested "nanodrops"; combined with a laser process, they reportedly lead to improvements in both short- and long-sightedness (also called near- and farsightedness). Clinical testing in humans is set to take place later in 2018.

"The invention includes three parts," Zeev Zalevsky, professor of electrical engineering and nanophotonics at Bar-Ilan University, who worked on the project, told Digital Trends.

The first of these steps involves an app on the patient's smartphone or mobile device that measures their eye refraction. A laser pattern is then created and projected onto the corneal surface of the eyes. This surgical procedure takes less than one second. Finally, the patient uses eyedrops containing what Zalevsky describes as "special nanoparticles."

"These nanoparticles go into the shallow ablated patterns generated on the surface of the cornea," he explained. "They change the refraction index inside of those patterns. This corrects the visual problem the user has. The process of correction can be done at home without the need of a medical doctor."

Zalevsky said that the treatment differs substantially from regular laser eye surgery, which removes a significant portion of the cornea, the transparent layer that forms the front of the eye. In the new process, only the upper part of the cornea is affected. The benefit of this approach is that, not only does it mean that the treatment can be safely carried out in a patient's home without medical supervision, but it should prove effective for far more patients.

The downside of the approach is that, because it is a milder treatment, the eye will gradually heal itself, which means that the improvements will subside. As a result, patients would need to repeat the process every one to two months to maintain their superior eyesight.

So far, the team has carried out ex-vivo experiments on pig eyes. These tests demonstrated improvements for both myopia and presbyopia, meaning short and long-sightedness. "We showed that... the nanoparticles went into the surface patterns and that without them no correction is obtained," Zalevsky said. "We are now raising funds in order to commercialize this technology from Bar-Ilan University. We intend to finish in-vivo tests within one year, and I hope that within two years the product may be available [on] the market."

Swimming lessons and embarrassing moments

Marilyn Shapiro enjoying a swim.

By Marilyn Shapiro

As schools let out for the summer, children head to the beach or the pool. Fortunately, my own first experiences with swimming certainly did not seriously hurt my current enjoyment of the sport.

In 1952, my parents moved our family from Potsdam to Keeseville. Both were small upstate New York towns. But whereas Potsdam had a college, including the Crane School of Music, Keeseville was a fairly poor mill town. Soon after my father took over as manager of Pearl's Department Store, the business at Prescott's Lumber, the company that made wooden television cabinets, slowed as manufacturers moved to less expensive metal cases.

Our new home, however, had one major advantage. Keeseville was located less than four miles from Port Douglass, a lovely spot on Lake Champlain that offered a sandy beach with a diving raft a hundred yards off shore. My mother grew up within walking distance of Coney Island's beach and boardwalk and loved the water. She was determined to get her license so she could drive us to the beach herself during our summer vacations.

As we lived only a block away from Pearls, my mother would walk me over to the store, hand me over to my father, and then drive away with Mr. Holdridge for her weekly driving lesson. While Dad managed the cash register, I sat in a back corner of the old building, listening to 78 RPM records: Walt Disney's Snow White and the Seven Dwarfs; Brothers Grimm and Hans Christian Anderson stories read by Danny Kaye; James Thurber's The Thirteen Clocks. Mom passed her driver's test on her third try. Soon after, she got her license in the mail, and I got the take those special records home to listen again and again on our family photograph.

Every summer afternoon, weather permitting, Mom would pile all of us into the station wagon, along with whatever friends tagged along. We would happily bounce our seat-beltless way to beach, nestled between towels, a couple of chairs, a cooler filled with snacks and drinks, and—once Bobbie was born—a playpen and a diaper bag. Once we got there, we dumped everything onto the sand. Mom would sit in a chair chatting with to her friends as we ran into the usually freezing water. (This was Upstate New York, remember, where the water temperature ranged from sixty degrees in early June to a balmy seventy degrees by August.)

I remember the beach, but I also remember the day—I was probably four—that I waded in too far and found myself over my head. I frantically struggled in three feet of water, going under once, twice, three times. Luckily, a teenager who was standing near my dilemma, fished me out, and put me back on shore. Sputtering, scared, but safe, I ran back to our blanket.

"I drowneded!" I told my mother. "That's nice, sweetheart," my mother said, and went back to her conversation with her friends.

In the years that followed, I, along with many of my friends, took swim lessons at Port Douglass. For six weeks a summer, we caught an 8 a.m. bus provided by the town to take classes taught by high school students. The four years of lessons are etched in my memory through the songs we would sing while being shuttled back and forth: Wake Up Little Susie (1957); Tom Dooley (1958); Battle of New Orleans (1959); and Tell Laura I Love Her (1960). We'd get home in time for lunch and often a second trip to the beach with Mom behind the wheel.

Around 1961, a swimming pool facility was built near Ausable Chasm. Our family obtained a membership, and we split our time between the sandy beach and the warmer waters of the pool. In 1966, our parents purchased a cottage on Willsboro Bay, across from Burlington, Vermont. We swam off our boat dock and off the small public beach adjacent to our property.

It was also during those summers in Willsboro that I learned how to water ski, resulting in one of the most embarrassing moments of my life. When I was 16, I was water skiing behind a boat driven by a very cute neighbor with his equally cute friend, who was spotting me. All of a sudden I realized that I had lost the top of my two-piece bathing suit. I quickly let go of the towline and submerged myself up to my neck in the middle of the bay. The two "Troy Donahue" twins brought the boat around to retrieve me. They somehow managed to hold their laughter as they handed me my aqua and white ruffled top—now missing their two back buttons—while I handed over my skis.

While in college, I occasionally swam laps in the university's athletic center, but my pool time increased exponentially once Larry and I had children. We joined a neighborhood pool four miles from our house. Adam and Julie played in the water with friends and I caught a few laps during adult swim. They both took swim lessons and subsequently joined a swim team. We spent many a summer night with timers in our hands as Adam, Julie, and their teammates made their way back and forth the pool with their breaststrokes and freestyles and butterflies.

Larry was not much of a swimmer himself, but he insisted both children get their lifeguard certification. For several years, they got jobs life guarding at our town pools and at college pools. Julie spent two summers managing the pool at The Hole in the Wall Gang Camp in Connecticut, a resort for seriously ill children founded and sponsored by Paul Newman. While Julie occasionally has opportunities to swim, (Nearby mountain-fed Lake Dillon rarely gets above 63 degrees in the summer), Adam still swims regularly in indoor pools near his San Francisco apartment.

