

Stem Cell & Growth Factors: Their Roles in Skin Cosmetics

(幹細胞とグロスファクター)
(スキンコスメにおけるそれらの役割)

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What are growth factors? (グロスファクターとは？)

- Growth factors are proteins that bind to receptors on the cell surface, with the primary result of activating cellular proliferation and/or differentiation.
-(グロスファクターは、たんぱく質の一種であり、細胞表面のレセプターに取り付きます。そして、細胞の増殖および細胞分裂を促進させます。)
- Many growth factors are quite versatile, stimulating cellular division in numerous different cell types; while others are specific to a particular cell-type.
-(多くの種類のグロスファクターが、多種類の異なる細胞の分裂に、有効に関与しますが、また、他の種類のグロスファクターが、選択的にある種の細胞の分裂に関与することもあります。)

General functions of the growth factors

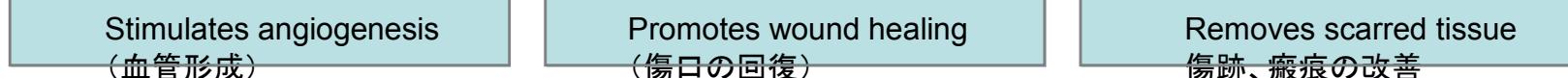
(グロスファクターの役割)

- Chemical messengers between cells
(細胞間の化学的な伝達物質である)
- Turn a variety of cellular activities “on” and “off”
(いろいろな細胞活動をオン・オフさせる)
- Increase the rate at which cells in the body grow
(体の成長に関わる細胞の増加率を上げる)
- Involved in cell division, new cell and blood vessel growth, and collagen and elastin production and distribution
(細胞分裂に関与し、新しい細胞により、血管の成長をうながし、コラーゲンとエラスチンの生成をはかる。)

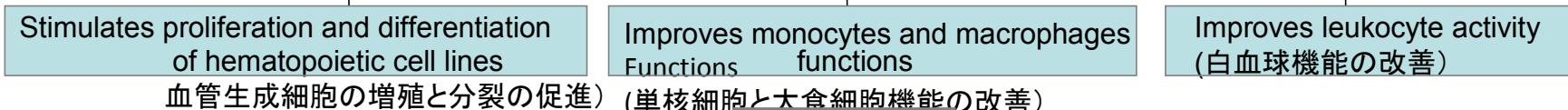
TGF-Beta(トランスフォーミング成長因子)
B1, B2 and B3



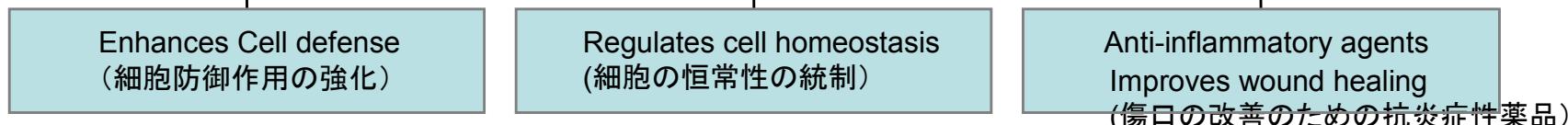
PDGF
Platlets Derived Growth Factor(血小板由来成長因子)



GM-CSF
Granulocyte Monocyte Colony Stimulating Factor(コロニー刺激因子)



Interleukins(インターロイキン)
IL-3, IL-6
IL-7 and IL-8



Growth factors and Stem cells

(グロスファクターと幹細胞)

- Do Stem cells produce growth factors?
(幹細胞はグロスファクターを產生するか？)
- Do stem cells from other species e.g. plants works for human?
(植物由來の幹細胞は人の細胞に影響を与えるか？)
- What is the best source of human growth factors?
(人の細胞のグロスファクターとして最適な原料は何か？)
- Recombinant GF
(遺伝子組み換えによるグロスファクター)

The role of the fibroblast in wound contraction and healing

Fibroblast migration and collagen deposition during dermal wound healing: mathematical modelling and clinical implications

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The multifunctional role of fibroblasts during wound healing in *Hirudo medicinalis* (Annelida, Hirudinea)

