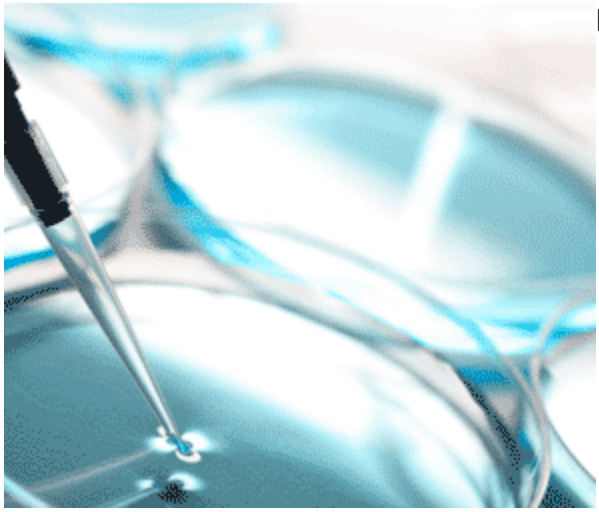
Learn More About Our Research

We are conducting primary research on bone regeneration and pancreas regeneration (diabetes research), cord blood expansion, and biomolecule expansion, all of which are covered by our worldwide patent applications.



Human Treatments

Moreover, very promising treatments of serious diseases with adult stem cells have already been tried. The special advantage is that there are no rejection reactions, because the cells are from the same body.

Of longer standing is treatment with bone marrow stem cells. The treatment comes into play when, for example, a patient has lost his or her blood-forming tissue through radiation or high-dose chemotherapy. Previously removed bone marrow stem cells are then retransplanted, and are able to resume the formation of blood cells.

In 2001, however, a team of doctors at the Duesseldorf University Clinic carried out a treatment of very far-reaching consequences. For the first time, they treated a cardiac infarct patient with stem cells from his own body. The cardiologist, Prof. Bodo Eckehard Strauer, is sure that the stem cells from the patient's bone marrow, after injection into the infarct zone, autonomously converted to heart muscle. The functioning of the severely damaged heart clearly improved within a few weeks.

Four days after the infarction, the doctors took bone marrow from the patient's pelvis using local anesthesia. The stem cells in the marrow were concentrated outside of the body and implanted in the infarct area the next day with a special technique via a coronary artery. However, the doctors could not yet take cardiac tissue to prove definitively that the implanted blood stem cells had converted to heart muscle cells. But, according to Strauer, there is no other way to explain the marked improvement in the patient's condition. After this first successful operation, six more patients have already been treated with their own stem cells, with similarly positive results.

There are also reports of successful treatments with adult stem cells in cases of Crohn's disease (a chronic infection of the gut), thalassemia (a blood disease), and a rare skin disease. And-despite the fact that basic research with adult stem cells is in its earliest beginnings and is in no way being promoted with urgency-there have been a growing number of reports lately of experiments with animals, from which it emerges that adult stem cells can successfully transform themselves into differentiated cells of organs of many kinds.

In contrast, reports of successful conversions of embryonic stem cells are very infrequent and cautious. Thus, we find in Science of Dec. 1, 2000 (Vol. 290, pp. 1672-1674): "In contrast, the human embryonic stem cells and fetal germ cells that made headlines in November 1998 because they can, in theory, develop into any cell type have so far

produced relatively modest results. Only a few papers and meeting reports have emerged from the handful of labs that work with human pluripotent cells. . . . The work suggests that it will not be simple to produce the pure populations of certain cell types that would be required for safe and reliable cell therapies. . . ."

This is the restrained language used by established science to describe a truly disastrous set of results.

There are, of course, still substantial problems to be overcome, even with adult stem cells: They are relatively rare, and are hard to find with the techniques used so far. They are also not very easy to culture outside of the body. It was therefore an important advance that Australian researchers of the Walter and Eliza Hall Institute of Medical Research have now found a way to isolate nerve stem cells with "extreme purity" from the brains of mice. In Nature of August 16, 2001 (Vol. 412, pp. 736-739), they reported obtaining a culture of 80 percent purity, compared to a previous rate of 5 percent at best.

It is now urgently necessary to tackle the research in precisely this direction, in order to find out the exact conditions under which the differentiation of stem cells comes about and how, in detail, it proceeds. Only by this morally unassailable route will it be possible to develop new therapies for serious, heretofore incurable diseases, and beyond that, to improve our understanding of the development of life itself.

From *The Case for Adult Stem Cell Research*
Courtesy of Wolfgang Lillge, M.D.