In Florida, I swim in our neighborhood pool several times a week. The water is heated to 82 degrees, so warm for my Upstate blood that I have been known to do laps when the air temperature is under 60 degrees. I am a strong swimmer, gliding slowly but steadily back and forth in my lane for 40, 50 minutes without a break. But once in a great while, I inhale a mouthful of water, start choking, and lean on the side of the pool to catch my breath. For that short moment I remember once upon a time, I "drowneded," but I have lived to tell the tale.

Marilyn Shapiro lives in Kissimmee. She writes regularly for the Jewish World in Schenectady, and published her book "There Goes My Heart," which is available on Amazon. You may also follow her on her blog, theregoesmyheart.me.

How a DNA test made me feel more Jewish than ever

By Zibby Owens

(Kveller via JTA)—I had a life-changing experience recently that transformed how I feel about my body, my health, my sleep and my identity. And it all started with a gob of spit.

I don't know why I bought a 23andMe DNA kit. Maybe I saw an ad. Perhaps a friend recommended it. I can't remember, but I've always been curious about my ancestry, my background and my health. (I mean, who isn't?) So I went online and bought a kit.

When it arrived, however, I let the small, square white box sit in a drawer beneath my sink for at least a month. Maybe two. I was eager to try it but could not mentally prepare for having to decipher what I assumed would be complicated instructions. Plus, I knew I had to do the test after 30 minutes of not eating and drinking—and, seriously, when does that ever happen?

At the urging of my 10-year-old daughter—an inveterate snooper—I finally decided to take the plunge. I opened the box, read the (surprisingly simple) instructions, then spit into the little test tube. Later that morning I tossed the completed kit in a nearby mailbox. That's it. Then, between raising four kids, hosting a podcast and writing, I forgot all about it.

But six weeks later, as I was emailing various moms about play dates, I got the email: "Your reports are ready." I stared at it in my inbox. At first I felt paralyzed: What if it was bad news? Could I handle knowing I was at a higher risk for Parkinson's? What if I carried the BRCA1 or BRCA2 gene? It was like one of those movie scenes where my index finger hovers over the keyboard, and all sound and motion stops.

But then I clicked.

First I clicked on the Ancestry report. The result? My background is—wait for it—98.4 percent Ashkenazi Jewish. Though this wasn't exactly a surprise, I discovered I found power and meaning in that statistic. Even though I've always known that I was Jewish, seeing it written like that—in my DNA, the very fibers of my being—made me pause. This wasn't just about "tradition, tradition, tradition," this was my blood. A heritage, a culture, a background—the very core of my being.

Seeing these results somehow strengthened my resolve to observe Shabbat every Friday night, which despite always buying the challah and planning on it, I occasionally forget. I mean, this is who I am! It's more than a religion; it's my entire body. I'm not even just Jew-ish; I'm like, really Jewish. A 98.4 percent felt like getting an A in Judaism. Observe—or else.

The result also reinforced all my decisions to enroll the kids in Hebrew school (b'nai mitzvah booked for 2020—stay tuned!), take them to Tot Shabbats and kiss the mezuzah every time we enter our home. It made me feel a renewed kinship with all other Jewish people—a feeling that's not only cemented by a legacy of surviving persecution but by our blood ties alone.

Of course, the results of the DNA test weren't all positive. I held my breath as I clicked on Health Reports. One by one, I scrolled down the tests. All was well—until I got to late-stage Alzheimer's. I learned I have a copy of the E4 gene variant, which means I have a "slightly increased risk" of developing late-stage Alzheimer's. This means that while the population at large has a 3 percent chance of Alzheimer's by age 75, I have a 5 percent to 7 percent chance. By age 85, the odds increase. Thankfully, I don't have two variants—that would have further increased the odds—but still. My great-grandmother had Alzheimer's.

Seeing this, my anxiety got the better of me. (I mentioned I was 98.4 percent Jewish, right?) I quickly did the math and calculated, worst-case scenario, that I have just 33 more years left with my memory intact. (If you could even call it that now.) That's 33 more Chanukahs, 33 more birthdays for each kid. My youngest child will only be 36 then! Will he have kids by then? Will any of my kids have kids? How can I live my life better now to prepare for this?

As my panic subsided, I resolved to live more for the moment—or try to, anyway—and to appreciate life events more as they rolled around. I told myself we'd celebrate Shabbat no matter what, even if it were a makeshift affair at a Benihana knockoff along Route 27 late on a Friday night. I vowed to thank God when my little guy—my fourth child, my miracle baby—said something sweet, like earlier this evening when he looked up and said, "I just want to snuggle with you, Mama," and hugged me close. I'm clinging to moments now—recording them, writing them down, savoring them. Who knows how many I have left? (And, just to be safe, I'll start to give to some Alzheimer's charities, too.)

The 23andMe test opened my eyes to many things: I now know, for example, that my weight is genetically exactly average for others with my ancestry, so I can stop beating myself up for not looking like those skinny, blonde WASPs. But also I'm sporty, and I learned I carry the same gene that many elite athletes do. Also, incredibly, both poor sleep and drinking lots of coffee also were in my DNA results.

So now I know: I'm a forgetful, size 8, athletic Jew who sleeps badly and drinks lots of caffeine, and this isn't just thanks to my behavior but due to my entire genetic makeup. I'm ready to embrace all that that means. Thanks, 23andMe.

Zibby Owens is a freelance writer and mother of four in New York City. She also co-authored the book "Your Perfect Fit" [McGraw-Hill]. Follow her on Instagram @ zibbyowens.

Kveller is a thriving community of women and parents who convene online to share, celebrate and commiserate their experiences of raising kids through a Jewish lens. Visit Kveller.com.

Six facts about smiling

By Dr. Yvette Alt Miller
Aish Hatorah Resources

Modern science is discovering what Jewish wisdom already knew: smiling is crucial to our well-being.

A smile can make someone's day. That's the conclusion both of modern researchers and ancient Jewish thinkers who long recognized the crucial role a smile can play in our well-being. Here are six facts about smiles, reflecting Jewish wisdom and modern scientific findings.

1. Smiling improves health.

The very act of smiling can make us happy. That's the surprising finding of two psychological scientists, Tara Kraft and Sarah Pressman, of the University of Kansas, in a groundbreaking 2012 study. They divided people into groups and asked them to complete a series of stressful tasks; some were asked to smile while others were not.

