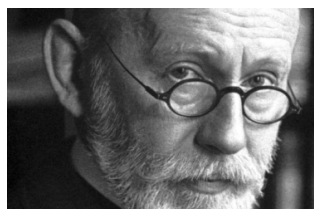




The Hebrew University of Jerusalem



A HUNDRED YEAR CELEBRATION

The Hebrew University of Jerusalem has more than 7,000 registered patents and eight Nobel Prize winners

By Rachele Schonberger, President
Australian Friends of The Hebrew University, NSW Division



What happened in 1915? The most decorated German scientist of all time, Paul Ehrlich, gave the money for the establishment of the Hebrew University in his will.

It was not Albert Einstein, Sigmund Freud, Martin Buber, or Chaim Weizmann - who, all of them, were the founders of Hebrew University. Ehrlich, who worked in the field of haematology, immunology, antimicrobial chemotherapy, diphtheria and syphilis treatment, won the Nobel Prize in physiology and medicine in 1908 and many other awards joined the founding committee of the university in 1914.

In 1918, the university was officially founded with the introduction of the first cornerstone, enabling Ehrlich's dream to become a reality.

Among the six campuses and seven faculties, the research of the Hebrew University and its Yissum technology transfer company is essential to life changing and life saving.

Professor Amnon Shashua developed a technology called Mobileye, a computerised vision that analyses everything in front of a vehicle.

Mobileye is an Advanced Driver Assistance System (ADAS) that provides warnings to prevent and mitigate collisions.

It is the largest Israeli company on the stock exchange and the largest company ever coming from any university in the world. This company was recently sold for \$ 15 billion.

There are three types of bulbs in the market. Edison's incandescent bulb, which is incredibly inefficient - generating a large amount of heat; fluorescent lamps that are quite efficient; and the most energy efficient bulbs there are LEDs.

The LED problem is when you want to adjust their spectrum, there is a dramatic loss of efficiency.

What is the purpose of using LED lamps when you want to fix them and then lose efficiency? Uri Banin invented a technology to solve this problem and started a company that was bought



The Role of Artificial Intelligence in the Design of Self-Driving Cars

by the world's largest LED lamp manufacturer - Merck, a German chemical company.

Oded Shoseyov, an expert in nanobiotechnology, handled the paper pulp paper product, one of the cheaper materials in the world. It has fitted it with a flexible and elastic compound to make it lighter and more elastic than rubber.



The world's leading medication for the treatment of dementia (memory loss) is generated by Professor Marta Weinstock-Rosin's research.

It is called Exelon and is marketed by Novartis all over the world.

Exelon is a cholinesterase inhibitor, a type of medication prescribed for people in the early or middle stages of Alzheimer's disease.

Although not a cure, Exelon has been shown to be an effective remedy for the treatment of moderate Alzheimer's disease symptoms.

It can slow down the progress of the symptoms and help people with mild and moderate Alzheimer's disease stay connected longer with the relationships and activities they value and enjoy.

The first anti-cancer medication has emerged from Israel against ovarian cancer - and the first "nano" drug approved



by the Federal Drug Administration in the US - is called Doxil, marketed by Johnson & Johnson.

Researchers have taken a very powerful chemotherapeutic agent and support it in a lipid drop. The lipid level maintains a closed environment that opens only in the area where it is needed, thus dramatically decreasing the toxicity and side effects.

Doxil is recommended for the treatment of ovarian cancer patients whose disease has progressed or recidivated after platinum-based chemotherapy. This drug enjoys approximately \$ 1 billion a year. It's the main thing for ovarian cancer. Photo: Prof. Yechezkel Barenholz and Prof. Alberto Gabizon of the Faculty of Medicine

You probably remember, not so long ago, that the life of the tomato ubiquity was measured per hour, and they were not a viable agricultural product. Nachum Kedar and Haim Rabinowitch's research led to the invention of cherry tomatoes that could be consumed within a week.

The Hebrew University can boast more than 7,000 registered patents, eight Nobel Prize winners, and one Medal Fields in Mathematics.

