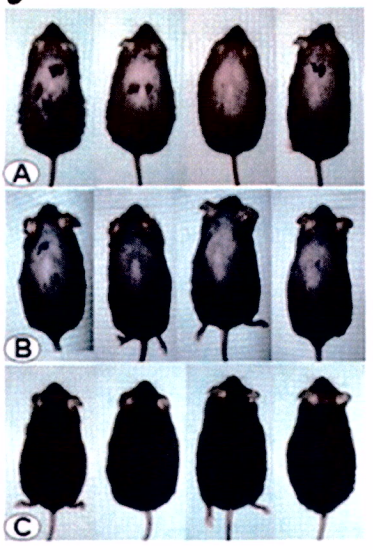
Astressin-B Potential new treatment for hair loss & gray hair



The bald mice in row C are the same mice shown in group B, after treatment with a hair-growth compound. The mice in row A were given a placebo

According to an article published in on line journal Plosone.org Million Mulugeta, D.V.M., Ph.D., co-director of UCLA's preclinical stress biology research program at the University of California, Los Angeles, claim that they have uncovered a promising hair-loss treatment & may have the potential to affect hair color, including gray hair.. The experiment wasn't focused on hair loss. Instead, it was designed to study a chemical compound that blocks the effects of stress on the gut.

The research team, during a study of the effect of a compound called **Astressin-B** while conducting stress-hormone experiments on mice that typically develop head-to-tail baldness as a result of being **genetically altered** to overproduce a stress hormone (The mice used in the experiments had been genetically altered to overproduce a stress hormone called corticotrophin-releasing factor, or CRF. Corticotropin-releasing factor over-expressing (CRF -OE)-mice that display phenotypes of Cushing's syndrome and chronic stress, including alopecia. CRF-OE mice develop bilateral symmetric hair loss in adulthood). The goal of the experiments was to study the effect of **Astressin-B** ((5 μg/mouse) injected peripherally once a day for 5 days) to determine whether it would block the effects of stress on the colon but accidental finding was the mice treated with **Astressin –B** had recovered the full cover of fur on the back in few weeks compared to the placebo (injected with saline) given mice which did not recover. **A sterssin-B** induced pigmentation and hair re-growth that was largely retained for over 4 months (a significant period for average 2 years life of mouse) when mice were killed Histological examination indicated that alopecic CRF-OE mice had hair follicle atrophy and that **Astressin-B** revived the hair follicle from the telogen to anagen phase.

The team repeated the experiment several times and got the same results — bald mice grew new hair in a few weeks. The researchers also injected the compound into young mice before they went bald. Those mice never lost their fur.

The researcher said the compound appears to have affected the mice **skin pigment** as well as spurred **hair growth**. This could mean **Astressin-B** has the potential to affect hair color and gray hairs. Majority of Pigments were regained by about 1 week and the hair was regained by about 2 weeks

Temporary blockade of the CRF receptors could thus be a breakthrough therapy for alopecia particularly for patients in acute (chemotherapy, traumatic stressful events) or chronic stress setting.

Findings of a mouse study may not be applicable to humans, but results may spur more study of the role stress might play in human hair loss. Hair growth cycles are very different in mice and humans, so one could draw only limited conclusions from the research

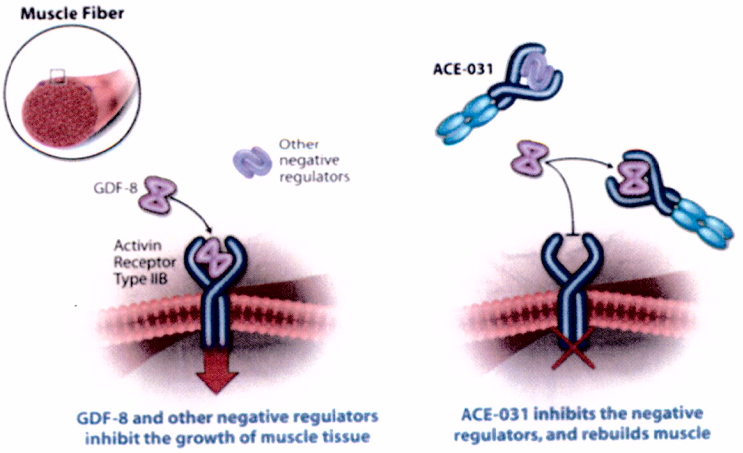
The research would probably be useful only for hair loss related to stress, likes that caused by one-time events, rather than as a treatment for genetic baldness.

