

Israel leads world in stem cell research papers per capita

Israel's prominence in stem cell research has been confirmed by a German study conducted by the Central Library of the Research Center, Julich, which shows that it is the leading publisher of stem cell research per capita in the world.

According to the report, which covers the years 2000-2004, Israel publishes 113 articles per one million citizens, a ratio that exceeds any other country in the world. Israel is followed in rank by Sweden, Switzerland, the Netherlands and Austria. The US places at sixth, though it comes in first when judged by volume alone, at 13,663 articles, compared to Israel's 690.

The center's director, Raphael Ball, an author of the study, told *The Scientist* that the strong showing on a per capita basis of Israel and other small nations indicates a strong national commitment for stem cell research, as well as good use of scientific and financial resources.

Top Israeli stem cell researcher Dr. Daniel Offen, head of research at the neuroscience laboratory at the Felsenstein Medical Research Center at Tel Aviv University, agrees with that assessment, and offers other reasons.

"Medical research in Israel in general is very high," Offen told ISRAEL21c. "And we don't have the same ethical and religious problems here, especially with regard to embryonic research. Not only is stem cell research allowed Halachically [according to Jewish law], but it is considered a mitzvah because it saves lives."

Offen focuses on Parkinson's disease and the isolation of neuronal stem cells from adult bone marrow. Using the cells from the patients themselves, he is working to induce cells to produce dopamine and produce cells that will support neurons in the brain or spinal cord.

Israel's work in stem cell research has historical grounding that extends back prior to embryonic stem cell research. As early as the 1960s, Israel was doing

"pioneer studies" of bone marrow stem cells. "The fact that the first steps in the development of stem cell studies occurred in Israel, formed a platform on which stem cell research developed in Israel," Dov Zipori, who is based at the Department of Molecular Cell Biology at Israel's Weizmann Institute of Science, told *The Scientist*.

A few months ago, Offen and his colleagues lectured at a stem cell conference at the Los Angeles-based hospital, Cedars-Sinai Medical Center. Since then, three of the doctors from California have come to Israel to engage in "scientific negotiations." The American doctors met with the Israelis to discuss how they could push their regulations and continue with their clinical studies in the States. The California doctors want to bring back the Israeli cells to use in their surgeries, an idea which will likely get FDA safety approval within the year. Offen says that their partnership with the Cedar Sinai Medical Center is one of his top priorities.

The American doctors are particularly impressed by the Israeli success in inducing cells to produce dopamine, as well as producing cells that will support neurons in the brain or spinal cord. "This is something that no one else can claim," Offen says.

Another prominent Israel researcher, Professor Jonathon Leor, Director of the Neufield Cardiac Research Institute at Sheba Medical Center, is doing breakthrough research in a process that involves using the blood of a newborn baby's discarded umbilical cord (UCB) as an unlimited source of stem/progenitor cells. The blood could be injected into a patient's heart in order to regenerate damaged heart tissue, a process that could eventually make heart transplants obsolete.

Leor believes that the Israeli success in stem cell research has to do with the manpower available in Israel. "We have bright researchers here. We have significant shortages in budget, but the researchers are dedicated and expe-

rienced, so we have a chance to compete with other nations," Leor told ISRAEL21c.

Leor, along with Dr. Israel Barbash and PhD student Ayalet Itzhaky, are currently working on isolating stem cells from the heart tissue of sick patients and growing those cells in an incubator in order to learn how to improve and cure them, in collaboration with the heart institute and cardiovascular surgery department at Sheba Medical Center. Though the stem cells currently being used for research are taken from heart tissue during open-heart surgery, in the future," Leor told ISRAEL21c, "the cells will be able to be retrieved from a catheter into the heart, or maybe even from a blood sample. The dream is to be able to isolate stem cells from the skin and use them for heart repair."

Two leading New York stem cell researchers, Dr. Piero Anversa and Dr. Michael Laslaam, recently visited Leor's lab, and Leor says that he will most likely enter into collaboration with Anversa, who is also a cardiac stem cell researcher.

Beyond their individual efforts, Israeli scientists, researchers and academics are also working together to further advance their work. A group of some of Israel's leading stem cell researchers founded a consortium called the Consortium Bereshit for Cell Therapy. Their main goal is to create embryonic stem cells that will be FDA approved.

"Medicines only treat symptoms, not diseases themselves," says Dr. Arik Hasson, the head of the project. "Stem cell therapy can offer a real solution to nervous system diseases and cancer. It can be applied to cardiac disorders, renal failure, diabetes mellitus, autoimmune disease, bone and joint disorders, genetic illness and skin wounds." Whatever the reason may be for Israel's high-profile role in stem cell research, with its world leading per capital volume of research papers, the country's clout in stem cell research is formidable. ■

Excerpts By Abby Margulies – 21C