Other evaluations include 269 Israel Prizes, nine Wolf Prizes, 33 EMET Prizes for Art, Science and Culture and 89 Rothschild Prizes

To celebrate the centenary of the university, the Hebrew University Start-up Nation Hothouse provided business leaders from all over the world a unique program focused on innovation, investment and inspiration. Leaders received an inner perspective of Jerusalem's high-tech world and connected the network with local entrepreneurs and industry leaders.

How wonderful that at this very special occasion, the 26 years of outstanding service to the Hebrew University of Jerusalem by former Federal President and now Honorary Chairman, Robert Simons OAM, was recognised by the awarding of an Honorary Doctorate.

COULD THE POLICE REPLAY MURDER VICTIMS' MEMORIES AFTER THEY DIE?

Originally appeared in the Daily Mail UK

Scientists have found that all memories have a unique genetic signature. By studying the brain, they can tell the type of events a person has endured

Scientists hope to apply the technology to tackle forensic cases in reviving the memories of the recently deceased

Our memories leave a clear and unique genetic mark on our brains.

That's the remarkable discovery of scientists in Israel who say these genetic markers could be used to unlock memories after people die.

The technology opens the door to strange scenarios, similar to those portrayed in the series 'Black Mirror', where investigators can record and playback the memories of suspected criminals.

It could even lead to a future in which police are able to read and replay memories of murder victims to help them piece together the events leading up to their death.



'It's a fascinating proposal,' said Clea Warburton at the University of Bristol told New Scientist. 'You would have to get in there extremely quickly, as proteins start to degrade within minutes of death,' says Dr Warburton. 'It probably wouldn't give you more information than a good forensic scientist could, but I wouldn't be surprised if we end up with a film about this.'

The discovery was made by researchers from the Hebrew University in Jerusalem. They wanted to know how brains store memories in new connections between neurons.

It's known that brains do this using new proteins, which are controlled by genes. The new study found different experiences create different changes in gene activity in the brains of mice. These included making them ill, giving them a treat, electrocution and giving them a hit of cocaine.

After an hour, the mice were euthanised and the team looked at which genes were expressed in seven areas of the brain that are known to be used in memory formation including the hippocampus and the amygdala.

Some events triggered a similar reaction to others and they had remarkably similar gene expressions as a result.

Dr Ami Citri at the Hebrew University in Jerusalem was part of the team of researchers that looked at memory formation in the mice.

Researchers looking at the brains were able to tell which specimens had been in which test group just by looking at the relative gene expression.

It was so clear-cut that they were more than 90 per cent accurate.

To test this, the team subjected laboratory mice to a variety of positive and negative experiences. The technology opens the door to strange scenarios,



The Crocodile episode of the latest series of Black Mirror features a device (pictured) that can access and replay any memory. The new study found different experiences create different changes in gene activity in the brains of mice

similar to those portrayed in the series 'Black Mirror', where investigators can record and playback the memories of suspected criminals (pictured left).

SCIENTISTS CHART A NEW MAP OF HUMAN GENOME USING STEM CELLS

Scientists from the Hebrew University of Jerusalem generated an atlas of the human genome using a state-of-the-art gene editing technology and human embryonic stem cells, illuminating the roles that our genes play in health and disease. The scientists reported their findings in the journal *Nature Cell Biology*.

“This gene atlas enables a new functional view on how we study the human genome and provides a tool that will change the fashion by which we analyse and treat cancer and genetic disorders,” said Professor Nissim Benvenisty, M.D., Ph.D., Director of the Azrieli Center for Stem Cells and Genetic Research and the Herbert Cohn Chair in Cancer Research at the Hebrew University of Jerusalem, and the senior author of the study.

