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How Israel's Desert Bloomed Into A Hi-Tech Hub

by Catherine Longworth

Israel's Ben-Gurion University (BGU) is pioneering a wave of innovation and economic progress in the Be'er-Sheva desert region. *Medtech Insight* meets with some of the leaders based at Ben-Gurion's Advanced Technologies Park where innovation and technology is developing the region into a world-class hi-tech hub.

Israel's first prime minister David Ben-Gurion had a vision. The late leader believed Israel's large Negev desert area held the key to the country's future growth and that it could bloom into a place of infinite possibility. Although Ben-Gurion died in 1973, today his vision for the desert may be becoming a reality.

Located at the northern edge of the Negev is Be'er Sheva, one of Israel's fastest growing cities and the heart of Israel's rising hi-tech hub. The city is home to the Ben-Gurion University (BGU) and a growing number of multinational companies which are forming a strong tech ecosystem.

BGN Technologies, the technology transfer company of BGU, is focused on spurring this innovation by commercializing technology coming out of the university to serve market needs. Located in the University's Advanced Technologies Park, BGN Technologies nurtures relationships between academia and industry to bring inventions from the labs to the market.

To date, the company has founded over 100 start-ups across various fields including medtech companies such as cartilage care start-up CartiHeal, the developer of an implant for repair of articular cartilage and osteochondral defects and ElMindA, that has a platform that reveals and affects the neural pathways in the brain.

"We focus on enhancing licensing and research collaborations between academia and the industry, and we always try to be very flexible in our negotiations," Netta Cohen*, CEO of BGN Technologies told Medtech Insight. "Each agreement we sign is different from one another, as

each company has specific conditions and needs. Most of our efforts are based on feedback we receive from the industry. We ask our potential partners what their needs are and try to come up with arrangements that benefit both parties."

Netta Cohen, CEO at BGN Technologies will participate in this year's MiXiii Biomed conference, held in Tel-Aviv, Israel

Last year, Xact Medical, a start-up that automates ultrasound-guided object placement in the body, was established based on a technology that emerged from a multi-year collaboration between BGN and Cincinnati Children's Hospital in the US. The goal of the collaboration is to improve health outcomes for children by ensuring device design that is customized to meet children's' unique physiology and medical needs. It pairs BGU's technical and engineering capabilities with the medical expertise of children's physicians.

Xact Medical focuses on the development of the FIND system – Fast Intelligent Needle Delivery system. FIND extends and enhances clinician capabilities and control for precisely, quickly, and conveniently placing a needle tip at a point in the body that significantly improves odds of successful vascular access on the first try. Xact will initially focus on central line placements in pediatric and adult populations with plans to expand into additional markets such as biopsy. Immediate next steps for the company include further testing its prototype and market research as it works toward FDA approval.

"We are different from the traditional tech transfer model, as regional development is at the heart of everything BGN Technologies does," Dana Gavish-Fridman, VP of Entrepreneurship at BGN Technologies told Medtech Insight. "The university is a real anchor to all the hi-tech and biotech research activity taking place in the Negev."

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Dana Gavish-Fridman, VP Entrepreneurship, BGN Technologies

BGU's management headed up the growing development of the region to tap into the technology

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sector's continued growth in Israel and boost the local economy. Be'er-Sheva's hi-tech park was launched just over five years ago and is now experiencing a rapid rate of growth. "If you came to this area just six years ago it would have just been sand," says Gavish-Fridman. "Now, there are over 2500 people working here in a flourishing innovation ecosystem."

BGU's efforts are backed-up by the Israeli government that invests heavily in the region. The Israeli army now plans to bring its best hi-tech and intelligence units to Be'er Sheva, which will intensify the area's technology focus. "This is the only Israeli university which has tripled its size in 20 years. There's been huge development and we are still a relatively young university," added Cohen.

"We have a very strong technology transfer operation that serves the university and many different industries. With multinationals such as Deutsche Telekom, IBM, Oracle, and Lockheed Martin setting up R&D centers here and our new entrepreneurship initiative, the world should watch this space. Be'er-Sheva is a small place but with a big emerging innovation ecosystem."

The CDI - Center for Digital Innovation

Also located at the University's Advanced Technologies Park, is the Center for Digital Innovation (CDI-NEGEV) – a non-profit research center aimed at managing and developing digital innovations in Israel in partnership with entrepreneurs.

