

Protein from poplar trees can be used to greatly increase computer capacity

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Scientists from the Hebrew University of Jerusalem have succeeded in showing how it is possible to greatly expand the memory capacity of future computers through the use of memory units based on silica nanoparticles combined with protein molecules obtained from the poplar tree.

In doing so, they say, they have developed an alternative avenue to miniaturize memory elements while increasing the number and capacity of memory and functional logic elements in computers. This approach, they say, could replace standard fabrication techniques in use until now for increasing computer [memory capacity](#), a process which involves ever-increasing manufacturing costs.

The Hebrew University project involves the genetic engineering of poplar protein to enable its hybridization with a silicon nanoparticle. In this process, the nanoparticles are attached to the inner pore of a stable, ring-like protein (the poplar derivative), and these hybrids are arranged in a large network, or array, of very close, molecular memory elements.

Prof. Danny Porath and his graduate student Izhar Medalsy of the Institute of Chemistry at the Hebrew University have succeeded in successfully demonstrating how stable computing activity in a tiny memory element can be carried out in this way. The practical result is a cost-effective system that greatly increases existing memory capacity while significantly reducing the space required to carry out this volume of activity.

The genetically engineered poplar-derived [protein](#) complexes were developed in the laboratory of Prof. Oded Shoseyhov in the framework of the doctoral thesis of Dr. Arnon Heyman at the Robert H. Smith Faculty of Agriculture, Food and Environment of the Hebrew University.

An article describing the work of the scientists has been published in the journal *Nature Nanotechnology*.

The researchers are hopeful that this technology, which has been patented by Yissum, the technology transfer company of the Hebrew University, and licensed to Fulcrum SP Ltd., will prove to be a commercially successful alternative to current computer systems.

Provided by Hebrew University of Jerusalem

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