

# Combining old and new to teach medical students

The Hebrew University's medical library is consolidating digital data with old, rare books and medical equipment that continue to educate. Judy Siegel-Itzkovich reports

Israeli medical students – who tend to look to the future rather than to the past – can be forgiven for not knowing much about the history of medicine. In none of the five medical faculties here is it a mandatory subject in the curriculum. Remembering much about the ancient Greek Hippocrates, the Jewish sage and physician Maimonides, the 17th-century anatomist Andreas Vesalius and pioneering Dutch microbiologist and microscope developer Antonie van Leeuwenhoek is too much to ask.

But some physicians and librarians at the Hebrew University of Jerusalem who have collected old medical textbooks and equipment believe that in addition to the new, there is much worth to knowing the origins of modern medicine and how it developed. An upgraded Medical History Museum with equipment – from the earliest microscopes and primitive sphygmomanometers (for measuring blood pressure) to circumcision equipment and wooden enema sticks – has just been launched at the Medical Library of the Hebrew University-Hadassah Medical School in Jerusalem's Ein Kerem.

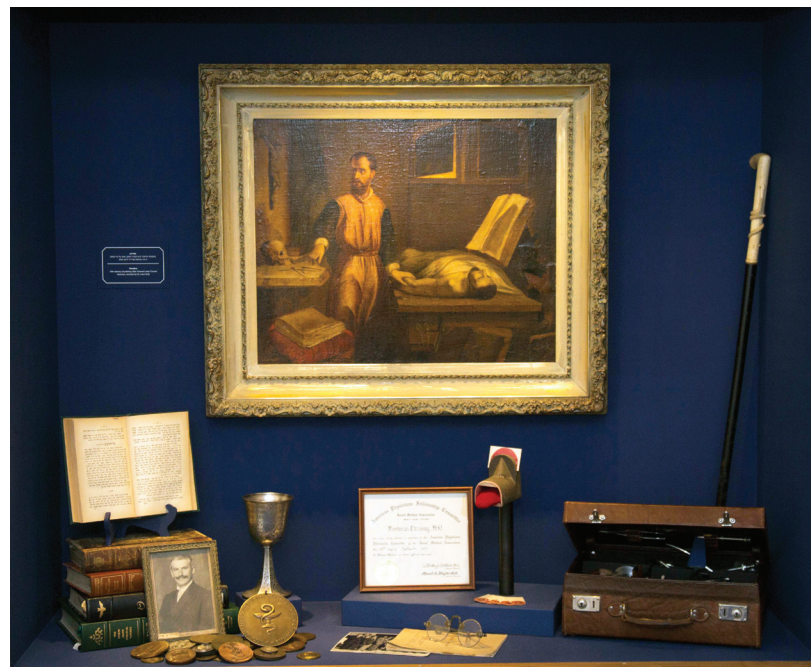
Open five days a week to students, faculty and the general public, the permanent exhibit complements the existing medical library, which serves the staff and 3,000 students of medicine, dentistry, pharmacy, nursing, public health and occupational therapy, in addition to clinical academic staff at the Hadassah University Medical Center. It is increasingly being digitized.

As the central collection of the nationwide medical library network with 60,000 book titles and 5,000 newspapers, the medical library provides loan services to some 80 academic medical research institutions around the country, said library director Sharon Lenga and Michal Mor, curator of the Medical History Museum that is integrated into it. They recently showed *The Jerusalem Post* around the impressive library and museum.

Many of the rare books are kept in a temperature- and humidity-controlled room, and anyone permitted to examine them does so wearing gloves and under constant supervision. One 17th-century book by English physician William Harvey outlines in detail the systemic circulation of the blood being pumped to the brain and body by the heart. The volume had to be restored using contemporary materia, and cotton thread made at the time the book was produced was used in the re-stitching to maintain the authenticity.

Established in 1919 with contributions from a New York physician, the book collection evolved into the country's National Medical Library when it moved to the Ein Kerem campus and then to its present location on the third floor of the medical school in 1975. It is now called the Muriel and Philip Berman Medical Library in honor of a donor couple from Allentown, Pennsylvania following the merger of small departmental libraries.

The medical school's rare book collection includes volumes from 16th to 19th centuries. The permanent exhibition of the museum includes rare books, includ-



(Guy Yehieli)



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ing early volumes from the Dr. Elliott Philipp collection of books in obstetrics and gynecology from Britain and France in the late eighteenth and early nineteenth century. There is also an old book collection dealing mainly with Maimonides from Dr. Sussman Munter and the Otto Izakower collection of books in the field of psychology and psychoanalysis.

Ben-Gurion University of the Negev in Beersheba has a leading medical historian, Prof. Shifra Schwartz, but her unit focuses mostly on the history of Clalit Health Services and other organizations from the time of the British Mandate rather than the broader medical history of the country and the world. The other medical faculties lack rare-book libraries and museums.