ACE-031 (Neuromuscular Disease)

ACE-031 is a novel, muscle-building agent that is being developed for the treatment of patients with Duchenne Muscular Dystrophy with the goal of improving strength and preserving physical function.

What is ACE-031?

ACE-031 is an investigational protein therapeutic that builds muscle and increases strength by inhibiting molecules that bind to and signal through a cell surface receptor called Activin Receptor Type IIB (ActRIIB). ACE-031 is a recombinant fusion protein that is produced by joining a portion of the human ActRIIB receptor to a portion of a human antibody. This creates a freely circulating, decoy version of ActRIIB which removes proteins, such as GDF-8 (myostatin) and other related molecules that limit the growth and strength of muscle.



The Role of ActRIIB Signaling and Muscle Growth

Muscle growth is regulated by proteins in the TGF-β protein superfamily that serve as "on" or "off" switches for muscle production. Several molecules including GDF-8 interact with the ActRIIB receptor and send an "off" signal to stop muscle production. In the absence of these "off" switch molecules that signal through the ActRIIB receptor, muscle mass increases dramatically.

Decreased ActRIIB Signaling Results in Muscle Growth

In nature, this effect has been observed in numerous species, particularly in animals that have been bred for increased musculature and strength. For example, Belgian Blue cattle lack the gene for GDF-8, which is one of several molecules that activate the ActRIIB receptor. A deficiency of this protein results in cattle with tremendously developed musculature and strength. Similar effects have been observed in other species, including rodents, dogs and even humans.

ACE-031 Builds Skeletal Muscle

Treatment with ACE-031 promotes muscle growth by inhibiting ActRIIB signaling. ACE-031 binds to proteins that signal through the ActRIIB receptor to limit muscle growth. When ACE-031 binds to these proteins, it prevents them from interacting with the ActRIIB receptor, thus allowing muscle to grow. Moreover, because ACE-031 prevents GDF-8 and other proteins that regulate muscle mass from signaling through the ActRIIB receptor, its effects on lean muscle exceed those of inhibitors of GDF-8 (myostatin) alone.

When animals are treated with ACE-031, they experience growth in lean muscle and are considerably stronger than their untreated counterparts. This has been shown in several species, and in both healthy animals and in animals with diseases associated with muscle weakness and wasting.

Clinical Development Status

Acceleron has completed a single dose study (A031-01) of ACE-031 in healthy volunteers. For a description of the study design, click here.

A second study in healthy volunteers (A031-02), evaluating multiple doses of ACE-031, has been completed. For more information on the study design, click here.

A Phase 2 study in patients with Duchenne Muscular Dystrophy (A031-03) was initiated in Canada. The main purpose of this study is to determine if ACE-031 is safe and well-tolerated in children with DMD. Another purpose of this study is to obtain preliminary information regarding the effects of ACE-031 on muscle size, strength, and function in patients with DMD. For more information on this study, click here. An extension study (A031-06) was also initiated in Canada for boys who participated in the A031-03 study. For more information on this study, click here.

During the course of clinical trials in healthy adults and in DMD boys, some participants experienced minor nosebleeds, gum bleeding, and/or small dilated blood vessels within the skin. These events all resolved fully upon discontinuation of treatment. By themselves, the minor bleeding events and dilated blood vessels were not considered to be a serious safety concern for study subjects. However, based on review of these safety data with the FDA and Health Canada, Acceleron has terminated the A031-03 DMD study and has suspended enrollment and dosing in the follow-on extension study. Pending further analysis of safety data and discussion with health authorities, a new ACE-031 trial for DMD will be planned.

References

A mutation in the myostatin gene increases muscle mass and enhances racing performance in heterozygote dogs, Mosher DS et al. PLoS Genet 3(5): e79, 2007.