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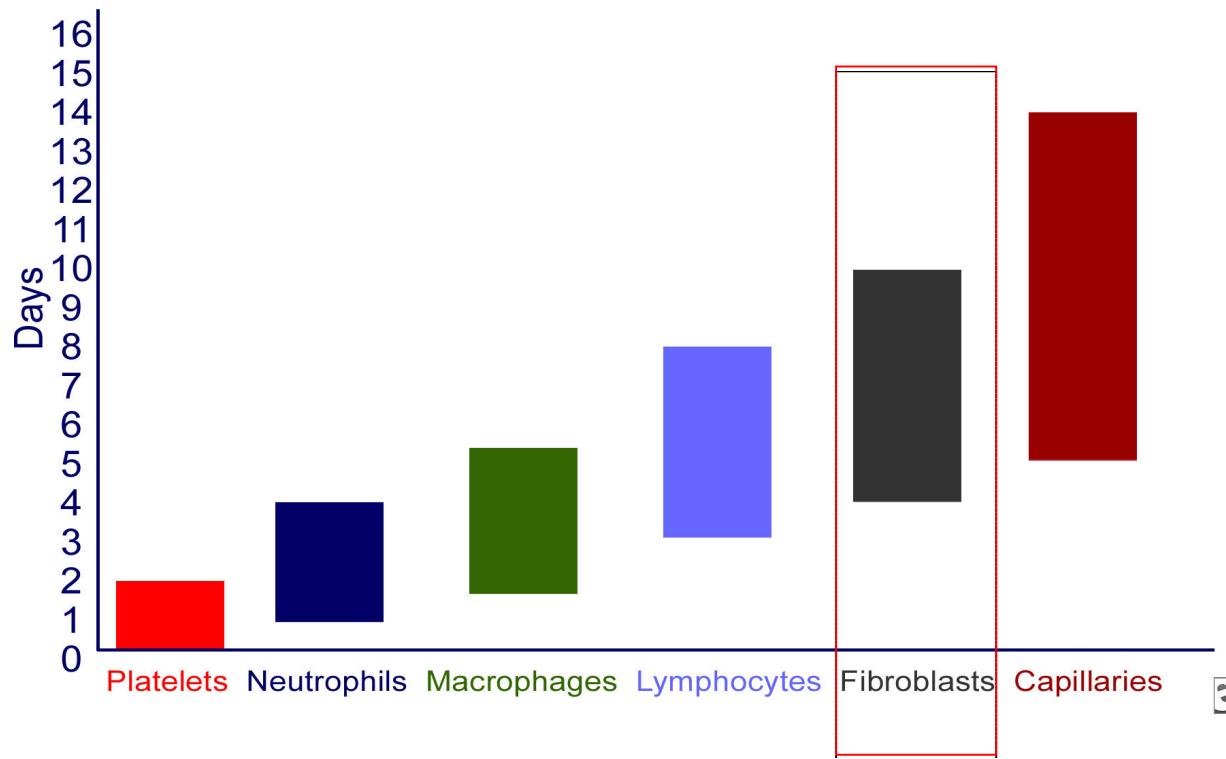
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Cells Involved in Wound Healing



Skin Grafts

(皮膚移植手術の現場)



After Skin Graft Procedure

(皮膚移植、直後の状態)



Results After Skin Graft Surgery

(皮膚移植後の状態)



Other Burn Healing

(その他のやけど治療の例)



7 days



14 days



21 days



Before



7 days



14 days



21 days

Current use of Growth Factors in Medicine and Cosmetics

(医療および化粧品におけるグロスファクター応用の現状)

A. Treatments for skin conditions

(A. 皮膚への治療)

しわ、肌のきめ、こじわ)

- Wrinkles, texture, fine lines

B. Alopecia Anderogenic (Hair loss)

(B. 脱毛症の治療)

- Male pattern baldness
- Female hair loss

(男性の脱毛症および女性の脱毛治療)

C. Wound Healing

(C. 皮膚外傷の治療)

- Diabetic ulcers & Burns

(糖尿病による腫瘍およびやけどの治療)

D. Growth factors with clinical modalities that give controlled damage and transdermal delivery. (laser, dermal stamp, dermal roller, IPL, etc.)