Embryonic stem cells are a unique resource as they can turn into any adult cell in our bodies. Their versatile nature puts them at the centre of attention in the fields of regenerative medicine, disease modelling, and drug discovery. In parallel to the discovery of human embryonic stem cells, another milestone in biology was completed with the sequencing of the human genome, and the identification of the entire set of genes responsible for our genetic identity. This finding has led to a new challenge of understanding the function of the genes in the human genome. Now, the new study by scientists at the Hebrew University provides a novel tool to map the function of all human genes using human embryonic stem cells.

The researchers analysed virtually all human genes in the human genome by generating more than 180,000 distinct mutations. To produce such a vast array of mutations, they combined a sophisticated gene-editing technology (CRISPR–Cas9 screening) with a new type of embryonic stem cells that were recently isolated by the same research group. This new type of stem cells harbours only a single copy of the human genome, instead of two copies from the mother and father, making gene editing easier thanks to the need of mutating only

one copy for each gene (see: Scientists generate a new type of human stem cell that has half a genome, March 17, 2016).

The researchers show that a mere 9% of all the genes in the human genome are essential for the growth and survival of human embryonic stem cells, whereas 5% of them actually limit the growth of these cells. They could also analyse the role of genes responsible for all hereditary disorders in early human development and growth. Furthermore, they showed how cancer-causing genes could affect the growth of the human embryo.

Another key finding of the study was the identification of a small group of genes that are uniquely essential for the survival of human embryonic stem cells but not to other cell types. These genes are thought to maintain the identity of embryonic stem cells and prevent them from becoming cancerous or turning into adult cell types.

“This study creates a new framework for the understanding of what it means to be an embryonic stem cell at the genetic level,” said Dr. Atilgan Yilmaz, Ph.D., postdoctoral fellow and a lead author on the paper. “The more complete a picture we have of the nature of these cells, the better chances we have for successful therapies in the clinic.”

CITATION: Defining essential genes for human pluripotent stem cells by CRISPR–Cas9 screening in haploid cells. Atilgan Yilmaz, Mordecai Peretz, Aviram Aharoni, Ido Sagi, and Nissim Benvenisty. *Nature Cell Biology* (2018), doi: 10.1038/s41556-018-0088-1.

HIGH EXPOSURE: CANON INC. ACQUIRES BRIEFCAM

The Japanese giant, Canon Inc., announced its acquisition of BriefCam, the industry's leading provider of Video Synopsis® solutions, which is based on technology developed at the Hebrew University of Jerusalem.

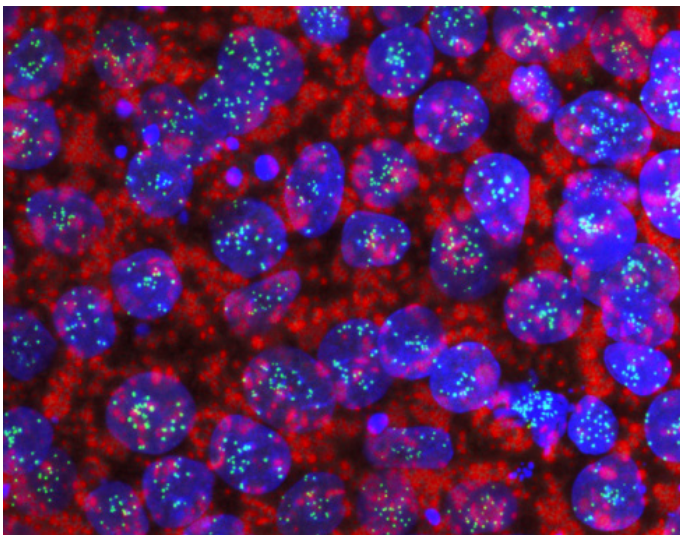
The acquisition demonstrates the dynamism of the Hebrew University of Jerusalem's research and innovation and comes on the heels of other high-profile startup exits whose technologies were based on research conducted at Hebrew University and licensed through its technology transfer company, Yissum.

BriefCam turns video surveillance into actionable intelligence and dramatically shortens the time-to-target for security threats while increasing safety and optimizing operations. Its remarkable technology was developed by co-founder and Chief Scientist, Professor Shmuel Peleg, from the Hebrew University's School of Computer Science and Engineering.

