

Won't he make your brown eyes blue?



Dr Gregg Homer Nancy Pastor

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Would you pay £3,000 to change your eye colour? Meet the man who can alter the way you look

If you believe Charles Darwin's 1871 masterpiece *The Descent of Man*, those of us with blue eyes have one simple thing in common when it comes to our relations with the opposite sex. We are all — how can I put this? — irresistible.

Or rather, it was our common ancestor — a genetic mutant who suddenly appeared about 20,000 years ago, according to anthropologists — who proved to be so desirable. Instead of being greeted as a freak, this first blue-eyed human cleaned up on the cave-person dating

scene, producing hordes of like-eyed offspring, who in turn did the same, and so on and so on. Until, eventually, Northern Europe was dominated by the owners of irises the colour of a midsummer California sky.

What's more, the sexual cachet of this genetic trait clearly didn't wear off over time. Hence the enduring appeal of Frank Sinatra — Ol' Blue Eyes himself — or Liz Taylor, whose eyes were so blue, they were practically violet. Likewise, many of today's leading men and women, such as Daniel Craig and Cameron Diaz, have the same ocular "advantage".

Little wonder, then, that people have long indulged fantasies about turning their brown eyes blue, a procedure that always seemed impossible outside the lyrics of a Crystal Gayle song. Indeed, google the phrase "I hate my brown eyes", and it generates 144,000 results — many from teenagers on social networking sites. Typically, friends tell them to buy blue contact lenses if they dislike their appearance so much.

But now, thanks to a leap in technology — which comes as blue eyes are becoming ever rarer because of immigration trends — those who are unsatisfied with their brown, hazel, black, or green eyes may soon have another, bolder option: a £3,200 cosmetic procedure that will turn a brown iris into a blue one with a simple 20-second zap from a laser (or so it's claimed), leaving only trace amounts of the former colour around the pupil. And no, this does not work in reverse. You cannot turn a blue eye brown.

Ten years ago, the "big thing" in cosmetic improvement was Botox, a product now worth billions. This decade, perhaps it will be "Stroma" — the brand name of blue-eye laser.

All of which raises a number of questions — such as why, in our supposedly post-racial age, is the "Aryan look" still so desirable? And shouldn't something as mysterious as a person's eyes, which are so intricately linked with their soul, be considered out of bounds for a medically unnecessary, irreversible procedure that might end up being purchased on a whim? And what about risk? Will anyone seriously put their sight in danger for something as ultimately frivolous as eye colour, no matter what Darwin's theories on human desirability might have been?

"Blue eyes are deep, whereas brown eyes are opaque," says Gregg Homer, 57, founder of Stroma Medical, the eight-employee company based in the wealthy resort of Laguna Beach, California, that created the eye-colour procedure. "I think that's what people respond to. Eye colour is also often one of those treacherous sibling rivalry things — you hear of people with brown eyes who grew up with parents or relatives always saying to their blue-eyed brothers or sisters, 'Oh, your eyes are so wonderful'."

Not that Homer has anything against brown eyes. "I think they're beautiful," he insists. I ask how he would feel if his technology was regarded as ethnically insensitive, given that he can only turn brown eyes to blue, and not the other way around. "Well, number one, I'm Jewish.

So that would be a pretty heavy blow to take,” he says. “I mean, is bleached hair also an ethnic issue?”

It has been a decade since Homer, a blue-eyed entertainment lawyer turned biology doctorate student at Stanford University, filed for a US patent on a then-crude laser device that could destroy the thin layer of pigment covering the front surface of the iris (the coloured part of the eye, which is brown for 90 per cent of the world’s population), thus turning it blue over the following weeks. Not that it will ever really be blue, of course, because blue is one of nature’s biggest scams — eyes, water and sky all get their hue from a trick of scattered light. Blue eyes are really just clear. Similarly, brown, green, hazel and black eyes aren’t a result of the shade of iris pigment, but the quantity of it. (Also, pigment in the iris takes a while to form, hence most babies are born with clear blue eyes, getting their true colour as they become toddlers.) Homer says that he got the idea for his Stroma device after a lunch with a friend at the University of California, Los Angeles, who is an expert on laser dermatology. They were discussing how brown spots could be removed from a patient’s skin using light and he began to wonder if the same technique could be used on other brown pigment in the body. After researching the matter, “I thought, ‘Wow, this is actually do-able’. I got really excited about it, because I thought it could be a really cool technology.”