(D. 物理的な皮膚への加療・治療における、グロスファクターの併用)

(レーザー治療、デルマスタンプ、デルマローラー、IPLなどとの併用)



Pre-Treatment

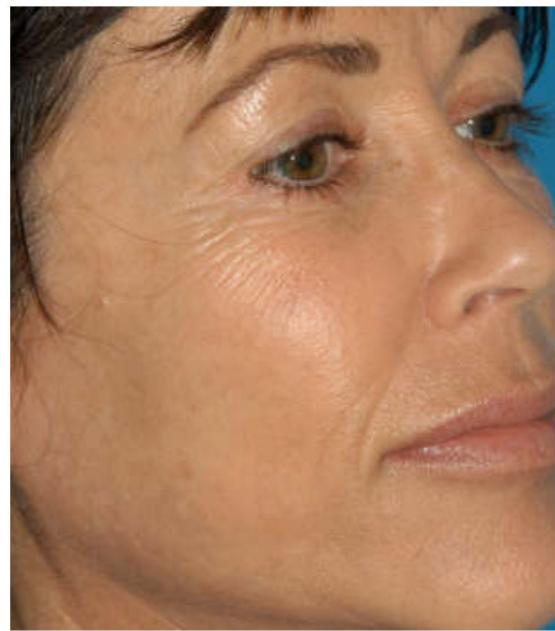


Week 1



Week 2

Courtesy: Dr. Norman Leaf (Beverly Hill, CA)



Pre-Treatment



Week 1

Courtesy: Dr. Norman Leaf (Beverly Hill, CA)



Pre-Treatment



Week 1



Week 2

Courtesy: Dr. Norman Leaf (Beverly Hill, CA)



Pre-Treatment

Week 1



Pre-Treatment

Week 1

Courtesy: Dr. Norman Leaf (Beverly Hill, CA)

Acne Scars



Courtesy: Viol Clinics - Korea

Hyperpigmentation



Scar



Courtesy: Viol Clinics - Korea

48yrs - male



Week 0



Week 3



Week 5



Week 8



Week 12



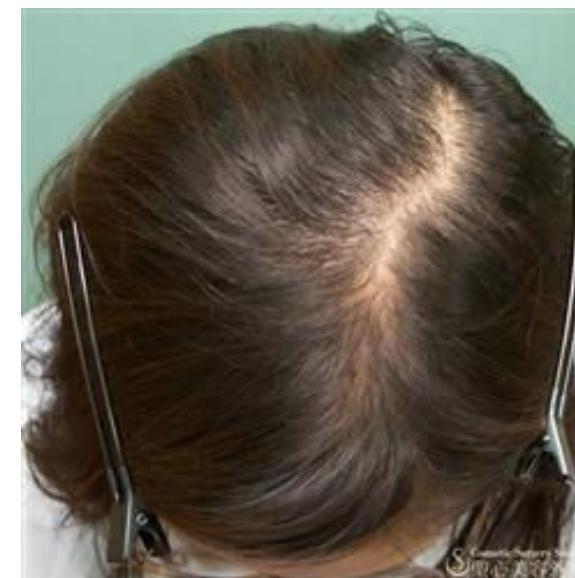
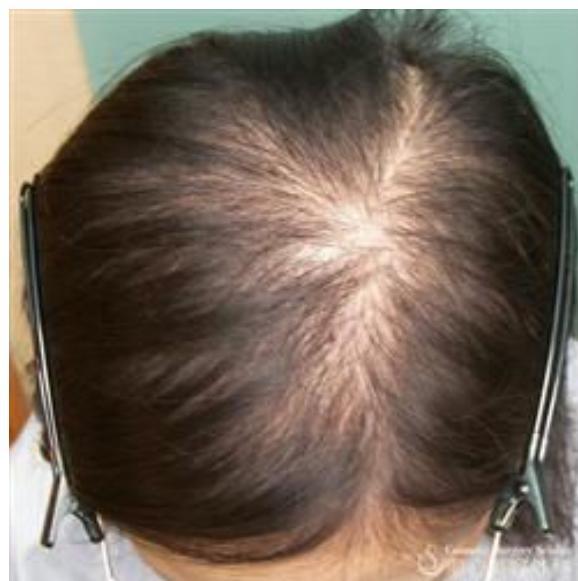
Week 15

Courtesy: AQ Skin Solutions Inc.

59 yrs
male



57 yrs
Female



by Seishin Clinic - JAPAN



Before

52 yrs - male



8 Weeks After

Courtesy: JRX and AQ Skin Solutions Inc.