JERUSALEM'S EX Libris company, which helps academic libraries around the world manage their collections, has been involved intensively with HU's libraries. Nina Keren-David, one of the founders of the *Post's* Internet site and now regional director for Israel and Africa of Ex Libris, said that libraries around the world are changing immensely.

"Fewer work just with print. Instead, we are combining print with electronic and digital materials. At present, universities use multiple systems, one doing digital, one print and another elec-

tronic. Our Alma Next-Generation Library Management Service streamlines libraries to become more efficient and offer more value to faculty and students," said Keren-David.

"Over 400 institutions have signed up with Ex Libris's 'cloud-based' system using a network of remote servers hosted on the Internet to store, manage and process data instead of a local server. 'This is a revolution, as we no longer have to install and manage systems' infrastructure locally."

The University of Haifa will next year become the first Israeli insti-



(Guy Yehieli)

tution of higher learning to start using the system, followed by the Hebrew University and Tel Aviv University's libraries in 2017, as

well as various colleges. "Libraries have always been very traditional, so they realize they need to make changes. The requirement of users being totally quiet among the books has changed. Instead, libraries encourage and provide facilities for collaborative teamwork, and their resulting interaction creates a hubbub."

The advanced Ex Libris system will include medical libraries. "Faculty members no longer rely mainly on printed textbooks. Most of the learning and research is conducted using electronic materials such as e-journals and e-books."

THE MEDICAL History Museum at the medical library was transferred to the Hebrew University Medical Library about 15 years ago. The main contributors to the original collection were Dr. Moshe Atlas, Dr. Mordechai Etzioni, Dr. Sussman Muntner, Dr. Siegfried Plaschkes, Dr. Avi Saliternik and Mr. and Mrs. Alexander Sharon. Today, it is officially listed by the Jerusalem Municipality as a museum located in the capital.

It contains collections of medals, Hebrew amulets, medical stamps, a number of ancient instruments and more. Leading up the stairs to the library are bookplates (ex libris) in black and white and drawings to whet the appetite. The first electrical pacemaker is one of the objects on display. The collections focus on teaching medical students about the history of medicine and the interface between past and present, but the professionally designed and curated collection "deserves the attention of the wider public," said Prof. Kenneth Collins, formerly of Glasgow, who researches the subject at the medical school.

Collins was co-editor of the fascinating book (reviewed by the *Post* two years ago) *Moses Maimonides and His Practice of Medicine* with HU emeritus Prof. Samuel Kottek and Prof. Fred Rosner of New York's Mount Sinai School of Medicine and the Albert Einstein College of Medicine. Kottek, Collins and Prof. Yoel Donchin, a retired Hadassah anesthesiologist who is in charge of medical education at the medical faculty, are academic consultants to the museum and lovers of old medical memorabilia.

"We wanted to change the way it was displayed and to make con-

nections with our rare book and history of medicine collection," Mor explained. "We aim at working with medical education to

make the museum exhibits as part of curriculum. We invite everyone to experience the world of medical examination, diagnosis, prognosis and education, via the collections of various physicians that form the basis for the museum," said Mor.

DONCHIN, AN amateur collector of memorabilia, teaches an optional course using objects in the museum. "Some students will argue that the history of medicine should be studied by old doctors and professors, but I think it's very important to teach it to medical students. They can learn from the history of medicine," he said. "The Hippocratic Oath includes the Latin rule *primum non nocere* – first, do no harm."

This, said Donchin, is as relevant today as in ancient Greece. The current debate on whether doctors should be required to force-feed security prisoners, for example.

"Medical students don't know when the first antibiotics went on market. They are surprised to hear that until 1945, there was no penicillin," Donchin said.

In his course, for example, students are told that "a 40-year-old man, an ancient Roman senator from the year 200 BCE, noticed that the skin on his face was yellow and he suffered from nausea and itching. What could his medical problem be, and which of the museum pieces would you use to diagnose it?"

There is a British medical journal called *The Lancet*, he continued.

"What actually is a lancet, and how is it used? In fact, the piece of metal is a cutting instrument with a double-edged blade for surgery, a pointed instrument that was used instead of a hypodermic needle for vaccinating patients against chicken pox or smallpox or... for pricking the skin to get drops of blood for testing."

Lancets are on display in the museum.

So are meticulous anatomical drawings by Vesalius, the first simulators to teach ear-nose-and-throat specialists how to examine the tongue and throat, a little hammer to test reflexes and even a map of bumps of the head that phrenologist medicine men used to use to "diagnose" illness. Donchin has attached QR codes to link his text material to online video material.