President of the Hebrew University, Professor Asher Cohen said, “We are happy and excited to be a home for talented and trailblazing researchers. This is just another example of how science and academia are creating initiatives that make our world a better and safer place.”

“With the acquisition of BriefCam we are once again witnessing the incredible global and commercial value of the cutting-edge research at the Hebrew University,” said Dr. Yaron Daniely, President and CEO of Yissum. “We are proud to be the bridge between the researchers and industry that facilitates innovation to reach and succeed in the marketplace.”

BriefCam has been deployed by law enforcement and companies around the world. In 2013, BriefCam played an integral role in capturing the suspects of the Boston Marathon bombings. Massachusetts Governor, Deval Patrick, offered his gratitude to BriefCam in a letter noting, “BriefCam played an



A photo of haploid human embryonic stem cells created at the Hebrew University's Azrieli Center for Stem Cells and Genetic Research.



important role in helping law enforcement officers identify and ultimately locate the suspected terrorists. In the days following the Boston Marathon bombings, thousands of photographs and videos, many taken with cell phones, were provided to law enforcement officers. Utilizing software developed by BriefCam, law enforcement officers and investigators were able to quickly review the photographs and videos and locate images of the two suspected terrorists. Undoubtedly, your company and its analytical product greatly facilitated the relatively speedy capture of one terrorist and the death of the other."

For decades Hebrew University has been a leader in scientific innovation with its technologies gaining worldwide acclaim. Last year, Mobileye, the global leader in the development of vision technology for Advanced Driver Assistance Systems (ADAS) and autonomous driving, was acquired by Intel for \$15 billion in the largest exit of an Israeli company to date. Earlier this year, OrCam, which harnesses the power of artificial vision by incorporating pioneering technology into a wearable platform to improve the lives of individuals who are blind, visually impaired, and have reading difficulties, was valued at \$1 billion. These are some of the most visible examples of the innovation taking place at the Hebrew University of Jerusalem, and they illustrate the Hebrew University's unparalleled role in creating, fostering and advancing the Start-Up revolution in Israel.

HEBREW UNIVERSITY RANKED AMONG TOP 100 MOST POWERFUL GLOBAL UNIVERSITY BRANDS IN TIMES HIGHER EDUCATION SURVEY

First Time since 2014 that an Israeli University is Included in Top 100

An analysis published by Times Higher Education (THE) has ranked Hebrew University of Jerusalem 91-100 among the top 100 most powerful global university brands. This marks the first time since 2014 that an Israeli university has been included in this coveted list.

The Reputation Rankings 2018 surveyed more than ten thousand leading academics from 137 countries. They were asked to name 15 universities that are the best for research and teaching, based on their own experience.

"To be judged among the Top 100 most powerful university brands is a great source of pride for everyone at Hebrew University and for Israel as a whole," shared HU president



Asher Cohen. "Success in our field is never an accident," he added, it is "achieved by a relentless pursuit of excellence, creativity and a deep commitment to our enduring values".

The top 10 ranked institutions include Harvard University, MIT-Massachusetts Institute of Technology and Stanford University. Hebrew University is the only Israeli university listed in this year's rankings.

The complete World Reputation Rankings 2018 list is available online at: <https://www.timeshighereducation.com/world-university-rankings/2018/reputation-ranking>.

LAB-GROWN MEAT CO FUTUREMEAT TECHNOLOGIES RAISES \$2.2M

The Israeli company is developing a distributive manufacturing platform for the cost-efficient, non-GMO production of meat directly from animal cells.

Jerusalem-based biotechnology lab-grown meat company Future Meat Technologies has announced a \$2.2 million seed investment round co-led by Tyson Ventures, the venture capital arm of Tyson Foods. Tyson Foods is a Fortune 100 company, and one of the world's largest food producers. Future Meat Technologies is developing a distributive manufacturing platform for the cost-efficient, non-GMO production of meat directly from animal cells, without the need to raise or harvest animals.