Week 0

37 yrs
male



Week 15

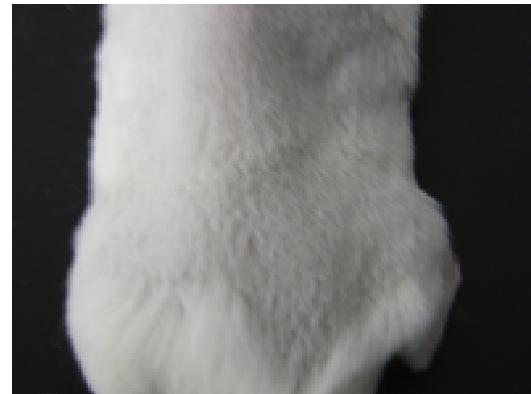
Courtesy: AQ Skin Solutions Inc.

Study on Mice

(ねずみによる実験例)



Day 0



Day 14

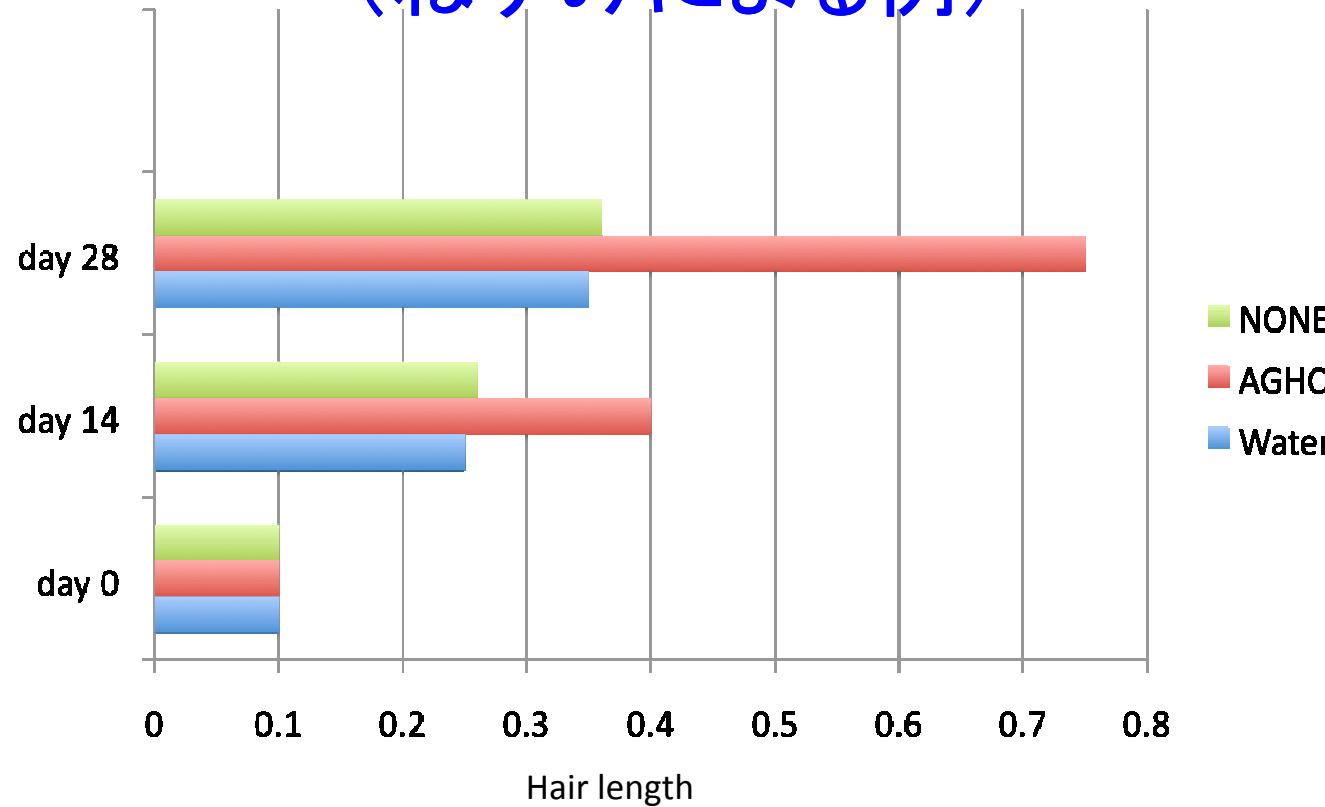


Day 28

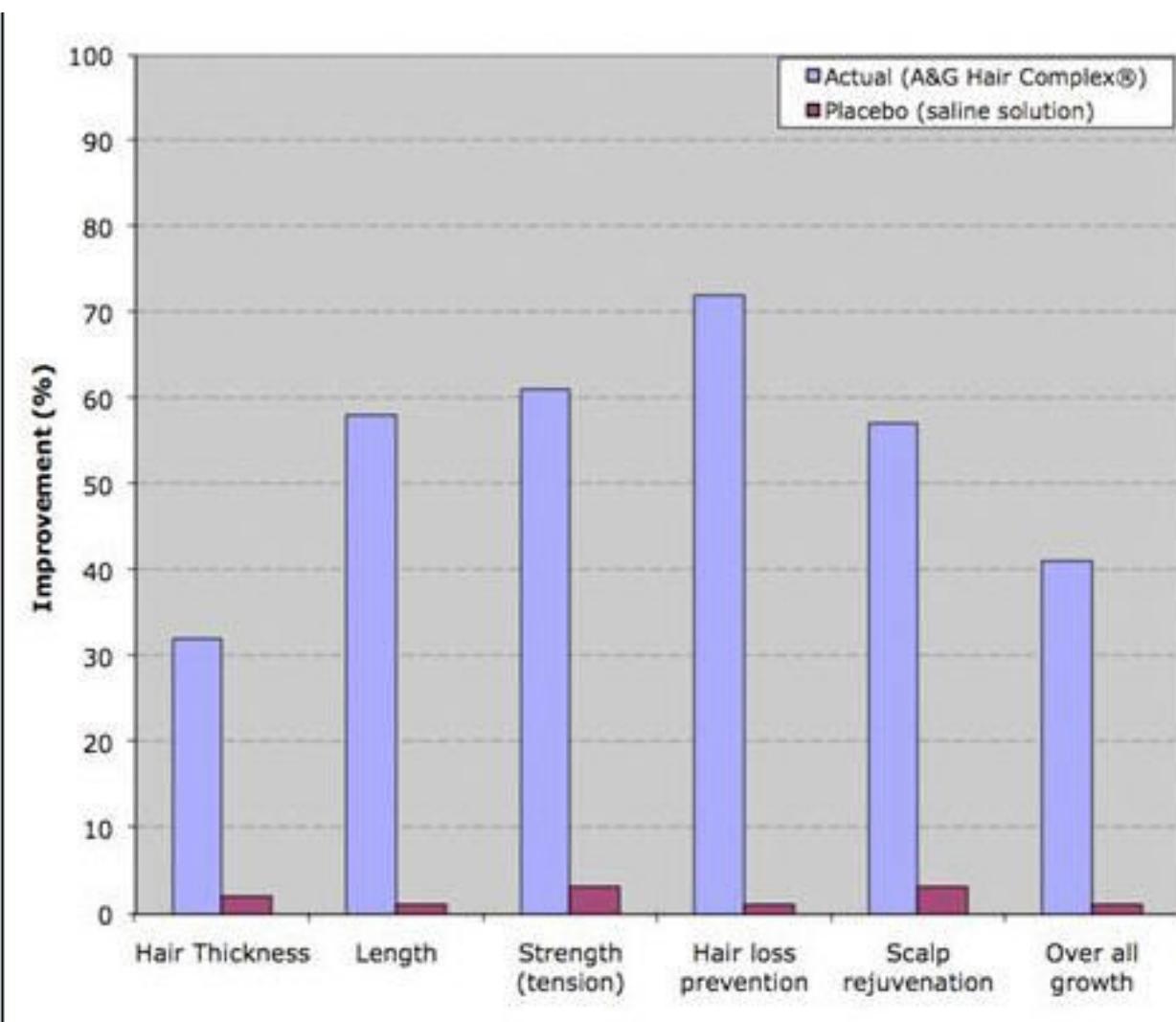
Mice that received the GF Hair Care Complex showed increased hair re-growth. Mice treated with water exhibited similar progress to the mice that received no treatment. Mice hair color was not affected in this experiment.

