



PROF. HERMONA SOREQ of the Hebrew University won one of this year's Kaye Innovation Awards. (HU)

RNA ENGINEERING CAN COMBAT DISEASE

Research that helps control errors in gene expression as a safer and more effective alternative to conventional drugs has won for Prof. Hermona Soreq, dean of the Hebrew University science faculty one of this year's Kaye Innovation Awards. These prizes, given annually by prominent British industrialist Isaac Kaye to encourage HU faculty, staff and students to develop innovations with good commercial potential that will benefit society, are always presented during the board of governors' meetings.

HEALTH SCAN

• By JUDY SIEGEL-ITZKOVICH

The concept behind Soreq's work lies in coping with situations involving over- or under-expression of certain genes. Through development of state-of-the-art technologies, she and her research partners succeeded in manipulating the RNA that translates cholinesterase genes from DNA into the cholinesterase proteins that control body-to-brain and brain-to-body communication and are therefore very important.

Essentially, all the drugs known today are aimed at blocking the activities of excess proteins. This, she says, is "economically" wrong because these drugs must target a large number of protein molecules, requiring relatively large quantities of drugs, and thus causing undesirable side effects.

On the other hand, Soreq says, one doesn't want to hamper the genes that are at the top of the "pyramid" of the process leading to the production of proteins, because this could endanger the next generation of cells. The third possibility, she continues, is to deal with the central part of the "pyramid" – the RNA level. RNA can be cloned and engineered to be expressed in various cells or tissues, adding protein if needed. Or, conversely, the RNA can be engineered to block a particular gene from being expressed, and thus prevent production of the unwanted excess of such protein.

Her invention of engineered human

cholinesterase and RNA-targeted agents to suppress its functioning has been patented by Yissum, the university's technology transfer company. Over the years, this technology has won over \$5 million in research grants and generated a significant patent portfolio. One company under license from Yissum has developed a herd of goats engineered to produce the human cholinesterase BCHE protein in their milk; this can protect soldiers against nerve gas, and could also be used as a treatment for Alzheimer's disease.