



Erwin Blumenfeld, *Untitled, New York 1954*

Buzz Lightyear

What do you get when you combine proven anti-aging ingredients with powerful lasers? Results so persuasive that doctors can't stop talking about them. **By Joan Kron**

Groupies, cameras in hand, were jostling for position at the front of the ballroom of Manhattan's Waldorf Astoria hotel recently. They weren't tweens stalking One Direction—that crowd was across town at the London hotel—but young plastic surgeons from around the world attending a symposium on medical advances in their specialty, and they were hoping for a photo with one of their

own rock stars: San Diego dermatologist Richard Fitzpatrick. There's a very good chance you've never heard of him, but anyone who's had hair removed, skin resurfaced, or brown spots zapped with a laser is in Fitzpatrick's debt. As one of the pioneers of the cosmetic use of light, he famously conducted some of the initial human studies of a CO₂ skin-resurfacing laser on his own left arm. Today, though, the focus of attention was slightly lower down, on the back of Fitzpatrick's left hand, where



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the doctor discreetly showed off the results of his latest experiments.

Fitzpatrick has a prediction about the future that should give hope to any woman who has ever despaired about her aging face. “Some people think aging is preordained; others blame it on oxidative damage,” he

told the 800 doctors assembled. Fitzpatrick’s theory: “Aging is a natural process that’s out of control, and therefore curable. We can reverse skin aging—not just the appearance of it. The next frontier is laser-assisted drug delivery. This is the technology to watch.”

For those wondering exactly what’s causing all this excitement, the answer is not an innovative device or drug. What’s new is pairing existing devices with proven treatments

for wrinkles and skin discoloration in creative ways. Laser-assisted drug delivery (a concept so cutting edge that it doesn’t have a nickname yet, so let’s give it one: LADD) solves an age-old problem in dermatology: how to enable repair agents—such as retinoids, vitamins, antioxidants, and growth factors—to penetrate the stratum corneum (the topmost layer of skin, which functions as a bodyguard). “Many products don’t benefit the skin very much when used topically because very little gets through,” says Roy Geronemus, a clinical professor of dermatology at New York University Medical Center and one of the laser experts studying drug and laser combinations. In the past, he says, “everything from pumice stones and sandpaper to needles, acid, and dermabrasion” was used to aid penetration, often leaving the skin bloody and bruised.

But lasers appear to do the best job of all. “When topicals are used in combination with a laser, we have the ability to increase concentration 20- or 30-fold in some cases,” says Geronemus. His group has studied several combined therapies: One is for melasma, the patchy skin color associated with pregnancy. The standard treatment requires the patient to apply a small amount of bleaching cream all over the face daily for several months. But when an application of a diluted bleaching cream is followed immediately by treatment with the Clear + Brilliant laser, a fractional device that requires no pain medication and doesn’t wound the skin, patients can see benefits after one visit to the doctor and can be completely clear after several, says Geronemus. (As with all medical advances, these preliminary results will have to be repeated and studied for side effects before the procedure is widely adopted.)

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Another, even more intriguing application of the new technique involves a diluted form of Sculptra, a collagen-building substance that is made from the same poly-L-lactic acid used in dissolvable sutures and normally injected deep below the surface. Not a filler per se, it stimulates the body's own production of skin protein. "It's like putting a grain of sand in an oyster," says Fitzpatrick, who has used the drug in the past to add volume to the face. Just five patients have been treated with the following technique so far: After an ablative fractional laser treatment, the face is covered with an even layer of the Sculptra solution, then passed over with an ultrasound device that pushes the liquid into the microscopic holes in the two- or three-hour window before these tiny channels start healing. "We get visible improvement in a single session," says Fitzpatrick of early results (although it took up to six months to see the full response). "You could never get a complete layer of coverage like this with injectable Sculptra," he says. David McDaniel, a laser dermatologist in Virginia Beach, Virginia, has begun a similar study with the Fraxel laser and LaViv, a compound of one's own fibroblasts that stimulates collagen production. (So far, it has worked well for one patient: his wife.)

The new techniques are particularly promising—potentially life-changing, in fact—for innumerable men and women who suffer from severe acne. Currently the gold standard of acne treatment—or the last resort, depending on your perspective—is a long course of Accutane (isotretinoin), a potent vitamin A derivative with harsh side effects. (Female patients must sign the so-called iPledge to stay on birth control, because Accutane has a high risk of causing birth defects. It has also been associated with depression, liver damage, hair loss, and dry

skin.) Now scientists are working on a treatment for acne that uses lasers and grains of sand coated with gold. In testing reported in the journal *Acne and Rosacea*, 17 patients rubbed their faces with a cream containing the grains, which are small enough to penetrate the pores where hair follicles and sebaceous glands coexist. Researchers wiped off the excess cream and treated the skin with a hair-removal laser, which heated the grains of gold. After only one session, 60 percent of the acne-causing sebaceous glands were damaged or destroyed with no harm to surrounding tissue. A laser combined with minute particles of silver is also being tested.

46%
of Americans
approve of
nonsurgical anti-
aging techniques
for public
figures—as long
as they're
not obvious.

—The Allure Aging Survey, 2013

As exciting as these initial results are, they're not definitive, says Geronemus: "Preliminary evidence and experience suggests that these combinations are safe and effective," he says. While waiting for further tests, let's take another look at the back of Fitzpatrick's left hand. Here, the doctor applied a combination of lasers and Retin A. Compared with the right hand, the texture is smoother and there are fewer dark spots. As the doctor said, this is definitely a technology to watch. ♦