The results were striking. Participants who smiled experienced markedly lower levels of stress. "The next time you are stuck in traffic or are experiencing some other type of stress, you might try to hold your face in a smile for a moment" explains Dr. Pressman; "Not only will it help you 'grin and bear it' psychologically, but it might actually help your heart health as well!"

2. Smiling is contagious.

Smiling at someone is the surest way to put a grin on their face—and make them feel happy. People subconsciously mimic the facial expressions of the people around them. When we see a smile, we often can't help but follow suit. "Smiling will change our body's nervous system in a way that fits with happiness," explains Adrienne Wood, a researcher at the University of Wisconsin.

3. Commanded to smile.

"Receive everyone with a cheerful face," advised the great Rabbi Shammai (Pirkei Avot 1:16) in a famous piece of advice that people still try to follow to this day.

4. Smiling makes us more attractive.

Smiling makes us more attractive than being healthier, losing weight and wearing makeup. That's the surprising finding of a 2017 study at Swansea University in England. People judging the attractiveness of men and women in photos consistently rated those who were smiling as more beautiful. The effects of having a smiling expression were as powerful as being slim, wearing makeup, and being young, researchers found.

5. Your smile affects everyone around you.

Your face is in the public domain. The expression you wear affects everyone around you. The Chazon Ish noted that smiling is not just a personal matter. Exuding happiness has a profound influence on everyone around us.

6. Smiling helps us to see the world as a better place.

Judaism advises us to "judge everyone favorably" (Pirkei Avot 1:6). According to a 2015 study at University College London, smiling might help us to achieve this.

Researchers asked participants to look at various photos while they underwent MRIs. Some of the subjects were asked to smile while they did, others to frown and others were asked to have neutral expressions on their face. Those people who smiled during the experiment were more likely to perceive other people favorably. It seems that the very act of smiling makes us more magnanimous and conditioned to like other people more.

Thousands of years later, modern science is discovering what ancient Jews already knew: smiling is crucial to our well-being, and sharing a smile with others is a way to brighten their whole day.

Yvette Alt Miller earned her B.A. at Harvard University. She completed a Postgraduate Diploma in Jewish Studies at Oxford University, and has a Ph.D. In International Relations from the London School of Economics.

How gum disease is at the root of five serious health issues

Your dentist keeps warning you about bleeding or inflamed gums for a reason. They can be a gateway to serious health issues.

Periodontal disease, the result of infections and inflammations of the gums, affects nearly 50 percent of U.S. adults aged 30 and older, according to the Centers for Disease Control and Prevention. The problem increases with age; 70 percent of U.S. adults 65 and over have some form of periodontal disease. Those sizable portions of the population are at increased risk heart disease, stroke, cancer, erectile dysfunction, and prostate problems.

"Lousy gums can lead to more health concerns than many people may realize," says Dr. Harold Katz, a dentist, bacteriologist and developer of TheraBreath Healthy Gums Oral Rinse (www.therabreath.com). "The bacteria in our mouths can spread throughout the body, and the results can be devastating.

"When you brush, floss and rinse regularly, you are doing more than caring for your teeth and gums. You are also taking care of your overall health."

Katz says major health concerns researchers have associated with gum disease include:

• Heart disease. Several studies have shown a link between periodontitis and heart disease. "The same bacteria causing periodontitis symptoms like inflammation, bleeding, and bone loss around teeth can travel through the bloodstream to the arteries," Katz says. "Bacteria can latch onto the walls of the arteries and cause small blood clots, increasing the risk of restricted blood flow to the heart."

• Stroke. The findings from a study titled "Impacts Of Periodontitis On Nonfatal Ischemic Stroke" showed that patients who suffered a stroke also had evidence of an oral infection. "Research has indicated that gum disease is nearly equal to high blood pressure as a source of causing strokes," Katz says.

• Cancer. "Bacteria swells the gums, and it can cause similar reactions to other tissues," Katz says. A study published in Cancer Research found that some of the same types of bacteria that trigger periodontal disease may also be linked to a higher risk of esophageal cancer. Another investigation, in the Annals of Oncology, found that men with an advanced form of periodontitis were 45 percent more likely to get diagnosed with cancer. "More proof you are simply endangering yourself while leaving bad gums unattended, allowing bacteria to spread," Katz says.

• Erectile dysfunction. Research has suggested there's a connection between systemic inflammation—the kind that could be caused by that traveling bacteria in your mouth—and increased risk of developing impotence. In research from Taiwan, men with erectile dysfunction were 79 percent more likely to have been diagnosed with chronic periodontal disease.

• Prostate-specific antigen (PSA). When the prostate becomes inflamed or infected, PSA levels increase, notes the American Academy of Periodontology. "The AAP states that men with indicators of periodontal disease tend to have higher levels of PSA, as well as more inflammation of the prostate," Katz says. That can lead to a condition known as prostatitis, which can be manifest in painful irritation, difficult ejaculation, and urination urgency.

"It's simple: Maintaining healthy gums increases your chances of a healthy body," Katz says. "Poor oral hygiene causes infection of the gums. It can send toxins into the bloodstream. It's being proven that having good oral hygiene is one of the most important preventative health measures one can take."

Is cannabis the new wonder drug?

By Abigail Klein Leichman

(ISRAEL21c)—Cancer, chronic pain, epilepsy, asthma, insomnia, autism, PTSD, inflammatory bowel disease, Parkinson's—the list of conditions that can be improved, and possibly cured, by medical cannabis keeps growing longer.

The powerful plant used to make marijuana and hashish may prove to be the wonder drug of the century. Israeli researchers have long been at the forefront of discovering which of its many components, and in what quantity and form of delivery, are effective for which ailments.

Already since the 1990s, medical cannabis has been permitted in Israel and currently is dispensed by prescription to about 33,000 people for relief of pain associated with diseases such as cancer, multiple sclerosis, Parkinson's and Crohn's, as well as post-traumatic stress disorder (PTSD).

Now, academic and corporate research is more intensive than ever. The Israeli government is formulating rules for exporting medical cannabis products such as capsules and oils, and the first government-sponsored international conference on medical cannabis took place April 23-26 near Tel Aviv.

ISRAEL21c spoke to conference organizer Hinanit Koltai, PhD, senior research scientist at the government's Agricultural Research Organization—Volcani Institute. She works with the Agriculture and Health ministries to promote medicalization of cannabis by determining proper growth conditions and building a national cannabis gene bank for the use of authorized growers, scientists and breeders.