PROF. YOEL DONCHIN  
(Judy Siegel-Itzkovich)

IN ANCIENT Greek medicine, since Hippocratic times, the 5th century BCE, human physiology was based on the theory of the "Four Humors." Modern surgery followed a better understanding of the human body when Vesalius became a professor at the University of Padua in the 16th century and published his masterpiece, the *Fabrica*. The advancement of physiology, invention of the microscope and discovery of the germ theory of disease led to cures for many infectious diseases, said Kottek. Eighteenth century military doctors improved trauma treatment, first aid and surgery.

Modern medicine developed with the introduction of new biological treatments, developments in chemistry, genetics and laboratory technology. Professionalization resulted in better trained nurses in the late 19th century and specialized physicians in the 20th century, he said. Recent advances in medical sciences are built on the foundations of past generations and an understanding of the medical past can still teach us much of what remains important to the physicians of today and tomorrow.

The museum is open during library hours: 8:30-19:30 Sunday through Thursday

For group visits and for guided tours, contact the library at (02) 675-7602.



(Judy Siegel-Itzkovich)

## Disposable guts save sea creature from predators

### NEW WORLDS

• By JUDY SIEGEL-ITZKOVICH

Tel Aviv University researchers have discovered a sea creature that ejects its digestive system when danger threatens, and then regenerates it within two weeks. They even wonder whether some day humans could use the same technique to renew vital organs. The research by Dr. Noa Shenkar and her student Tal Gordon, titled "Gut-spilling in chordates: Evisceration in the tropical ascidian *Polycarpa mytiligera*," was published recently in *Nature: Scientific Reports*.

Shenkar and her team are surveying certain invertebrates living among the corals off the coast of Eilat. It was there that they discovered the talented member of the ascidian family, and they took several to their lab. What they saw was "like science fiction." When even a small amount of mechanical pressure is applied to it by a predator, the creature expels its unpalatable digestive organs. The mechanism makes the creature very successful; this species is the most common type in

the Eilat coral reefs, and among the most common in reefs around the world.

The ejection of internal organs is a well-known phenomenon in sea-cucumbers. But it was not known in other creatures such as *Polycarpa mytiligera*, which is small and simple looking. Shenkar, a marine biologist, noted that many living things can regenerate missing parts – for example lizards regrow their tails, starfish regrow their arms and flatworms can restore whole sections of their bodies. However, these body parts are not essential to their survival. The *Polycarpa mytiligera* can not only eject and regrow vital organs, but can manage without them for a limited time.

"It seems that mankind has a lot to learn from this creature," said Shenkar.

As it is brown and usually covered with all kinds of other creatures, it is well cam-

ouflaged. Fish usually don't feed on it, as it is not tasty to them, said Shenkar. If a fish bites into one, it spits it out immediately.

"We still don't know the compound that gives it a bad taste. The ejection of its organs is a way of telling potential predators: 'Don't touch me or eat me. I am not tasty,'" the TAU biologist suggested.

Regarding the possibility of implications for human health, she said that the ascidian, which is commonly found, could serve as an excellent model for future medical research on renewing soft tissue.

"We believe that these planned studies can advance understanding toward future developments in regenerating human tissue," concluded Shenkar.

### ANIMAL SPECIES PRODUCE OWN SUNSCREEN

Researchers have discovered why many animal species can spend their whole lives outdoors with no apparent concern

about high levels of solar exposure – they make their own sunscreen.

The findings, published recently in the journal *eLife* by scientists from Oregon State University, found that many fish, amphibians, reptiles and birds can naturally produce a compound called gadusol, which among other biologic activities provides protection from the ultraviolet, or sun-burning component of sunlight. The researchers also believe that this ability may have been obtained through some prehistoric, natural genetic engineering.

According to the study, the gene that provides the capability to produce gadusol is remarkably similar to one found in algae, which may have transferred it to vertebrate animals and because it's so valuable, it has been retained and passed along for hundreds of millions of years of animal evolution.

"Humans and mammals don't have the ability to make this compound, but we've found that many other animal species do," said pharmacy professor Taifo Mah-

mun who was lead author of the research.

The genetic pathway that allows gadusol production is found in animals ranging from rainbow trout to the American alligator, green sea turtle and farmyard chicken.

"The ability to make gadusol, which was first discovered in fish eggs, clearly has some evolutionary value to be found in so many species," Mahmud said. "We know it provides UV-B protection, it makes a pretty good sunscreen. But there may also be roles it plays as an antioxidant, in stress response, embryonic development and other functions."

The researchers also found a way to naturally produce gadusol in large amounts using yeast. With continued research, it may be possible to develop gadusol as an ingredient for different types of sunscreen products, cosmetics or pharmaceutical products for humans. Instead of rubbing the sunscreen on, it could be a systemic one in humans that they could swallow, he suggested.