Founded by Ziv Ofek along with fellow entrepreneurs Sharon Sasportas and Boaz Gur Lavie with major involvement of BGU, the project is backed by million-dollar investments and partnership with several of Israel's leading organizations and companies.

"The CDI was founded by three entrepreneurs that understood that something good is happening with digital innovation in this country," CDI's director of innovation and new shiny things, Idan Papier, told Medtech Insight. "This hi-tech park is only a few years old and before that students at the Ben-Gurion

MiXiii Biomed

MiXiii Biomed is Israel's leading international life science conference and exhibition, taking place on May 15-17 at the David InterContinental Hotel in Tel Aviv.

This year Netta Cohen, CEO of BGN Technologies, will participate at the Technology Transfer Track of the upcoming MiXiii Biomed conference.

The conference is the largest gathering for health-care professionals from Israel to meet with international colleagues and partners. It offers a unique opportunity for global participants to learn about the latest innovations and technologies of Israel's biomedical industry. In addition to a digital-health track, the conference this year will also look at trends in ophthalmology, oncology,

University studied here and then left to go to the center of Israel in Tel Aviv to find a job. Now there is a big change because all of the relevant players are setting up bases around us and the hi-tech park is already filled with about 200 companies."

brain health, personalized diagnostics and therapeutics, and nanomedicine, among others.

The CDI aims to "foster tangible solutions for humanity's biggest challenges" by creating partnerships and joining together players across different spaces. "We try to bring together all the relevant people to sit together at a common table and address a common challenge," said Papier. "These different players can be academic partners or government partners like the National Insurance Institute of Israel or private companies and other organizations. When the CDI was first set up, we looked at the challenges that exist in the world and identified all of the mega trends undergoing rapid changes where digital innovation could improve the quality of lives."

The CDI's goals focus on developing innovation in four main areas – digital health, welfare and healthy ageing, education and smart cities. "What's special about CDI is that we deal with all these areas together at the same time, because we believe that every area is affected by one another and they are all connected," he said.

As the director for CDI's Healthy Aging program, Papier works with a team to develop digital technologies aimed at addressing the challenges of an ageing population. The center recently opened Israel's first Innovation Lab for Healthy Aging, a joint effort between the CDI, BGU and the National Insurance Institute of Israel, the Be'er-Sheva municipality, the Joint Distribution Committee (JDC) and the Amal & Beyond Group.

The new innovation lab is situated in a fully furnished model home that simulates senior citizens` living environment and enables start-ups to take a "holistic approach" to developing solutions. New technologies and product prototypes are tested in and around the home to meet challenges such as preventing falls, alleviating loneliness, slowing deterioration, treating pain, and assisting in activities like bathing and toileting.

A glimpse inside Israel's first healthy aging lab

Papier said the CDI is also experimenting with giving Virtual Reality 3-D glasses to the elderly so they can experience new worlds and to help tackle common problems such as loneliness. Other innovative ideas to tackle loneliness include using a robot to identify facial expressions so if the person is sad, the robot will identify that emotion and contact a family member, friend or doctor to get in touch with the elderly person.

"The world is becoming older and changing very rapidly. In countries like Japan, they are now selling more diapers for older adults than for babies. When we started out we understood that we needed to change the existing paradigm of overcoming challenges through doing traditional projects," said Papier. "By the time you finish a traditional project, the challenge will change and in order to keep up with this, you have to keep up with innovative ways of thinking and solving problems."

Last year, the challenges of ageing were explored in full at Israel's leading life sciences conference MiXiii Biomed*, which brings together companies from across Israel and the world to discuss the innovations and trends fueling the future of health-care systems.