In addition to Tyson Ventures, the Neto Group, one of the largest food conglomerates in Israel, S2G Ventures, a Chicago-based venture capital fund, BitsXBites, China's first food technology venture capital fund, and Agrinnovation, an Israeli investment fund founded by Yissum, the Technology Transfer Company of The Hebrew University, participated in this round. New York-based HB Ventures also joined the round.



Israeli startup Future Meat Technologies focuses on developing a new generation of manufacturing technology that enables the cost-efficient production of fat and muscle cells, the core building blocks of meat.

Future Meat Technologies expects to use the funds to establish its engineering activities and increase its biological research. The company is currently recruiting engineers, chefs and scientists.

"It is difficult to imagine cultured meat becoming a reality with a current production price of about \$10,000 per kilogram," said Prof. Yaakov Nahmias, the company's founder and Chief Scientist. "We redesigned the manufacturing process until we brought it down to \$800 per kilogram today, with a clear roadmap to \$5-10 per kg by 2020."

Tyson Foods EVP Corporate Strategy and Chief Sustainability Officer Justin Whitmore said, "This is our first investment in an Israel-based company and we're excited about this opportunity to broaden our exposure to innovative, new ways of producing protein. We continue to invest significantly in our traditional meat business but also believe in exploring additional opportunities for growth that give consumers more choices."


Animal fat produces the unique aroma and flavour of meat that "makes our mouth water," noted Nahmias, and Future Meat Technologies is now the only company that can produce

this fat, without harvesting animals and without any genetic modification. "I want my children to eat meat that is delicious, sustainable and safe," said Nahmias. "This is our commitment to future generations."

Future Meat Technologies CEO Rom Kshuk said, "Global demand for protein and meat is growing at a rapid pace, with an estimated worldwide market of more than a trillion dollars, including explosive growth in China. We believe that making a healthy, non-GMO product that can meet this demand is an essential part of our mission. Cultured meat production may also be eco-friendlier than traditional meat production. "We want to feed the world while protecting the environment."

Future Meat's technology is based on Prof. Yaakov Nahmias' research at The Hebrew University of Jerusalem and is licensed through Yisum. Dr. Yaron Daniely, President and CEO of Yisum, noted that Israel is a leader in cultured meat technologies. "Hebrew University, home to Israel's only Faculty of Agriculture, specializes in incubating applied research in such fields as animal-free meat sources. Future Meat Technologies' innovations are revolutionizing the sector and leading the way in creating sustainable alternative protein sources."

Read the source article at globes.co.il




ISRAEL 70+
An Optimistic Look at Israel's Future


In honour of Israel's 70th Anniversary, we decided to look into the future, to try and predict what the next 70 years will look like.


With the help of our Hebrew University faculty members, we put together a fascinating portrait of Israel at 70+. How they answer, will fascinate you!