(グロスファクターを含んだ頭髪治療用薬剤をねずみに使用すると、何も含まない水を塗布されたねずみと比べて、発毛が促進される。この例では、ねずみの毛の色には、何も影響を及ぼさなかった。)

Study on Mice (ねずみによる例)



Overall hair growth progress was compared among all three groups. Mice that received the GF Hair Care Complex exhibited an average 43% increase in the rate of hair re-growth. (ねずみによる発毛効果の状況を3つのグループに分けて検討した。その結果、グロスファクター含有の発毛剤を塗布されたグループは、平均43%の発毛率の増大を見た。)



Courtesy: AQ Skin Solutions Inc.

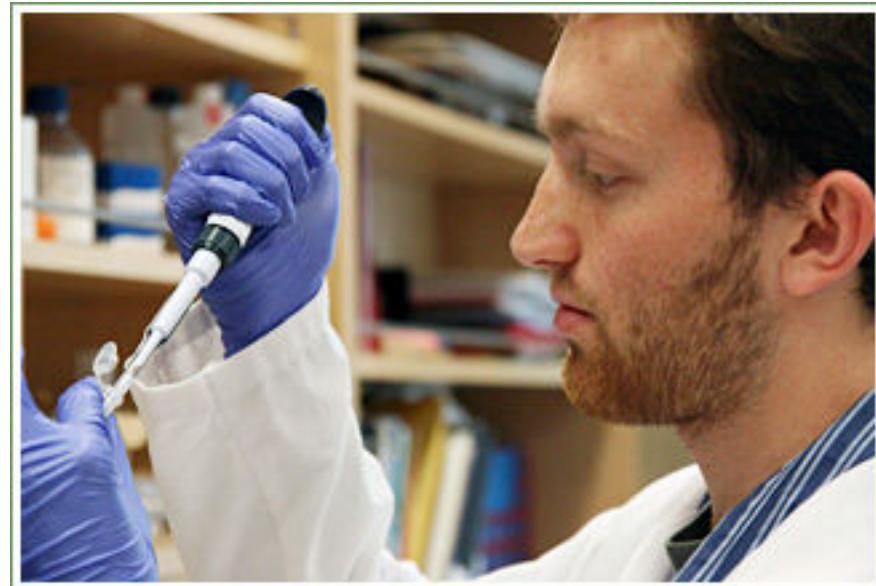
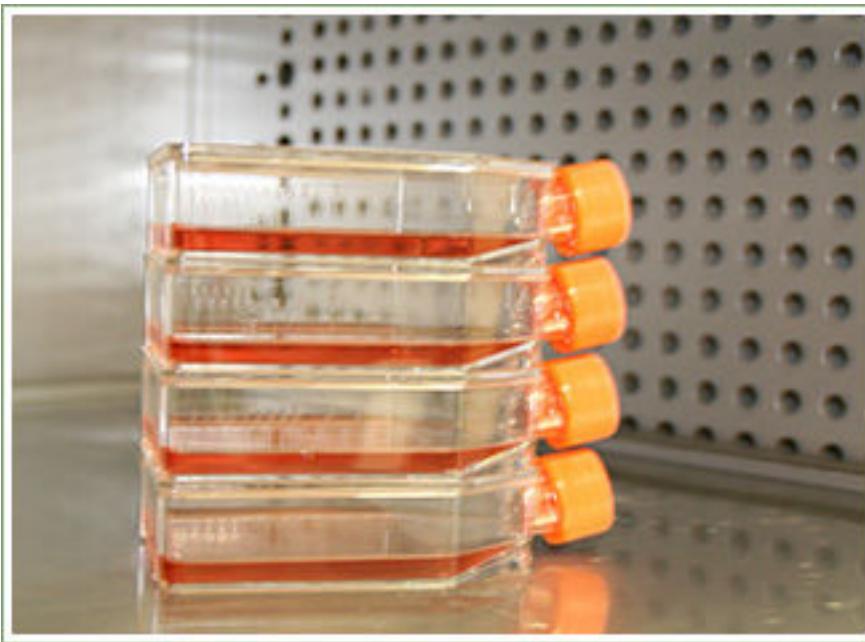
Hair growth stimulated by conditioned medium of adipose-derived stem cells is enhanced by hypoxia: evidence of increased growth factor secretion

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ขอบคุณครับ



THANK YOU