Individual strains or cultivars could be optimized for certain medical indications, Koltai explained.

"We can grow cannabis plants for research purposes and manipulate the growth conditions in a way that forms whatever composition we prefer and then we can give future guidelines to growers," Koltai said.

Her lab developed new extraction methods and bio-assays, and collaborates with physicians, scientists and commercial companies to develop cannabis-based treatments for specific conditions.

IBD and cancer

For research on inflammatory bowel diseases (IBD) including Crohn's and ulcerative colitis, Koltai's lab partnered with Israeli-Canadian PlantEXT, a subsidiary of Israel Plant Sciences.

They're examining the effect of cannabis extracts and compounds on tissue from colon biopsies provided by Meir Medical Center in Kfar Saba and will soon start clinical trials. Next they'll turn their attention to colon cancer.

"Until now, even with IBD we talked about treating symptoms rather than curing. With cancer, we're starting to talk about curing. This is revolutionary in relation to medical cannabis," Koltai revealed.

"I do not want to raise false hopes but we see it as a mission to try and establish cannabis as an anti-cancer treatment. We have exciting results that have to be verified in clinical trials and that can take years," she added.

Cannabis will one day be an important tool in curing cancer, agrees Prof. David "Dedi" Meiri, head of the Laboratory of Cancer Biology and Cannabanoid Research at the Technion-Israeli Institute of Technology.

However, a one-size-fits-all approach won't work. Each type of cancer has unique characteristics and cannabis contains 142 known cannabinoids (active components).

Matching the most effective cannabis compounds (possibly a cocktail of them) to specific cancers is a complex process that Meiri's lab is mapping out on mice, Meiri told ISRAEL21c at the fourth annual CannaTechconference in Tel Aviv earlier this year.

Even the compound extraction method makes a difference, Meiri said, "but we don't know yet which is better, just that there's a difference."

Parkinson's, insomnia

Nearly 70 Israeli companies are actively focusing on medical cannabis in sectors such as agriculture, life-sciences and medical devices, according to a 2018 report from Tel Aviv-based IVC Research Center.

Some of the life-sciencescompanies developing medicines or treatments are ICD Pharma, Intec Pharma, Talent Biotechs (acquired in 2017 by Kalytera Therapeutics), Therapix Biosciences, Bazelet and Izun Pharma subsidiary CannRx.

"Cannabis is very different from traditional pharma because the initial evidence for relevant indications is coming from patients themselves rather than from basic research," said Shimon Lecht, PhD, the R&D manager for CannRx.

The medical indications in the CannRx pipeline are insomnia, neurodegenerative disorders such as Parkinson's disease; and pain (with a delivery system suitable for the elderly and other populations having difficulty with administration).

"The most advanced formulas are for insomnia and pain. We expect during this year to have some announcements of clinical trial results," said Lecht.

CannRx also develops unique drug-delivery products for the cannabis molecule such as a novel vapor capture technology (VCT) method to extract the oil of the plant for the most beneficial medical effects.

Kanabo Research in Ness Ziona, which develops clinical solutions for extraction and vaporization of medical cannabis, is entering an agreement with US-based medical cannabis extraction company Constance Therapeutics to establish a cannabis cultivation farm and manufacturing facility for cannabis active compounds THC and CBD in the European Union, to be used as treatments for insomnia, PTSD and chronic pain. Constance Therapeutics also will market Kanabo Research's solutions in the United States.

Autism, epilepsy, fractures, diabetes

Dr. Adi Aran, director of neuropediatrics at Shaare Zedek Medical Center in Jerusalem and a consultant to the Health Ministry for medical cannabis, explores the effects of medical cannabis on epilepsy and autism spectrum disorder (ASD).

"The dramatic clinical effect seen in some cases has led me to further explore the potential benefits, and possible risks, of cannabinoids, particularly in children," said Aran.

In 2016, he led the world's first open-label trial studying the effect of cannabidiol (CBD) oil on symptoms in 60 subjects aged 5 to 21.

Nearly half the subjects' parents said their children's core ASD symptoms were reduced by the treatment. Almost one-third said their previously uncommunicative children started speaking or communicating nonverbally—including one who said "I love you" to his mother for the first time.

Encouraged by those results, Aran led a large-scale double-blind controlled trial on the efficacy and safety of cannabis for autism, involving 150 severely autistic children and adults aged 5 to 29.

"The follow-up will continue till November," he told ISRAEL21c, "and then the publication process will take several months."

Tikun Olam, the first grower and supplier of medical cannabis to be licensed by the Israeli Health Ministry, in 2005, recently tested its oral CBD oil drops to lessen symptoms associated with severe ASD.

In the study at Assaf Harofeh Medical Center involving 53 children and young adults aged 4 to 22, the Tikun Olam drops caused a significant improvement in social communication skills and decrease in self-injury and rage attacks, hyperactivity, sleep disturbances and anxiety. The overall rate of improvement in symptoms was 74.5 percent, although in some participants the symptoms stayed the same or worsened.

"Cannabidiol appears to be effective in improving ASD symptoms; however, long-term effects should be evaluated in large-scale studies," the study authors concluded.

Regarding other medical conditions, scientists from Tel Aviv University and the Hebrew University of Jerusalem showed that CBD significantly enhanced healing in lab rats with thigh-bone fractures; and Ananda Scientific is investigating how CBD may control and even prevent diabetes.

Pain, PTSD, asthma

The opioid addiction crisis is driving increased interest in medical cannabis as an alternative to other pain-relief medications.

Israeli research published in the March 2018 issue of European Journal of Internal Medicine showed the effectiveness and safety of a six-month regimen of cannabis treatment for pain in 2,736 patients aged 65 and older.

Overall improvement was noted by 93.7 percent of respondents. They reported significantly fewer falls and less use of prescription pain medicines including opioids.

"Gathering more evidence-based data, including data from double-blind randomized-controlled trials, in this special population is imperative," concluded the authors, who include Ran Abuhasira, Victor Novack and Lihi Bar-Lev Schleider of the Cannabis Clinical Research Institute at Soroka University Medical Center and Ben-Gurion University in Beersheva (Schleider also heads research at Tikun Olam) and Prof. Raphael Mechoulam from the Hebrew University of Jerusalem.

Mechoulam, the first to successfully isolate the THC (psychoactive) component of cannabis back in 1964, is leading a team at the Hebrew University's Multidisciplinary Center on Cannabis Research investigating the benefits of non-psychoactive cannabis components for treating asthmaand other respiratory conditions, a study commissioned by UK-Israeli biotech startup CiiTech.