You can learn more about the project and view the films on www.israel70.co.il


THE VIDEOS



Big Data



Brain Science



Food

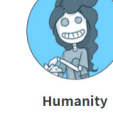

Autonomous Transportation



Child Welfare

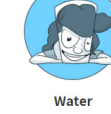

Disabilities



Employment


Family



Humanity



Israel - Diaspora



Water



Medicine


THE EXPERTS



Amos Hermon



Prof. Nathan Sussman

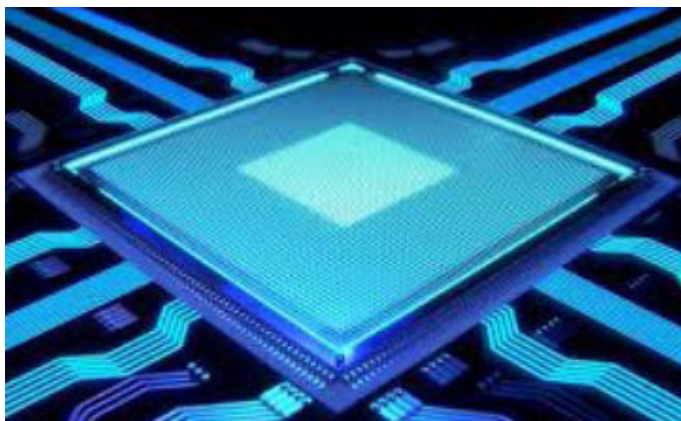

Shira Ruderman


Prof. Yuval Noah Harari


Prof. Oren Froy


Prof. Shai Shalev-Shwartz


Prof. Nathan Sussman



SMALLER AND FASTER: THE TERAHERTZ COMPUTER CHIP IS NOW WITHIN REACH

Hebrew University Researcher Shows Proof of Concept for Nanotechnology that will make Computers Run 100 Times Faster

Following three years of extensive research, Hebrew University of Jerusalem (HU) physicist Dr. Uriel Levy and his team have created technology that will enable our computers—and all optic communication devices—to run 100 times faster through terahertz microchips.

Until now, two major challenges stood in the way of creating the terahertz microchip: overheating and scalability.

However, in a paper published this week in *Laser and Photonics Review*, Dr. Levy, head of HU's Nano-Opto Group and HU emeritus professor Joseph Shappir have shown proof of concept for an optic technology that integrates the speed of optic (light) communications with the reliability—and manufacturing scalability—of electronics.

Optic communications encompass all technologies that use light and transmit through fiber optic cables, such as the internet, email, text messages, phone calls, the cloud and data centres, among others. Optic communications are super-fast but in microchips they become unreliable and difficult to replicate in large quantities.

Now, by using a Metal-Oxide-Nitride-Oxide-Silicon (MONOS) structure, Levy and his team have come up with a new integrated circuit that uses flash memory technology—the kind used in flash drives and discs-on-key—in microchips. If successful, this technology will enable standard 8-16 gigahertz computers to run 100 times faster and will bring all optic devices closer to the holy grail of communications: the terahertz chip.

As Dr. Uriel Levy shared, “this discovery could help fill the ‘THz gap’ and create new and more powerful wireless devices that could transmit data at significantly higher speeds than currently possible. In the world of hi-tech advances, this is game-changing technology.”

Meir Grajower, the leading HU PhD student on the project, added, “It will now be possible to manufacture any optical device with the precision and cost-effectiveness of flash technology”.

Coming soon to a chip near you...

A TIGER MAY NOT CHANGE ITS SPOTS BUT VENOMOUS CREATURES TWEAK THEIR VENOM RECIPE MANY TIMES IN A LIFETIME

Hebrew University researcher discovers Darwinism at work, as sea anemones adapt their venom to accommodate changing prey and sea conditions

Many animals use venom to protect themselves from predators and to catch prey. Some, like jellyfish, have tentacles, while others, like bees and snakes use stingers and fangs to inject their prey with venomous toxins.

For a long time scientists believed that an animal's venom was consistent over time: once a venomous creature, always a venomous creature. However, through a close study of sea anemones, Dr. Yehu Moran of Hebrew University's Alexander Silberman Institute of Life Science, found that animals change their venom several times over the course of a lifetime, adapting the potency and recipe of their venom to suit changing predators and aquatic environments.

Today, in a study published in *eLife Science Magazine*, Moran and his team describe their spectacular findings. They studied the *Nematostella*, a relative of the jellyfish, from cradle to grave. *Nematostella* are sea anemones that belong to the Cnidaria family of jellyfish and corals. They begin their life as tiny larvae and grow into animals measuring several inches long. While in the larvae stage, the *Nematostella* fall prey to larger fish but once mature, they become predators themselves, catching shrimp and small fish with their venomous tentacles.

Dr. Moran found that while in the larvae stage, sea anemones produce uniquely potent venom that causes predators to immediately spit them out if swallowed (see video, attached). Later on, when the sea anemones grow big and become predators themselves, their venom adapts to their new lifestyle by producing a different kind of toxin, one best suited to catch small fish and shrimp. Over the course of a lifetime, as the *Nematostella*'s diet changes and they move from one aquatic region to another, they adapt their venom to suit their new needs and environment.