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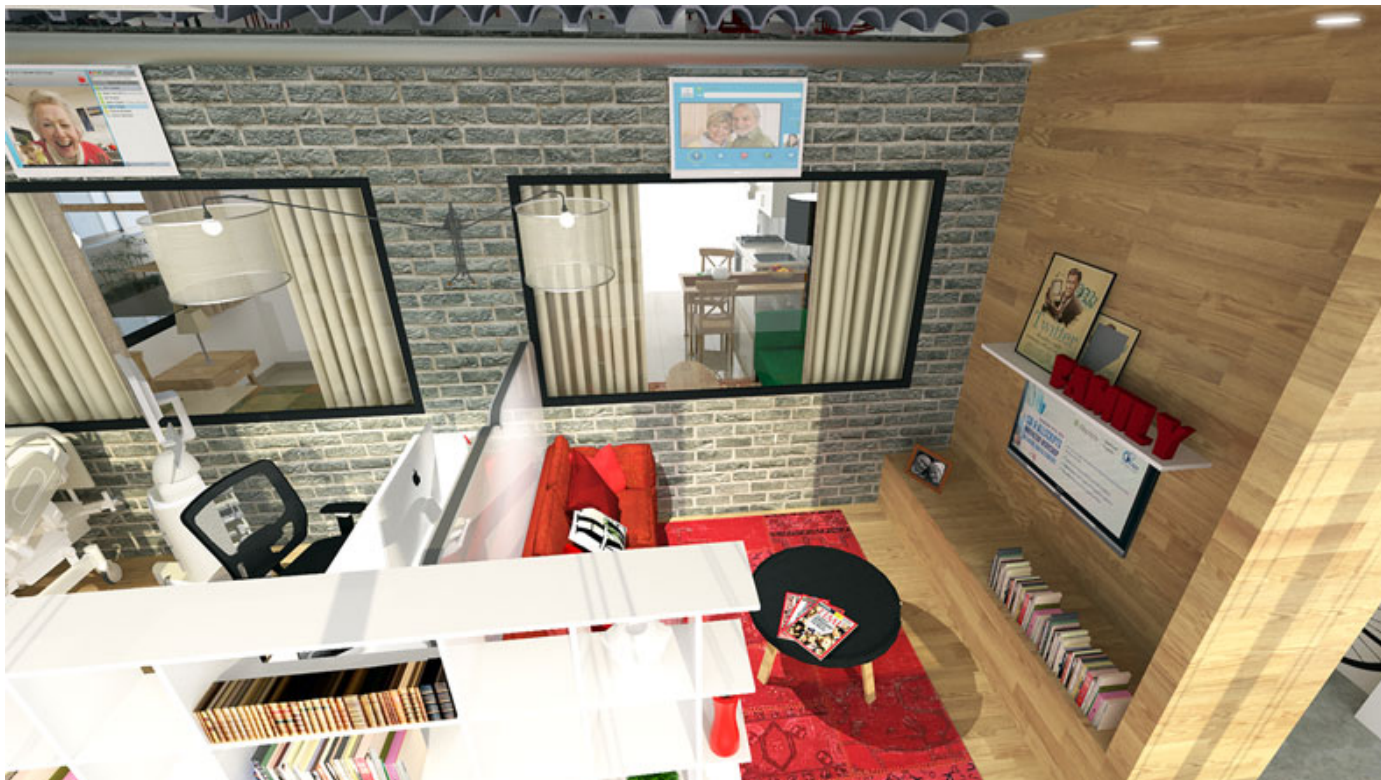
The Innovation Lab for Healthy Aging at israel's center for digital innovation

CDI's community of start-ups currently stands at 31 companies and includes healthy aging projects such as Vitalerter, a wireless platform that monitors heart rates and respiratory systems and provides alerts when identifying potential danger, as well as Healthy.io, a home urine-testing kit that can provide test results within minutes, which are then broadcast to the patient's physician using a smartphone camera.

"We established a new methodology of working with start-ups which we call the Innovation Stairs," said Papier. "We don't believe in giving one single start-up a sum of investment like one million dollars to go forward because there is a 96% chance that they will fail and then they've burned through one million dollars and a lot of time. What we think is best is take this money and divide it into many small packets of investment and give a number of start-ups the chance to go on the first innovation step. In the traditional model they only select one and sometimes this could just be the 'sexiest' spokesperson, not necessarily the best technology idea."

Instead, CDI encourages start-ups to plunge in the deep end and try fast, fail fast and move on.

"A lot of entrepreneurs make the mistake of falling in love with their gadget, so they invent a solution and then try and find a problem for the solution. We claim otherwise, we say look at the challenge first because there are always many solutions."

Israel's Center for Digital Innovation (CDI-NEGEV)