

Hi-Tech Future

1 USB Flash Drive That Revolutionized Data Storage

Developed by alumnus Dov Moran '77, founder of M-Systems

DiskOnChip, the first patented flash drive, or "thumb drive," enabled users to transfer, store, and back up computer files rapidly and easily, eliminating the use of floppy disks. Named to *TIME* magazine's All-TIME 100 Gadgets, and sold in 2006 to SanDisk for \$1.6 billion.

2 Smart Baby Monitor

Developed by Technion alumnus Assaf Glazer Ph.D. '13, Runway Startup Postdoc Program at Cornell Tech's Jacobs Technion-Cornell Institute '14

Nanit uses computer vision and machine learning to track a baby's sleep patterns and provide sleep analyses, tips, and immediate alerts through an app. Sold at major retailers and has made numerous "best of" lists, including *TIME*'s Best Inventions of 2018.

3 A Virtual Fitting Room That Removes the Guesswork of Online Clothes Shopping

Developed by alumna Yael Vizel '10

Combining fashion and computer image technology, the Zeekit app allows online shoppers to see themselves in any item of clothing found online. Acquired in May 2021 by the world's largest retailer, Walmart.

4 Where AI Meets Drug Development

Developed by Prof. Shai Shen-Orr '00, head of the Systems Immunology & Precision Medicine Laboratory at the Technion and co-founder and chief scientist, CytoReason

A computational model that simulates human diseases accurately enough to start replacing animal and human trials in drug development, CytoReason technology is used by six of the world's top 10 pharmaceutical companies, including Pfizer.

Sustainability

5 Helping the World Grow More With Less

Developed by alumnus Raphael "Rafi" Mehoudar '66 for Netafim

Invented drip irrigation pipes that have bloomed Israel's desert and provided crucial irrigation for more than 25 million acres of arid crop land worldwide. His sophisticated and self-cleaning drippers maintain a uniform flow regardless of water quality and pressure.

6 New-Generation Rocket Fuel

Developed by Prof. Benny Natan '77, M.Sc. '82, Ph.D. '88, scientific advisor, NewRocket

Startup NewRocket is developing gel fuel for rocket engines that is safer and performs

better than conventional liquid and solid fuels. "PowerGel" is also environmentally friendly.

7 Leading the Clean Meat Revolution

Developed from the technology of Prof. Shulamit Levenberg of the Faculty of Biomedical Engineering and Aleph Farm's chief scientific advisor

Aleph Farms is a cultured meat startup developing the first-ever 3D printed rib eye from beef cells in the lab, without harm to animals or the environment. Hailed for replicating the taste, texture, and marbling of real steak, the company hopes to launch the product commercially by the end of 2022.

Technion Innovations

Since 1924, the Technion - Israel Institute of Technology has been home to dreamers, inventors, and innovators who think about the world's problems differently. Within classrooms and laboratories, Technion students and faculty are encouraged to explore their passions, to reach beyond the confines of their disciplines, and to pursue the unconventional. Alumni carry that pioneering spirit to some of the highest positions within the Israeli government and multinational corporations around the world.

The inventions highlighted here are just a sample of how Technion ingenuity is helping the State of Israel flourish while solving some of humankind's most intractable problems. From safer, environmentally friendly rocket fuel to an innovative "glue" that can safely fuse torn human tissue to microfluidic chips that can detect heart disease and cancer, Technion faculty, students, and alumni are making the seemingly impossible possible, every day.

Defense

8 Protecting Israel From Missile Attacks

Developed at Rafael Advanced Defense Systems by a team comprised mainly of alumni

Iron Dome, the mobile anti-missile defense technology that locates, intercepts, and destroys incoming rockets up to 45 miles away.

9 Lifesaving Aerospace Tech

Developed by Prof. Pini Gurfil and a team of researchers and students, with Israel Aerospace Industries

Advanced satellite technology could save lives by precisely locating distress signals. Part of Israel's historic space mission, the Adelis-SAMSON nanosatellites can be used for search and rescue and environmental monitoring.

Human Health

10 Pioneer in Gastroenterology

Developed by alumnus Dr. Gavriel Iddan at Given Imaging, now part of Medtronic

PillCam is the first pill-sized camera swallowed by patients to image the digestive tract. The capsule endoscopy, slightly larger than a multivitamin, received FDA approval in 2001.

11 Redefining Spinal Surgery

Developed by Prof. Emeritus Moshe Shoham '78, M.Sc. '82, Ph.D. '86, Tamara and Harry Handelsman Academic Chair, former head of the research arm of the Rappaport Faculty of Medicine, and co-founder of Mazor Robotics Ltd.

FDA-approved Mazor performs robotic-assisted spinal surgery with greater accuracy than a surgeon's hand. Its \$1.64 billion acquisition by Medtronic in 2018 then marked Israel's biggest biotech buyout.

12 Sniffing Out Diseases

Developed by Prof. Hossam Haick, Ph.D. '02, the F.M.W. Academic Chair and head of the Laboratory of Nanomaterials-Based Devices, Wolfson Department of Chemical Engineering

Nanose uses AI-guided nanosensors to detect the scent of more than 23 specific disease biomarkers in a person's breath, including various cancers, kidney disease, COVID-19, and Parkinson's and Alzheimer's

diseases. The award-winning tech is being used to develop a diagnostic test for lung cancer, as well as the SniffPhone.

13 Electric Field Tumor Treatment

Developed by Prof. Emeritus Yoram Palti

Novocure is an FDA-approved, innovative treatment for deadly brain cancer that produces low-intensity electric fields to help slow or stop glioblastoma cells from dividing.

14 Bionic Hands for Children

Developed by Prof. Alon Wolf '95, M.Sc. '98, Ph.D. '02, Technion students, and Haifa 3D

Children in need of an artificial hand receive colorful, 3D-printed hands, customized with their favorite cartoon character or superhero. More functional than existing prosthetics, they even allow children to catch a ball.

15 Calming Panic Attacks

Developed by alumna Adi Wallach '09, co-founder and CEO, Dendro Technologies

A handheld device resembling an asthma inhaler uses lights, relaxing scents, and vibration feedback instead of drugs to regulate breathing and calm panic attacks. CalmiGo is sold commercially.