“Until now, venom research focused mainly on toxins produced by adult animals. However, by studying sea anemones from birth to death, we discovered that animals have a much wider toxin arsenal than previously thought. Their venom evolves to best meet threats from predators and to cope with changing aquatic environments”, explained Dr. Yehu Moran.

To track these changes, Moran's team labeled the sea anemone's venom-producing cells and monitored them over time. The researchers also recorded significant interactions



The *Nematostella*. (Photo: Yaara Columbus-Shenkar, Hebrew University)

that *Nematostella* had over their lifetime—first as prey and later as predators.

These findings are significant for several reasons. First, venom is often used in medicines and pharmacological compounds. This study suggests that for animals with a complex life cycle there are many venom components that have remained unknown to researchers since, until now, researchers have only studied venom from adult sea anemones, missing out on the unique compounds that exist in larvae venom. These “new” compounds could lead to new medicines and drugs. Second, sea anemones, jellyfish and coral play a significant role in marine environments. A better understanding of their venomous output and effect on marine life ecology is crucial.

Most fundamentally, Moran’s study sheds more light on the basic mechanisms of Darwinism: How do animals adapt to their changing world and ecological habitats? The *Nematostella*, with its changing venom, provides us yet another clue.

The Hebrew University of Jerusalem is Israel’s leading academic and research institution, producing one-third of all civilian research in Israel.

For more information, visit <http://new.huji.ac.il/en>.

DOZENS OF “FREEDOM COINS” FROM JEWISH REVOLT AGAINST ROME (66-70 C.E.) DISCOVERED IN CAVE NEAR JERUSALEM TEMPLE MOUNT

Bronze coins, the last remnants of a four-year Jewish revolt against the Roman Empire were found near the Temple Mount in Jerusalem. These bronze coins were discovered by Hebrew University archaeologist Dr. Eilat Mazar during renewed excavations at the Ophel, located below the Temple Mount’s southern wall.

These 1.5cm bronze coins were left behind by Jewish residents who hid in a large cave (7x14 meters) for four years (66-70 C.E.)—from the Roman siege of Jerusalem, up until the destruction of the Second Temple and the city of Jerusalem.

While several of the coins date to the early years of the revolt, the great majority are from its final year, otherwise known as, “Year Four” (69-70 CE). Significantly, during the final year, the Hebrew inscription on the coins was changed from “For the Freedom of Zion” to “For the Redemption of Zion”, a shift which reflects the changing mood of the rebels during this period of horror and famine.



(Photo: Eilat Mazar/
Hebrew University)

“A discovery like this is incredibly moving,” shared Dr. Mazar.

In addition to Hebrew inscriptions, the coins were decorated with Jewish symbols, such as the four biblical plant species: palm, myrtle, citron and willow, and a picture of the goblet that was used in the Temple service.

Many broken pottery vessels, including jars and cooking pots, were also found in the cave. According to Mazar, it is remarkable that this cave was never discovered by subsequent residents of Jerusalem nor used again after the Second Temple period. In this way the cave acts as a veritable time capsule of life in Jerusalem under the siege and during the four-year revolt against the Roman Empire.

These finds all date back to the time of the rebellion and were found in the Ophel Cave directly above a Hasmonean Period layer that was situated at the base of the cave. A more complete report of these findings will be published in the third volume of the Ophel excavations; the second is being published this week.

According to Mazar, the coins were well preserved, probably because they were in use for such a short time. A similar number of “Year Four” coins were found near Robinson’s Arch, near the Western Wall, by Professor Benjamin Mazar, Eilat Mazar’s grandfather. He conducted the Temple Mount excavations right after Israel’s Six Day War, on behalf of Hebrew University’s Institute of Archaeology.

The Ophel excavations are situated within the Walls Around Jerusalem National Park, which is managed by the National Parks and Gardens Authority and the Eastern Jerusalem Development Company. Funding was generously provided by the Herbert W. Armstrong College of Edmond, Oklahoma, whose students participate in the digs.

