



ADULT STEM CELL BREAKTHROUGHS, TREATMENTS AND CURES

- Scientists in Portugal are using olfactory ensheathing glial cells from the lining of a patient's nose to treat *spinal cord* injuries. Senator Brownback recently held a press conference where he introduced two young ladies, Susan and Laura, who were paralyzed, one a quadriplegic. Both of them are now able to walk with braces, due to adult stem cells.
Testimony of Susan Fajt at hearing of the US Senate Subcommittee on Science, Technology and Space, July 14, 2004. Accessed at: http://commerce.senate.gov/hearings/testimony.cfm?id=1268&wit_id=3674
Zwillich, Todd, "Paralysis Patients Tout Adult Stem Cells: Portuguese Surgery Soon to Seek FDA Approval in US," *WebMD Medical News*, June 24, 2004. Accessed at: <http://my.webmd.com/content/Article/89/10025.htm>.
- In South Korea a 20-year-old quadriplegic woman received transplanted umbilical cord stem cells to the site of her spinal injury. She's now mobile with a walker.
"Paralyzed Woman Walks Again After Stem Cell Therapy," *Yahoo! News*, Nov. 28, 2004. Accessed at: <http://sg.news.yahoo.com/041128/1/3ovex.html>.
- In Germany, stem cells have been used to help repair skull bone damage in a 7-year-old girl. Unlike other bones, skull bones do not regenerate, hence the use of metal plates to repair the damage. Using adult stem cells, the missing bone plates were replaced by thin, solid bone. Bits of the child's own bones, mixed with adult stem cells, produced the healing.
Howaldt, Hans-Peter et al., "Autologous Stem Cells and Fibrin Glue Used to Treat Widespread Traumatic Calvarial Defects: Case Report," *Journal of Cranio-Maxillofacial Surgery*, Volume 32, Issue 6, Dec. 2004, p. 370 - 373.
- London researches have been using adult stem cells in trials to treat damaged livers. They hope to colonize and grow new liver cells allowing the liver to function again.
Day, Michael, Halle, Martyn and Houreld, Katharine "If Drink or Disease Destroy Your Liver, Just Grow a New One," *Telegraph Group Limited*, Nov. 14, 2004. Accessed at: <http://telegraph.co.uk/core/content/displayPrintable.jhtml?xml=/news/2004/11/14/nliver14.xml&site>.
- In the US Germany, Brazil and France, human patients have been treated with their own stem cells to regenerate heart muscle destroyed during a heart attack or injury. In most cases this was successful.
Wade, Nicholas, "Doctors Use Bone Marrow Stem Cells to Repair a Heart," *New York Times*, March 7, 2003: A20.
Britten, MD et al., "Infarct Remodeling After Intracoronary Progenitor Cell Treatment in Patients With Acute Myocardial Infarction," *Circulation* 107, May 13, 2003, p. 2294 - 2302.
Menasche, P et al., "Myoblast Transplantation for Heart Failure," *Lancet* 357, Jan. 2001, p. 279 - 280.
- Twenty-three patients regained their eyesight following limbal (adult) stem cell transplants. This treatment has helped many suffering from blindness for years, including victims of Iraqi mustard gas attacks.
Holland, Edward J et al., "Management of Aniridic Keratopathy With Keratolimbal Allograft: a Limbal Stem Cell Transplantation Technique," *Ophthalmology*, Volume 110, Issue 1, p. 125 - 130.
- Patients with Crohn's disease have apparently been cured after treatment with stem cells from their own blood.
Burt, RK et al., "High-Dose Immune Suppression and Autologous Hematopoietic Stem Cell Transplantation in Refractory Crohn Disease," *Blood* 101, March 2003, p. 2064 - 2066.

- Ninety percent of 19 patients with various autoimmune disorders, such as systemic lupus, are in remission or have improved after treatment with their own blood stem cells.

Rosen, O et al., "Autologous Stem-Cell Transplantation in Refractory Autoimmune Diseases After in Vivo Immunoablation and Ex Vivo Depletion of Mononuclear Cells," *Arthritis Research* 2, 2000, p. 327 - 336.
- One patient with multiple sclerosis improved after being treated with adult stem cells from his own blood.

Silber, Judy, "A promising Weapon in the Fight Against MS," Sept. 7, 2000. Accessed at www.multiple-sclerosis.org/news/Sep2000/LATimesMSStemCellTransplants.html.
- One Study of Parkinson's patients showed an average improvement of sixty-one percent increase of coordination, as well as fewer symptoms after transplants of the patient's own neuronal stem cells.

Gill, SS et al., "Direct Brain Infusion of Glial Cell Line-Derived Neurotrophic Factor in Parkinson Disease," *Nature Medicine* 9, May 2003, p. 589 - 595.
- Doctors added adult stem cells from umbilical cord blood to the treatment of leukemia patients. This freed fourteen of eighteen patients of the disease.

Ooi, J et al., "Unrelated Cord Blood Transplantation for Adult Patients With De Novo Acute Myeloid Leukemia," *Blood* 103, Jan. 15, 2004, p. 489 - 491.
- Hematopoietic stem cell transplants successfully treated over two hundred sickle cell patients. The success rate has been eighty to eighty-five percent.

Vermlyen, C, "Hematopoietic Stem Cell Transplantation in Sickle Cell Disease," *Blood* 17, Sept. 2003, p. 163 - 166.
- A 52-year-old woman with rheumatoid arthritis in 38 joints was treated with adult stem cells from her sister. While still in the hospital, her morning stiffness ceased. One year later she is free of the disease and off medication.