Bazelet, the largest medical cannabis company in Israel,has developed proprietary technology to isolate and utilize specific cannabis components to treat chronic pain, post-traumatic stress disorder (PTSD), neurodegenerative diseases, epilepsy and autism. Clinical trials are in progress for pain relief and PTSD.

Therapix Biosciences of Tel Aviv recently received US Food and Drug Administration (FDA) clearance for its investigational synthetic cannabinoid drug THX-110, paving the way for a Phase IIa clinical trial of THX-110 for chronic low back pain.

Tourette and sleep apnea

Therapix also has a clinical development program for THX-110 in the treatment of Tourette syndrome (TS) and obstructive sleep apnea.

A Phase IIa study at Yale University for TS suggests that THX-110 significantly improved symptoms over time in adult subjects. Complete results will be presented at the 2018 European Society for the Study of Tourette Syndrome meeting in Copenhagen this June.

"These results are of particular interest as the pharmacology of THX-110 appears to be distinct from existing medications for TS and may offer a unique option for treating these patients," said Therapix CTO Adi Zuloff-Shani.

"Based on these study results, we intend to initiate a randomized, double-blind, placebo controlled study to evaluate the safety, tolerability and efficacy of daily oral THX-110 in treating adults with Tourette syndrome."

There is more on the horizon: Therapix is testing a different cannabis compound, THX-130, for the treatment of mild cognitive impairment and traumatic brain injury; THX-150 for the treatment of infectious diseases; and THX-ULD01 for treating mild cognitive impairment.

Ten breakthrough health techs emerging from Israel

By Nicky Blackburn

(ISRAEL21c)—This annual three-day life-science and biomed conference has been running for 17 years and attracts around 6,000 healthcare professionals, investors, engineers and scientists, including more than 1,000 attendees from over 45 countries, who come to learn about the newest developments in biotech, digital health and medical devices emerging from Israel.

For the second year in a row, 10 of the companies taking part in this exhibition were invited to enter the IIA's Biomed Startup of the Year competition.

If there's one conference every year that is guaranteed to highlight fascinating new health innovations, it's Israel's MIXiii-Biomed, held in Tel Aviv.

"The 10 companies that participated were a remarkable variety of what the Israeli life-science industry has to offer," said Appelbaum.

"They all presented impressive innovative technologies and choosing the best one was not an easy task. From cellular biology to space technology, we were presented with the best startups in Israel's life-science industry. The winning companies exemplify differentiated technology and solid global strategy, serving as a beacon of excellence for the well-being of humanity."

Here we take a more in-depth look at the 10 Israeli startups chosen as the best of the year.

CorNeat Vision

CorNeat Vision was one of the joint winners of the start-up competition at Biomed, and for good reason—the technology is just so cool. The company is developing an artificial cornea implant, the CorNeat KPro, which could offer a remedy to millions of people suffering from diseases of the cornea.

The early-stage technology is a patented synthetic cornea that uses advanced cell technology to integrate artificial optics within resident ocular tissue. It can be transplanted in a simple 30-minute surgery, according to the company. Ra'anana-based CorNeat plans to move to human implantations sometime this year, and to begin clinical trials in the US.

According to the World Health Organization, diseases of the cornea are the second leading cause of blindness worldwide, second only to cataracts. As many as 30 million people are affected, with around two million new cases each year.

"Unlike previous devices, which attempt to integrate optics into the native cornea, CorNeat's implant leverages a virtual space under the conjunctiva that is rich with fibroblast cells, heals quickly and provides robust long-term integration," said CorNeat's CEO and VP R&D Almog Aley-Raz.

PixCell Medical

PixCell Medical is developing a breakthrough low-cost portable hematology analyzer that performs a complete blood count (CBC) at the point of care.

With just a tiny drop of blood, PixCell's HemoScreen can analyze 20 standard CBC parameters, including red blood cells and five different white blood cell types, and identify anomalous cells and hemoglobin levels, in just five minutes.

HemoScreen relies on a new microfluidics technology that causes cells to migrate to the center of flow and perfectly align into a single layer. Identification and classification of the cells is achieved using machine-learning and machine-vision algorithms superior to present methods.

SpacePharma

Swiss-Israeli SpacePharma will democratize the process of doing experiments in space, according to Guy Samburski, the company's head of chemical and pharmaceutical technologies.

"NASA has made huge efforts to enable commercial companies to carry out experiments in space, but it's too slow and expensive. SpacePharma makes the same science available to everyone—universities, pharma companies—at a much, much cheaper price," he told ISRAEL21c at MIXiii-Biomed.

Experimenting in microgravity is an essential tool for many pharma and research companies today. Taking gravity out of the equation simplifies the physics and removes many obstacles to bacteria growth and stem-cell research. Already companies like Merck, Procter & Gamble and Eli Lilly have conducted tests on the International Space Station over the last decade. However, these experiments are hugely expensive and have to be extremely well vetted because they need to be carried out by the astronauts themselves.

SpacePharma creates minilabs that can be rented for up to six months of orbital research. These minilabs—about the size of a milk carton—can include a number of experiments that can be carried out remotely from Israel, reducing costs drastically. All an astronaut has to do is turn it on.

Since all experiments are done remotely, the minilabs can be docked on the International Space Station or attached to private satellites.

SpacePharma was founded by Yossi Yamin, a former commander of the Israeli Defense Forces' satellite unit, and has already carried out two rounds of experiments in space. It is the first company in the field, and though competitors are now beginning to emerge, Samburski says SpacePharma, which is headquartered in Switzerland with R&D in Herzliya, is two to three years ahead.

NovaSight

Two-and-a-half-year-old NovaSight has developed a technology based on eye-tracking to help children with vision disorders. The company's first product is a system called EyeSwift, which it claims can revolutionize diagnosis of strabismus—a misalignment of the eyes, CI (Convergence insufficiency) and reading disorders.