HIDDEN TEXT FOUND ON ‘BLANK’ DEAD SEA SCROLLS

Previously hidden text on fragments of the Dead Sea Scrolls is now readable, revealing a possible undiscovered scroll and solving a debate about the sacred Temple Scroll. The discoveries came from a new infrared analysis of the artefacts, the Israel Antiquities Authority (IAA) announced.

The newfound writing came from the books of Deuteronomy and Leviticus, which are in the Hebrew Bible (also known as the Old Testament of the Christian Bible), and the Book of Jubilees, a text written at the same time as the Hebrew Bible that was never incorporated into the biblical books, the archaeologists said.



Photo: Israel
Antiquities
Authority



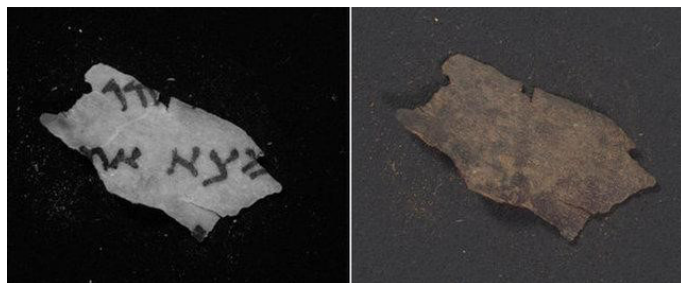
Researchers work to conserve the Dead Sea Scrolls at the Israel Antiquities Authority's lab. (Photo: Israel Antiquity Authority)

Researchers presented the newly revealed words at an international conference, called "The Dead Sea Scrolls at Seventy: Clear a Path in the Wilderness," in Israel. [Gallery of Dead Sea Scrolls: A Glimpse of the Past]

Local Bedouins and archaeologists discovered the Dead Sea Scrolls in the 1940s in caves near Qumran in the West Bank, located near the northern edge of the Dead Sea. Excavations in the following decades turned up tens of thousands of parchment and papyrus fragments that were dated to 2,000 years ago, the IAA said.

There were so many small and fragile fragments that archaeologists placed them in boxes to be studied at a later date. Now, that time has come: IAA researchers are digitizing the scrolls so that they can be studied and shared with the public without damaging the originals.

During one of these digital scans, Oren Ableman, a scroll researcher at the IAA's Dead Sea Scrolls Unit and a doctoral student in the Department of Jewish History at the Hebrew University of Jerusalem, noticed something peculiar on a few dozen fragments that had been discovered in Cave 11 near Qumran.



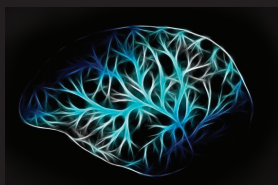
A fragment of Deuteronomy (right) next to the same fragment seen with infrared imagery (left). (Photo: Israel Antiquity Authority)

These fragments looked blank to the naked eye. But, by using infrared imaging, Ableman discovered that they held Hebrew letters and words, he said in a statement. Ableman then deciphered the script and even connected the fragments to the manuscripts that they had likely been attached to before crumbling away.

Some of the more interesting fragments include the following:

- A fragment from the Temple Scroll, a text that gives instructions for how to conduct services in the ideal temple. Scholars have debated whether there are two or three copies of the Temple Scroll from Cave 11. The discovery of the text on this fragment suggests that there are, indeed, three copies.
- A fragment from the Great Psalms Scroll. This fragment contains part of the beginning of Psalm 147:1, and the end of the verse is preserved in a larger fragment from the same cave. The newfound fragment shows that the ancient Psalm is slightly shorter than the Hebrew text used nowadays.
- Another fragment has letters written in paleo-Hebrew, an ancient Hebrew script. This fragment could not be attributed to any known manuscripts and could belong to an unknown manuscript.

Read the source article at Live Science



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Please contact us; we would love to assist.

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