Burt, Richard K, "Induction of Remission of Severe and Refractory Rheumatoid Arthritis by Allogeneic Mixed Chimerism," *Arthritis & Rheumatism*, Volume 50, Issue 8, p. 2466 - 2470.
- Innsbruck, Austria, doctors have used adult stem cells from patients' muscles to successfully treat urinary stress incontinence. Eighteen of twenty remain continent one year later.

Klauser, Andrea et al., "Ultrasound-Guided Transurethral Injection of Adult Stem Cells for Treatment of Urinary Incontinence: First Clinical Results," Nov. 28, 2004. Accessed at: <http://www2.rsna.org/pr/target.cfm?ID=208>.
- Researchers found that adult stem cells in the pulp of baby teeth may be extremely useful in growing replacement brain tissue to overcome stroke damage and other neurological disorders.

Miura, Masako et al., "SHED: Stem Cells From Human Exfoliated Deciduous Teeth," *Proceeding of the National Academy of Sciences*, May 13, 2003, Volume 100, No. 10, p. 5807 - 5812.
- Chagas disease is a potentially lethal parasitic condition attacking and destroying the heart and other tissue. It kills six million people worldwide every year. The parasite can be killed with treatment, but the damage remains. Now scientists in Buenos Aires, using adult stem cells from patients' own bone marrow, have been repairing heart damage.

"Adult Stem Cells Repair Damage Caused by Deadly Parasites," *Corethics*, Feb. 17, 2005. Accessed at: <http://www.corethics.org/document.asp?id=n170205.txt&se=4&st=4>.
- Scientists in New York are exploring the real possibility of using adult stem cells to regenerate teeth that have been removed.

Duailibi, MT et al., "Bioengineered Teeth from Cultured Rat Tooth Bud Cells," *Journal of Dental Research* 83, p. 523 - 528.
- Toronto researchers reported finding adult stem cells not merely in umbilical cord blood, but also in "jackpot" adult stem cells in the tissue mass (Warton's Jelly) surrounding the three umbilical cord blood vessels. They anticipate using these adult stem cells to regrow bone and connective tissue in knees that have been damaged in

an accident.

Sarugaser, Rahul et al., "Human Umbilical Cord Perivascular (HUCPV) Cells: A Source of Mesenchymal Progenitors," *Stem Cells* 23, Feb. 2005, p. 220 - 229.

- In Argentina, stem cells from a diabetic patient's own bone marrow were fed into his pancreas through an artery. His glucose levels returned to normal with no need for medications.
"Argentina: More on Fernandez Vina's Work on Diabetes," *Stem Cell Research Medical and Health News*, Feb. 8, 2005.
Accessed at: <http://www.stemnews.com/archives/000247.html>.
- Pennsylvania and Louisiana scientists have coaxed adult stem cells from bone marrow to differentiate into the type of cells that line lungs and air passages. This may lead to effective treatments for cystic fibrosis.
Spice, Byron, "Stem Cell Therapy for Cystic Fibrosis?," *Healthy, Science & Environment*, Dec. 21, 2004. Accessed at: <http://www.post-gazette.com/pg/04356/430049.stm>.
- Adult stem cells hold a promise to treating baldness in humans. A study at the University of Pennsylvania School of Medicine reports using them to grow hair on bald mice.
Morris, Rebecca et al., "Capturing and Profiling Adult Hair Follicle Stem Cells," *Nature Biotechnology*, Volume 22, No. 4, April 2004, p. 411 - 417.
- Chicago researchers are looking at a new adult stem cell technique that will replace implants for reconstructive surgery and body augmentation. This could have profound commercial implications for cosmetic surgery.
Reinberg, Steven, "Stem Cells Promise Better Plastic Surgery," *Forbes.com*, Feb. 17, 2005. Accessed at: <http://www.forbes.com/lifestyle/health/feeds/hscout/2005/02/17/hscout524030.html>.
- Dr. Migoshi, Kelo U. Tokyo, March, Am Col Cardiology, Adult Stem Cells from Menstrual blood into heart cells.
- Dr. G. Hasenfuss, Goettingen, Germany, versatile stem cells from testicles into liver, muscle, pancreas, heart and nerve cells, *Nature*, 24, March.
- First lung stem cell found "*Technology Review*, March, 2006, online."
- Hair follicle stem cells repair mice nerve damage.
- Umbilical cord blood stem cells contain naturally known hematopoietic stem cells but also additional formative cells similar to embryonic ones.
- Adult stem cells made to multiply at will ... *MIT*, Boston, Dr. Shewey, J. Biotech & Bioeng.
- Bone marrow cells found that behave like embryonic ones, M. Ratajczak, University of Louisville, *American Society Hematology Meeting*, Dec. 2005.
- No relapse: Adult stem cell Rx shows permanent results, K. Syrjala, *J. Clinical Oncology*, Sept. 2005.
- From placenta: Amniotic epithelial cells similar to embryonic cells, University of Pittsburg, *Stem Cell Express* online, Aug. 9, 2005.
- Many of the above studies are preliminary and have been done on animal models, although many have been used in human trials. A single report of a success (e.g. of skull bone) is not considered definitive until other scientists replicate the same study. Then trials must succeed in human subjects, using adult stem cells before such treatments will be available for you and your loved ones. This being said, however, we can hardly conceal our excitement at these new discoveries. Most of the above have been reported within the last 1 to 3 years. In stark contrast to this, we have no reports of any such successes using embryonic stem cells.