



THE SUNDAY TIMES

Price £1

19 SEPTEMBER 1999

No 9,134

Gene scientists give grey hair the brush-off

SCIENTISTS have developed a revolutionary gene therapy technique that could reverse the greying of human hair, writes Lynn Eaton.

Dr George Cotsarelis, of the University of Pennsylvania in Philadelphia, revealed last week that he has managed to transfer genes to human hair by "loading" a

microscope and is easily traced. Cotsarelis grafted pieces of human skin on to mice for his experiment.

Researchers in California have managed to isolate the gene essential for colouring the hair follicle, tyrosinase. In experiments on mice, the tyrosinase-bearing gene, attached to a virus, is applied to the hair and triggers the hair follicle to produce melanin, which darkens hair in the same way it darkens skin.

"We've managed to get colour back in albino rats and mice," said Andrew Perry, president of consumer products at the San Diego-based Anti Cancer Inc. "The genes take up residence almost immediately."

The results in mice, discovered while Anti Cancer Inc was researching hair loss in chemotherapy, will pave the way for tyrosinase to be used on humans. "Using tyrosinase would be the next step," said Cotsarelis yesterday. "In theory it is possible. It's just a matter of time." It has not yet been tried on a living human head.

Cotsarelis and Dr Robert Hoffman, president of Anti Cancer Inc, were in York this weekend to present their findings to delegates at the European Hair Research Society. Hoffman's company has also used liposomes to transfer genes into the hair follicle. "The number one hurdle in all gene therapy is getting selective delivery to the target," he said. "I am confident that it is moving forward very well."

Hoffman believes his work — which paves the way for more intrusive genetic manipulation — is not controversial. He estimates the hair colour market could be worth \$1 billion worldwide: "It's big. That's for colour. If we find a way to tackle baldness, it could be even bigger."

Experts said the same technology could theoretically be used for a variety of sensitive applications, including alteration of skin colour.

Colour cure

How gene therapy could restore pigment in grey hair

- 1 Scientists extract the gene for hair colour, tyrosinase, and clone it



- 2 The gene is inserted into a globule of fat which is mixed into a cream



- 3 The cream is then rubbed directly into the scalp

- 4 Within days, the root of the hair follicle regains colour as the genetic make-up of its cells change



gene onto fatty globules, or liposomes, which are then rubbed onto the hair.

He managed to target the human hair follicle using a so-called "reporter" gene, which looks blue under the