Weizmann Wonder Wander

News, Features and Discoveries from the Weizmann Institute

מכון ויצמן למדע
WEIZMANN INSTITUTE OF SCIENCE

Stem Cells On Call

01.10.2003 | Also in: Life Sciences, Disease, Drugs & Diagnostics

They still don't have a personality and they're waiting for the maturity call. Stem cells in our bone marrow usually develop into blood cells, replenishing our blood system. However, in an emergency, the destiny of some of these stem cells may change: They can become virtually any type of cell – liver cells, muscle cells, nerve cells – in response to the body's needs.

Prof. Tsvee Lapidot and Dr. Orit Kollet of the Weizmann Institute's Immunology Department have found how the liver, when damaged, sends a cry for help to these stem cells. They discovered that certain molecules governing normal development of the liver become overproduced when it is damaged, signaling to the stem cells in the bone marrow to come to the site. The scientists were able to pinpoint the signaling molecules and describe the homing process.

The findings could lead to new insights into organ repair and transplants, especially liver-related ones. They may also point to a whole new stock of stem cells that can, under certain conditions, become liver cells. Until a few years ago, only embryonic stem cells were thought to possess such capabilities. Understanding how stem cells in the bone marrow turn into liver cells could one day be a great boon to liver repair as well as to stem cell research and therapy.

Prof. Lapidot's research was supported by the M.D. Moross Institute for Cancer Research; the Concern Foundation, Beverly Hills, CA; Ms. Rhoda Goldstein, Nanuet, NY; the Levine Institute of Applied Science; Ms. Nora Peisner, Hungtington, MI; and the Gabrielle Rich Center for Transplantation Biology Research.