

Mixedfat can be broken down further, into nanofat—a paste made up of captured fat cells, their supporting stem cells, and other beneficial fat-based compounds—which rather than adding fullness and shape to the skin, improves its tone, texture, and overall health.

“For more than two decades now, we’ve known clinically that fat does improve the skin, but I don’t think it’s due to just one thing,” says [Dr. Haideh Hirmand](#), a board-certified plastic surgeon in New York City. In nanofat, “there’s more than just stem cells,” she goes on to explain. Moreover, “we know that the stem cells themselves contain or produce and secrete biologically active substances,” which control inflammation, turn on collagen-producing fibroblasts, and prevent DNA damage. “But we still don’t know exactly which components do what,” Dr. Hirmand says.

As Dr. Tregier notes, different uses of fat—mixedfat and nanofat—serve to combat the different tissue changes that occur with time. “Much of facial aging is due to deep volume loss,” he says, which surgeons aim to address by injecting fat on top of bone and into soft tissue, to boost structural support and thicken things up. Improving skin quality, on the other hand, is a more superficial pursuit, he adds. And since the fat is placed closer to the skin’s surface, smaller bits are needed, to avoid lumps and bumps.

# Stem cells for under-eye rejuvenation

To brighten and smooth the delicate under-eye area, surgeons routinely inject medical dogs into the tear troughs, to correct hollows before treating the skin, often described as crepey skin of the lower lids with needles. This area has proved “has been an absolute game changer for lower **eyelid surgery**,” Dr. Boudreau tells us. “I can use medical to replace lost volume and then further medical superficially to improve the dark circle effect of hyperpigmentation.”

Dr. Hirmand agrees that “we often can’t improve the [under-eye] tissues or volume as much as we want to by just doing blepharoplasty,” she says. By incorporating fat, however, she’s able to offer patients what she calls a “more intelligent version of the surgery.”

In patients not needing or wanting a blepharoplasty, fat can be injected under the eyes as a longer-lasting alternative to filler—but since liposuction is a prerequisite for fat grafting, the procedure is more invasive and expensive than standard **upper and lower eyelid surgery**.

When using nanofat, “I call it adipose-derived serum,” says Dr. Hirmand. “I don’t say, ‘Here are your stem cells.’” Instead, she describes the serum as “a sized-down version of the fat that contains this milieu of additional components, provided by the fat, which can help improve the tissue.”