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## Fat injections add more than volume to hands

By John Jesitus

### Stem cells play significant role in rejuvenating skin



Dr. Coleman

**New Orleans** — Rather than simply plumping up the back of the hand, fat injections given there perform a host of rejuvenation functions that researchers are just beginning to understand.

"The way that fat acts in the back of hands is, it doesn't just make the hands fatter. It actually makes the skin better so that it disguises the veins and tendons and acts to fill out the area when one has big depressions. But the more important thing it does is it gives a younger-looking hand without making it fat," says Sydney R. Coleman, M.D., a plastic surgeon in private practice in New York City.

Until recently, researchers knew little about how fat injections accomplished such changes. As they learn more about stem cells, however, they find that it appears these cells play a significant role in rejuvenation.

**Repair of skin** "There's been a huge amount of research that shows that from fat, one can actually make bone, tendons, cartilage, muscle and skin," he says. "The big emphasis on muscle has (occurred) because of cardiac research" that attempts to repair heart tissue by injecting stem cells into them after a heart attack, to reverse the associated scarring and damage.

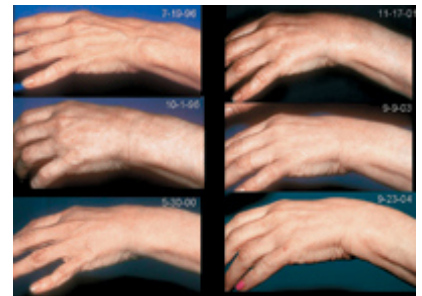
"I believe something very similar to that is happening with regard to stem cells placed under the skin via a fat injection, in that (such injections) repair the skin," Dr. Coleman says. "Fat has the highest percentage of stem cells of any tissue in the body other than bone marrow."

In bone marrow, stem cells function to manufacture red and white blood cells, as well as platelets.

"But we're finding out that they do a lot of other things," Dr. Coleman says. "Some of the recent research even shows that bone marrow stem cells help repair skin when the skin is damaged. There's a lot of very interesting research in the tissue engineering literature right now about that."

**Fat cells can change** Among the latest discoveries is the finding that fat cells containing lipids can actually change to become bone-forming cells (Justesen J et al. *Tissue Eng.* 2004 Mar-Apr;10(3-4):381-391).

"We've known for a long time that calcium deposits can be formed in soft tissue — that's how we look for breast cancers and similar problems. But now we're finding out that there's a whole lot going on that we didn't know about" with stem cells, Dr. Coleman says.



Dr. Sydney R. Coleman coined the word LipoRepair because fat placed under the skin appears to repair aged, sun damaged and even scarred skin. Photos: Sydney R. Coleman, M.D.



Fibroblasts: The great rejuvenator?

"We've always known that the body can make bone in soft tissue, but now we're finding out how it works," he says. "We thought it was something that happened only when patients had cancers or something like that. But now the tissue engineering literature is showing us that it's possible for something like fat to become bone, cartilage, muscle or skin. It's an area people are paying a lot of attention to because of the potential medical applications" that could stem from this knowledge.

**Epidermis can form** Another recent breakthrough is the finding that epidermis can be

formed from stem cells derived from adipose tissue (El Ghalbzouri A et al. *Br J Dermatol.* 2004 Mar;150(3):444-454).

The most significant piece of recent research, Dr. Coleman adds, is a group of Italian plastic surgeons' conclusion that stem cells are very active in repairing radiation damage and skin when fat is injected under the skin (Rigotti G, Marchi A. Presented at American Association of Plastic Surgeons 84th Annual Meeting, May 10, 2005, Scottsdale, Ariz.).

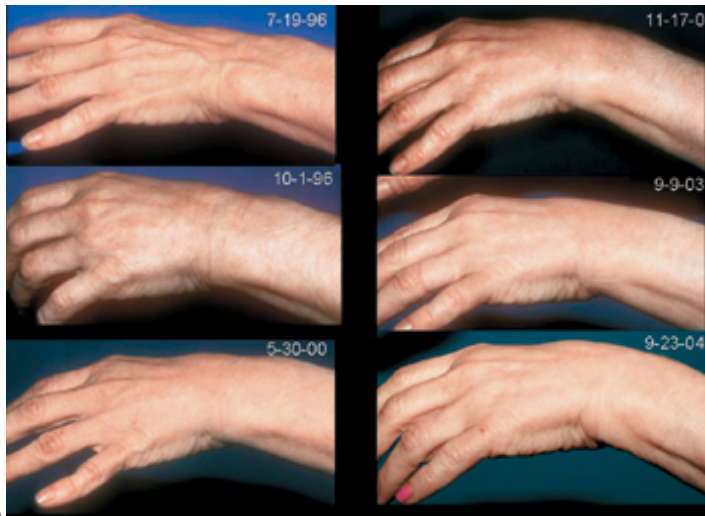
According to Dr. Coleman, "Everyone else has shown that one definitely can take fat and have it transform into other tissues. But (Dr. Rigotti) has shown that it actually happens in humans and when placed under skin."

He concludes, "The importance of all these findings is that we now have evidence that under normal conditions, some of the repair of cells in the body comes from stem cells, and many of those are located in fat. So when one moves fat into an area like the back of the hand, or the face, it does more than just filling it out. There's actually some potential repair of damaged tissue."

**Disclosure:** Dr. Coleman receives cannula royalties from Byron Medical.

**For more information:**

[www.lipostructure.com](http://www.lipostructure.com)



Dr. Coleman

Dr. Sydney R. Coleman coined the word LipoRepair because fat placed under the skin appears to repair aged, sun damaged and even scarred skin. Photos: Sydney R. Coleman, M.D.

# Fibroblasts: The great rejuvenator?




A simple process involving skin cell injections may be used to treat stretch marks, baldness and gum disease, according to *Chemistry & Industry* magazine. **The process uses fibroblast cells taken from the dermal layer of skin, then multiplied *in vitro* and injected into the area to be treated.** While the process has been used for several years to rejuvenate the aging face, researchers at Texas-based biotech company Isolagen, have recently had some success in erasing stretch marks and growing hair. In phase 1 and 2 clinical trials, fibroblast injections consistently regenerated gum tissue.

Source: Newswise

Fibroblasts: The great rejuvenator?



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