And now, after £1.6 million of funding, several jerry-rigged lasers and tests on rabbits in the US and human beings in Mexico, Homer has said that the procedure will be available outside America within 18 months (although this will depend on £10 million being raised next year from investors).

Inside the US — where more daunting and expensive regulatory approval from the Food and Drug Administration (FDA) must be sought — it is likely to be offered by 2015. “Basically, the FDA want you to test on foreigners before they’ll let you test on Americans,” is how Homer bluntly puts it. “But safety’s a big issue for us. The idea that someone could volunteer for something cosmetic and wind up worse off than when they started, even if it’s not an injury, is just . . . how would you ever forgive yourself?”

In Mexico, Homer chose as his subjects only those with extreme myopia, limiting the effect of any potential injuries, and paid for them to have lens implants once the tests were over, thus fixing their short-sightedness using a technology they could never have otherwise afforded. “I’m proud of that programme,” he says.

The next round of testing will involve 100 human subjects in four countries, and if you believe Homer, he’s already getting 300 e-mail inquiries a day. “People are begging me, even offering to pay me, to be in the trials,” he says. As for those who have already undergone the procedure, The Times wasn’t able to talk to them or see the results of their iris colour-change, because of rules that prohibit US companies from using the subjects of clinical trials for any purpose that could be considered marketing.

But what does the medical establishment think of all this?

“There are many unanswered questions,” says Professor Harminder Dua, President of the Royal College of Ophthalmologists in London. “The treatment is very experimental, and one can envisage some side-effects that could be difficult to manage. For example, all the pigment that is shed will be inside the eye. This could clog up the channels from where the fluid of the eye (aqueous humour) normally drains, leading to raised eye pressure. This rise could be temporary or permanent, requiring treatment.

“Another possible side-effect would be on the ability of the pupil to respond to light as it naturally does. The pupil may become more dilated or smaller than it was before treatment. This change could be permanent, too.”

These aren't his only concerns. Dua also says it could be difficult to make both eyes look the same, potentially requiring multiple surgeries, and he questions if the treatment would have “the same predictable effect on very dark-brown or black eyes”.

Answering the first and second points, Homer says that Stroma targets only the thinner pigment at the front of the iris, not the thicker pigment at the back, which can become trapped when it's dislodged — leading to glaucoma, which can result in tunnel vision. In a company-issued Q&A on risk and safety, he promises: “If we believe that the procedure could have any adverse effect on vision, we will not release it.”

None of this will matter, of course, if the public cannot be persuaded to pay £3,200 to sit in front of Stroma's machines. Cosmetic surgeons approached by The Times were unwilling to give any on-the-record predictions regarding demand, although an unscientific e-mail poll of various brown-eyed Americans and Britons wasn't particularly encouraging (all names were changed).

“When I first heard about this my immediate reaction was a shiver of revulsion,” says Christy, a US TV writer. “I can't imagine anyone I know wanting to get that done. It's tragic.”

Toby, a British entrepreneur, was less disgusted but no more enthusiastic: “There may be racial overtones here, but compared with nose reductions and suchlike, this falls quite far down the list of ‘ways to camouflage one's ethnicity’. Would I do it for three grand? Don't be ridiculous: that's why God invented blue contacts.”

