

News Release

For immediate release

Miniature robot for precise positioning and targeting in keyhole neurosurgery wins Kaye Award for Hebrew University researcher

Jerusalem, 5th June 2007 – While recent advances in neurosurgery have made it possible to precisely target areas in the brain with minimum invasiveness -- using a small hole to insert a probe, needle or catheter -- there remains a disadvantage. The small size of the openings reduces or eliminates direct site visibility and requires greater dexterity, stability and precision by the surgeon.

Now, an invention by a Hebrew University of Jerusalem researcher has made it possible to retain the advances of such keyhole surgery through utilization of the “services” of a tiny robot that can guide surgical procedures with great accuracy. For this development, Prof. Leo Joskowicz of the School of Engineering and Computer Science at the Hebrew University has been named one of this year’s winners of a Kaye Innovation Award, to be presented on June 6 during the Hebrew University’s 70th Board of Governors meeting. Prof. Joskowicz is the founder of the Computer-Aided Surgery and Medical Image Processing Laboratory at the Hebrew University, which he heads to this day.

Although keyhole brain surgery, based on preoperative CT or MRI images, has obvious advantages for the patient, misplacement of the surgical instrument in these procedures may result in haemorrhage and severe neurological complications.

To overcome this problem, Prof. Joskowicz and his associates have developed a novel, image-guided system for precise, automatic targeting of structures inside the brain. The system is based on a miniature robot that can be programmed with detailed information obtained from preoperative electronic scans of the patient.

During surgery, the robot is directly affixed to a head clamp or to the patient's skull. It automatically positions itself with great accuracy in respect to the surgical targets. Once positioned, the robot locks itself in place and serves as a guide for insertion by the surgeon of a needle, probe, or catheter to carry out the procedure.

The main advantages of the system are the reduced pain for the patient, its compactness and ease of use, and its applicability to a wide variety of neurosurgical procedures.

The system was developed jointly by Prof. Joskowicz with Ph.D. students Ruby Shamir and Moti Freiman of the School of Engineering and Computer Science at the Hebrew University; Prof. Moshe Shoham of the Department of Mechanical Engineering at the Technion-Israel Institute of Technology; Dr. Yigal Shoshan and Prof. Felix Umansky, of the Department of Neurosurgery at Hadassah Hebrew University Medical Centre.

The two-year project was funded by a grant from the Israel Ministry of Trade and Industry through Yissum, the technology transfer company of the Hebrew University, which has commercialized it for product development by Mazor Surgical Technologies, Israel.

The Kaye Innovation Awards at the Hebrew University have been awarded annually since 1994. Isaac Kaye of England, a prominent industrialist in the pharmaceutical industry, established the awards to encourage faculty, staff, and students of the University to develop innovative methods and inventions with good commercial potential that have benefited or will benefit the University and society.

For more information, or for press contact with students, faculty or spokespersons from HU, please speak in the first instance to Jason Caplin, Communications Manager, on +44 (0)20 7691 1471 or email jason.caplin@bfhu.org.



About the Hebrew University

With 24,000 full-time students, the Hebrew University of Jerusalem is Israel's pre-eminent institute of higher education. Its faculty members pursue projects that are both essential to Israel's future and the benefit of humanity. It is a centre of international repute, with formal and informal ties extending to and from the worldwide scientific and academic community. Students come from all over Israel and across the Middle East to study in an atmosphere of academic and research excellence.

About the British Friends of the Hebrew University

Established in 1926, The British Friends of the Hebrew University is the oldest established Jewish charity in support of higher education. The charity works to promote and enhance the reputation of the Hebrew University, ensure that underprivileged students are given the opportunity to complete their studies, and help HU to maintain its standard of excellence and worldwide reputation for research. BFHU acts as the UK's gateway to Hebrew University research, expertise and faculty, and provides financial and pastoral support for prospective and current students at HU, as well as supporting visiting and sabbatical Hebrew University lecturers during their time in the UK.