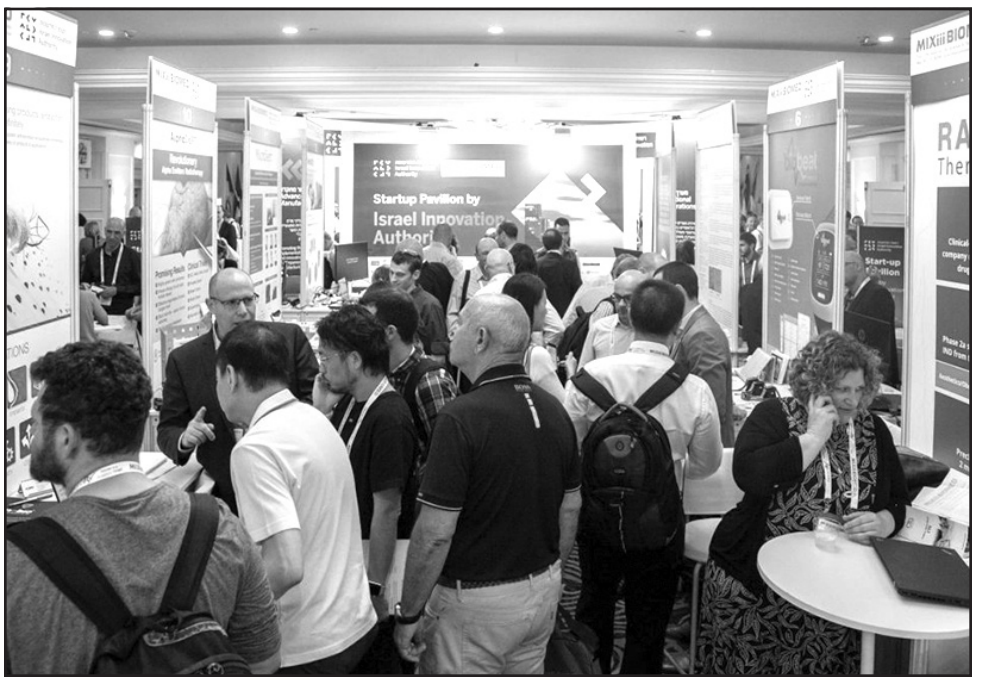
Strabismus is treated by corrective surgery, but its success is dependent on the accuracy of the misalignment measurement—until now a laborious, inaccurate, manual process that has not changed for decades.

EyeSwift uses eye-tracking technology as well as self-designed active glasses to diagnose visual disorders quickly and reliably while patients watch a short animated video. The system has already received CE approval.

NovaSight, which is based in Airport City in Israel, has also developed another product called CureSight to treat amblyopia (lazy eye) and CI.

"When you have lazy eye the gold standard treatment is a patch covering the good eye," Liran Adlin, the company's marketing manager, tells ISRAEL21c. "This can be a great source of embarrassment for children, however, and there's only about 50% compliance, which isn't good.

"With our device, children can instead watch videos while we process the content in real time according the momentary direction of the eyes, two or three times a week, and this trains the eye."



Alexander Elman

The Startup Pavilion at MIXiii Biomed.

Alpha Tau Medical

Alpha particles are considered a powerful tool against cancer because they can damage the DNA of a tumor cell regardless of the level of oxygenation or the cell cycle stage, but their downside is a short range. Israeli startup Alpha Tau Medical believes its potent alpha radiotherapy technology provides the answer.

Alpha DaRT (Diffusing Alpha-Emitters Radiation Therapy), developed in 2003 by Itzhak Kelson and Yona Keisara from Tel Aviv University, is based on a radioactive seed that can be injected into a solid tumor. As the seed decays it releases atoms that emit high-energy alpha particles that destroy tumor tissue.

Preclinical trials have found the technology to be safe for various indications, including tumors considered resistant to standard radiotherapy. The company, led by CEO and Chairman Uzi Sofer, is now carrying out clinical trials in Israel and Italy and plans further trials around the world.

Neurosteer

Herzliya startup Neurosteer has developed a small wearable sensor for monitoring brain activity in people with neurological disorders, and providing high-quality neurological data.

The sticker-sized sensor can be used for a wide range of medical, wellness and lifestyle applications and combines advanced neuroscience and proprietary machine learning to capture brain activity, interpret brain dynamics, and detect emotions, neurological states, engagement, attention and intent in real time.

The sensor can be used in the hospital, in rehab and at home. It can also be used to monitor patients undergoing psychiatric clinical trials.

Brainvivo

Tel Aviv's Brainvivo develops MRI-based software that enhances MRI resolution for early detection, monitoring and treatment of neurodegenerative brain disorders.

The company's software overcomes the MRI resolution limitation by tracking the movement of water molecules within brain tissues, and providing MRI data that allows the measurement of both the neural fiber diameter and layers of the brain cortex.

The company was co-founded by Assaf Horowitz and Prof. Yaniv Assaf from Tel Aviv University.

TempraMed

TempraMed develops small, hassle-free cooling products for keeping sensitive injectable medications like insulin, for the treatment of diabetes, at the proper temperature.

The company, which has been working in stealth mode for some years, has developed a series of products including replaceable caps lined with a space-grade thermal insulation to fit over popular insulin pens and vials. It is now working on a similar product for EpiPens, which are designed for treating allergies.

TempraMed was founded by Israeli Ron Nagar, who has worked in the medical-device field for 20 years, and whose father has Type 2 diabetes.

E-Motion Medical

Millions of people suffer from reduced motor function of their digestive system, leading to malnutrition and a higher risk of infection. It's a phenomenon common in critically ill patients, as well as neurological, surgical, geriatric and neonatal patients. A severely limited ability to eat detrimentally affects well-being and quality of life.

Founded in 2011, Tel Aviv's E-Motion Medical has developed a unique technology that it claims can deliver stimulation to the esophagus, generating contractions, restoring esophageal and digestive motor function, reducing infectious complications and improving survival and physical function.

BarimOte

Patients who have undergone gastric weight-loss surgery have to alter their eating behavior radically in order to sustain their lower weight. For many, this proves too difficult, and can lead to complications, weight gain and new operations.

Israeli startup BarimOte hopes to improve those odds with a new eating behavior monitoring and training technology, which it claims can enhance the success rate of weight-loss surgery.

The company's patented technology will offer biofeedback during meals, real-time analysis of eating behavior patterns, remote e-monitoring to caregivers, and even caloric intake at every meal. It sends alerts and referrals to the surgeon in case of complications.

Injury recovery should include prescriptions plus natural medicines

Suffer an injury—a twisted knee, a turned ankle—and you know what's likely to come next: swelling and reddening of the damaged area.

Inflammation is one of the body's most common reactions to the stress of an injury, and while modern science has created many important drugs to help the body heal, some health professionals say holistic medicines should also be part of the prescription.