There were, however, a couple of possible takers. “I wouldn't mind getting my eyes made more green,” says Dana, a hazel-eyed marketing executive (this option isn't yet available). As for the price: Adam, a financier in New York, says that he thought it sounded reasonable. “I know of a handful of girls that have permanent porcelain teeth fronts put in and that procedure easily costs the same if not more. I don't even think it's a price thing, I think it's going to be more of a risk consideration and whether or not it can be reversed.

“On the other hand, if you think of all those people getting fake breast implants and whatnot — or Asians who get surgery to look more Western — this could really be huge. If I was going in for Lasik [laser eye surgery for short and long sight] and was offered this as an ‘upgrade’ for the price of a flatscreen, then I might consider it.”

But the biggest threat to Stroma’s business model, which depends not on selling its machines but on taking a royalty for every procedure, might not come from the hesitancy of potential customers. Instead, it might be delivered by the field of anthropology, which has been questioning Darwin’s claims about blue eyes and sexual selection of late, and threatens to utterly debunk the long-held theory that irises the colour of Caribbean seawater can help to win a mate.

“Darwin saw blue eyes as something novel that was attractive to the opposite sex,” says John Hawks, a professor of anthropology at the University of Wisconsin. “But another, more recent theory, is that it’s a side-effect of skin pigmentation.” By this he means that when humans migrated north, they received less sunlight, so those with lighter skin were able to absorb more vitamin D and survive in colder, darker climates.

Blue eyes, argues Hawks, might just be a peculiarly European genetic response to pale skin. Which would make them no more a marker of sexual desirability than that other infamous genetic response to skin that burns and never tans — ginger hair. And that’s surely not good news for Stroma’s marketing plan.

Indeed, it’s probably only a matter of time before we blue-eyed boys and girls are driven to a conclusion that is arguably long overdue, given the undeniable rise of the brown-eyed human population over the past 100 years: maybe we’re not so irresistible after all.

Tangled up in blue genes

Like all my siblings, I share my father’s brown eyes and I had assumed that this was a trait I would probably pass on to my children. Yet when my daughter Anna was born in April, she looked back at me with steel-blue eyes just like her mother Niki’s. And I’ve a good idea of the genetic reason why.

Though eye colour is influenced by multiple genes, most of the variation is explained by just one, called OCA2. Everybody has two copies of this gene, one inherited from each parent, and it has two common variants, with either the DNA letter A or G at a particular position. The combination of variants affects your eye colour.

Put simply, the A variant promotes brown colour and the G variant blue, with A having the stronger effect. If you have two As, you are very likely to have brown eyes, with only a 1 in 100 chance that they are blue. One A and one G usually produces brown or green eyes, with blue still improbable. Only people with two Gs are very likely to have blue eyes: the chances are 72 per cent blue, 27 per cent green, and 1 per cent brown. A couple of years ago, I spat into a tube

and sent it off to a company called 23andMe for DNA testing, to reveal some of my genetic profile. The results included the OCA2 gene, so I know I have the AG variant. And it's this that probably explains why Anna's eyes look like my wife's and not mine.

As Niki and all her family have blue eyes, it's virtually certain that she is GG. Anna has thus inherited one G from Niki and one G from me. If Anna has a brother or sister there's a 50-50 chance that her sibling will get my A rather than my G, and have brown or green eyes as a result.

There is another possibility. Some infants of all races are born with blue eyes that later darken, as the melanin pigment that turns eyes green or brown can take time to build up. At seven months, though, Anna's eyes are bright, beautiful and very blue. I think that they'll stay that way.

The future of blue eyes in the population at large, too, remains secure. Though stories about the imminent extinction of blonde hair and blue eyes seem to circulate every few years, science says otherwise. Genes that behave recessively, such as the GG variant of OCR2, can continue to spread even if they have deleterious effects, which blue eyes do not. Given the Western ideals of beauty on which Gregg Homer is seeking to capitalise, blue eyes may confer a reproductive advantage, which would if anything make them more likely to spread.

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