

## Fat assets: Your behind's foe is your face's ally

New research explores high-tech ways to plump up our deflating skin

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Some of cosmetic surgery's most regrettable results, such as the wind-tunnel facelift, are to blame on a case of mistaken identity, according to researchers. Cosmetic surgeons have long attributed wrinkles to the effects of gravity. But when doctors starting doing anatomical research, they realized that the bigger culprit is loss of volume under the skin of the face. In other words, our faces look older not so much because they're falling, but because they're deflating.

Some of these conclusions come from research done by Dr. Joel Pessa, an assistant professor of plastic surgery at the University of Texas Southwestern Medical Center at Dallas, who's been busily dissecting the faces of cadavers. Last year his team published a report in the journal *Plastic and Reconstructive Surgery* showing that the human face is made up of several different compartments of fat that gain or lose volume during different phases of life.

He says that by understanding where the fat goes when the face looks youthful, surgeons will one day be able to "create the optical illusion of youth" by injecting fat or filler substances into these precise compartments. "Some day there will be a formula for a youthful face," Pessa says.

Still, the trick remains how to restore this type of volume. The most popular filler out there, Restylane, only lasts a matter of months before the body absorbs it and is so pricey that to plump an entire sunken face would cost upwards of \$10,000 — all for a temporary fix. Transplants of your body's own fat are notoriously unpredictable. The next step is to develop a permanent, predictable and natural-looking substance.

Two front-runners are focusing such efforts on manipulating the body's own fat:

- The fat being liposuctioned from your behind may have some uses after all, says Dr. J. Peter Rubin, an assistant professor of surgery at the University of Pittsburgh School of Medicine.

Rubin has extracted stem cells from liposuction fat and then used these cells to grow new batches of fat in animal studies. He imagines injecting a gel of stem cells primed to produce fat into the face in someone in their 20s or 30s so that they never lose the fat, and to prevent wrinkles and sagging in the first place.

U.S. human trials, he says, are still several years off.

- Dr. Stephen Baker, an associate professor of plastic surgery at Georgetown University Hospital in Washington, D.C., and colleagues have uncovered a biological switch that allows them to selectively grow fat. They published their initial findings last summer in the journal *Nature Medicine*.

By inserting pellets containing a growth factor known as neuropeptide Y under the skin of mice and monkeys, they were able to stimulate the growth of fat deposits. (They're currently experimenting with growing breast-implant-like lumps in mice.)

Baker thinks the first possible use of this technology will be to stimulate fat in deflated, aging faces. Unlike fat transplants, which the body tends to reabsorb, these deposits should be permanent, he says, because the growth factor helps the fat establish a blood supply and take hold. He says human trials could be underway within two years.

If it pans out, a plastic surgeon could essential play sculptor with this stuff. "It would be like spackling under the skin," Baker says. "You could bring me in a picture of yourself at 20 and literally get a liquid facelift."

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