Here's why: An emphasis on alternatives to prescription drugs could reduce other issues, says Dr. Sanda Moldovan, a periodontist and nutritionist and author of "HEAL UP!: 7 Ways To Faster Healing And Optimum Health" (www.beverlyhills-dentalhealth.com).

The most frequently prescribed medications worldwide are non-steroidal anti-inflammatory drugs, known as NSAIDs, and they have been linked to a higher increase in cardiovascular problems, heart attacks and strokes. In the United States alone, more than 70 million prescriptions are written for these drugs every year.

"Prescription medications have their place, but discovering and using natural alternatives prevents potential narcotics abuse and lessens side effects," Moldovan says. "Dr. Mother Nature is the best prescriber for healing and optimum wellness."

While a typical physician's recommendations will include things to not eat or drink that will be helpful in making sure there is no specific reaction, making sure the entire body is in optimum health to fight an infection will typically shorten the recovery period, she says.

"Nutritional interventions can assist the body's capacity to fight any type of infection," Moldovan says.

She says there are many little known therapies that can help a person heal including IV nutrition, homeopathics, herbs, teas, oxygen/ozone, and even light and energy devices. A few of those include:

• Micro-current and low level laser therapy—speed up healing by using magnetic fields and laser energy

• Mind-Body Synchronization—Guided Meditation and relaxation techniques have been proven as ways to shorten the length of time for injury rehabilitation.

• Oxygen / ozone Therapy—Oxygen is all around us yet we underestimate its importance. The trend of hyperbaric chambers in private homes is evidence that more people are taking it seriously. Ozone therapy also aids in immune function and detoxification.

• Plants, herbs and teas—Current research has proven the efficacy of ancient plant medicines, which are now in better formulations and more purified for a better therapeutic effect.

Patients should remember that the entire body is impacted by an injury even though the injury itself may be localized, Moldovan says. By treating the entire body wholistically, she says, it will assist the body in recovering faster.

Big wheels, big hills, and a bike ride from hell

By Marilyn Shapiro

Summer mornings on our neighborhood in Upstate New York during the 1980s were quiet—until eight o'clock. At that hour—designated by the parents to be late enough to 'start the engines'— the garage doors on almost every house opened one by one. A fleet of children, all sitting low on seats of their Big Wheels, flew down their driveways and began circling the 'track' that surrounded the grassy knoll in the middle of the cul-de-sac. The Daily Devon Court 500 was officially in session.

Biking had been part of life since I was a child. I spent hours riding a second-hand three speed on rolling hills past apple orchards and Lake Champlain beaches Larry and I pedaled through the back roads of Albany County, me on that ancient three speed and Larry on the bike he had ridden to deliver newspapers in Saratoga Springs.

Once our children graduated from Big Wheels to two-wheelers, the four of us took family outings on the Mohawk-Hudson Bike Trail.

When we turned 40, Larry and I traded in our relics for lighter, more efficient ten speeds. Larry had to give up competitive running in 1996 due to an injury, and he began biking more frequently. He encouraged me to join him, and we pedaled our way around Southern Saratoga County.

Cycling became a social event. For a couple of years, a group from Congregation Beth Shalom in Clifton Park met on Sunday mornings in the synagogue parking lot for a ten to fifteen mile circuit. Larry and I were enjoying our biking.

The length of our rides together increased: twenty miles, thirty miles at a clip. As a members of the Mohawk Hudson Wheelmen, we participated with several other riders in metric half centuries, one in which I rode the 62 miles in honor of my 62 birthday. Larry completed a 100 miles with a more-hardy friend.

Despite all my biking, I never was totally comfortable on hills. While Larry gleefully viewed them as a challenge, I dreaded every long, steep incline. I usually made it with a great deal of effort. Once in a while, I had to resort to getting off the bike and pushing it to the top.

My fear of hills prevented me from taking advantage of all the all the biking trails near Julie and Sam's home in Summit County, Colorado. Larry had taken some rides with Sam, but I bowed out. On our visit in July 2012, however, I had several months of biking long distances in New York under my belt. Larry and I finally took Sam up on his offer to join him for what Sam billed as an easy, fairly flat twenty mile ride around Lake Dillon.

"There is a little incline at the beginning of the trip," Sam explained while we adjusted our seat height on our rentals and snapped on our helmets, "but I am sure you two can handle it."

As Sam had promised, the first four miles on the bike trail, were fairly flat and straight. Then we arrived at the bottom of Swan Mountain. I craned my neck to view the bike lane that ran along a fairly busy two lane highway. The summit appeared to me to be five miles away,

"Sam, this is not a little incline," I said. "This is a mountain! How long is it? And what is the increase in elevation?"

"We go from 9100 to 10,200 feet, an eleven hundred foot ascent over about a mile," Sam conceded. "I promise we'll take it slow."

Within one half mile, I was huffing and puffing. And sweating. My shirt was stuck to my back; under my helmet, my hair was glued to my head; my socks were drenched. I even had sweat running out of my ear canals.

"I can't do it," I yelled to Larry and Sam, who were riding with little effort 200 yards in front of me. "I'm going to walk the rest of the way. I will meet you at the summit."

"Are you sure?" Larry asked. They barely waited for my breathless "Yes!" before they pedaled off and left me to push my bike to the top.

Fifteen minutes later, I met up with Larry and Sam at the Sapphire Point Overlook.

"I made it!" I said to Sam. "It's all downhill from here!"

Then I took a look down the trail. Whatever goes up must come down, but this down was a steep descent on a narrow, serpentine bike path crowded with other cyclists

"What the heck, Sam?" I exclaimed. "I thought climbing up was bad, but I can't handle going down this obstacle course!"

"Sorry, Marilyn, but it's the only way back to our house without adding another 10 miles," said Sam. "Just take it slow."

"Don't worry!" said Larry. "I'll be right behind you."

Larry's 'right-behind-you' promise lasted an even shorter time than Sam's 'we'll-take-it-slow' promise. Terrified and white knuckled, I kept hitting my brakes. Larry couldn't bike slowly enough to follow behind and had to go ahead. I prayed all the way down to the bottom, where I caught up with Larry and Sam for the second time that day.

The remaining miles were less dramatic. And, by the end of our vacation, I had actually forgiven Sam.

Biker Marilyn Shapiro.

Since my bike ride from hell, however, I haven't attempted a repeat in Colorado. These days, I love riding through my mountain-free community in Florida—elevation in the Orlando area peaks out at eighty-two feet above sea level. Big hills—like Devon Court's Big Wheels—are in my rear view mirror. And that is fine with me.

Marilyn Shapiro lives in Kissimmee. She writes regularly for the Jewish World in Schenectady, and published her book "There Goes My Heart," which is available on Amazon. You may also follow her on her blog, theregoesmyheart.me.

Beating the odds, winning at life

By Marilyn Shapiro

Eric Lagerstrom, a 29-year-old from Gresham, Oregon, may have been the official male top finisher in the 2018 St. Anthony's Triathlon, which was held on a beautiful April day in St. Petersburg, Florida. However, in the pack of over 3000 participants was an individual that many considered the true winner. Seventy-nine-year-old Tony Handler had completed his 300th triathlon since his "terminal" diagnosis 35 years earlier. "I beat Mr. Cancer again," said Tony with satisfaction.

Waiting at the finish line, as she had done almost every time before, was his wife, Narda, his childhood sweetheart from Newark, New Jersey. "I think I missed only five races in his entire triathlon career," said Narda.

None of this seemed it would be possible 35 years earlier. In 1983 Handler was driving Narda and friends home from an evening out when he was seized by excruciating abdominal pains. His friend took over the wheel and drove Tony directly to the hospital. The doctors in the emergency room determined that his stomach had ruptured and immediately operated.

Death around the corner?

Two days after the surgery, Handler was transferred to the National Institutes of Health (NIH) in Bethesda, Maryland. The doctors there gave the Handlers the devastating news: he had pancreatic cancer and had at best two more years to live.

Handler, who was 45, refused to accept the diagnosis. After several more surgeries, he was chosen to participate in clinical trials at NIH with 19 other patients who shared his rare form of cancer. A willing "human guinea pig," Handler endured hours of medical protocols, innumerable experimental drug treatments, and seven surgeries.

While undergoing the regimen, Handler saw an article that stated the city of Baltimore was hosting the Bud Lite Triathlon in July 1985. "I thought this would be a good way for me to fight the bleak prognosis."

Against the odds!

Handler was not new to athletic competitions. Born in 1939 in Newark, New Jersey, to first generation Jewish parents, he had participated in Weequahic High School's cross country and swim teams, serving as the latter's captain.

Cheering him on in the stands was Narda Mandell. Shortly after his bar mitzvah at Congregation B'Nai Jeshrun in Newark, Tony had met 12-year-old Narda and they soon became a couple. "I was—and still am—his biggest fan," said Narda.

Handler was determined to survive. He set his goal to compete in the 1985 Bud Lite Triathlon. Initially, he could only do a slow walk/run. As his stamina increased, he began running two, five, 10 miles. "Running made me feel as if I were fighting back," said Tony. He dusted off his bike and rode the Maryland countryside. He found a local pool, donned goggles and a Speedo, and began swimming competitive laps for the first time since his high school swim team days.

The main competition

On July 1, 1985, Handler completed the Baltimore triathlon, which combined a one-mile swim, 24.8 miles of bicycling and 6.2 miles of running. He was far behind the winning time of one hour and 55 minutes, but he had won a personal victory. "I only had one competitor," said Tony, "and that was Mr. Cancer."

Unfortunately, Mr. Cancer wasn't done with Handler. He faced multiple bouts with six different kinds of cancer, including pancreatic, liver, prostate, and skin cancers, and twenty-one surgeries.

Through it all, Handler continued his job as an IBM consultant. The management at the company was supportive, never hesitating in giving the time he needed to have the multiple surgeries and finish his recovery. After work and on weekends he continued to work out and participate in triathlons across the United States. "I needed victories wherever I could find them," said Handler. "Every time I crossed that finish line, I felt like I beat Mr. Cancer again."

The marathon continues

In 1988 Handler received a promotion to senior consultant and was transferred to Tampa, Florida, where he continued to compete.

By the time he was approaching his 60th birthday, Handler had completed 200 triathlons. He set his goal even higher by signing up for the 2000 Florida Ironman Triathlon. A back injury that was unrelated to cancer forced him to cancel. But in 2001, he completed the Panama City-based competition, which was composed of a 2.4-mile swim, a 112-mile bicycle ride and a marathon 26.2-mile run. He felt such a sense of accomplishment he did again when he was 62.

When he retired from IBM in 2003, the Handlers moved to Solivita, a 55-plus active adult community in Central Florida.

Playing it forward

As a cancer survivor, Handler was determined to "pay it forward." Soon after their move, he organized the first annual community-wide three-mile walk/run in Solivita to raise money for the American Cancer Society (ACS). Beginning in 2012, several Solivita clubs joined together to establish an annual Relay for Life event that supported ACS. Handler's run/walk was folded into the community's umbrella fundraising efforts. As of 2018, the combined efforts have raised over $700,000, of which $60,000 was raised by Handler's walk/run event.

His story of survival and his fundraising have earned Handler state and national recognition. In 2013, he qualified to compete in the National Triathlon Age Group Championship in Milwaukee. At the concluding banquet, Handler was given an award for being the "Most Inspirational Athlete." In 2015, Handler qualified to represent the United States on Team USA at the World Age Group Triathlon Championship in Chicago.

In 2016, Handler was the recipient of the "Geriathlete" award at the Growing Bolder Awards banquet in Orlando, Florida. He, along with other Central Florida seniors, was lauded for "pursuing his passions and living lives of purpose while making a difference in the lives of others.

Determination and exercise

Getty Images

Tony Handler stands with his triathlon bicycle in his Poinciana, Florida home, May 6.

Sadly, Handler is the only surviving participant of the 20 original participants in the 1983 NIH clinical trials. Doctors at the Moffitt Cancer Center continue to track Handler's progress and oversee his life-saving medications and monthly chemo injections. His remarkable medical history has been the subject in professional journals and conferences. Researchers agree that what Handler often calls his "crazy exercise routine" appears to have been a factor in his longevity.

Along with their busy life in Central Florida, the Handlers enjoy the pleasure of three sons, one living in Maryland and the other two in Florida with their wives and five grandchildren.

Handler views the St. Anthony's Triathlon as another victory against Mr. Cancer, a fight he hopes to continue waging for as long as his body is able to.

"I beat the odds," said Handler. "I just hope my story is an inspiration to other cancer patients to "NEVER GIVE UP."

Marilyn Shapiro lives in Kissimmee. She writes regularly for the Jewish World in Schenectady, and published her book "There Goes My Heart," which is available on Amazon. You may also follow her on her blog, theregoesmyheart.me.