

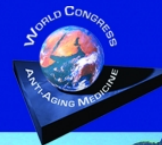
YOUNG AGAIN® PROJECT

Cellular Vitality & Longevity

Roberto Cavagna, M.D.
Dermatologist



Under the High Patronage of
H.S.H. Prince Albert II of Monaco



9th ANTI-AGING MEDICINE WORLD CONGRESS & MEDISPA

Aesthetic Dermatology and Surgery
Preventive and Anti-Aging Medicine

The World Largest Event for "Global Aging Management" **AMWC 9th Edition**



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SIMULTANEOUS
TRANSLATION



15 CME
CREDITS





Roberto Cavagna, M.D.

CURRICULUM VITAE



Born in Parma on 4th June 1960

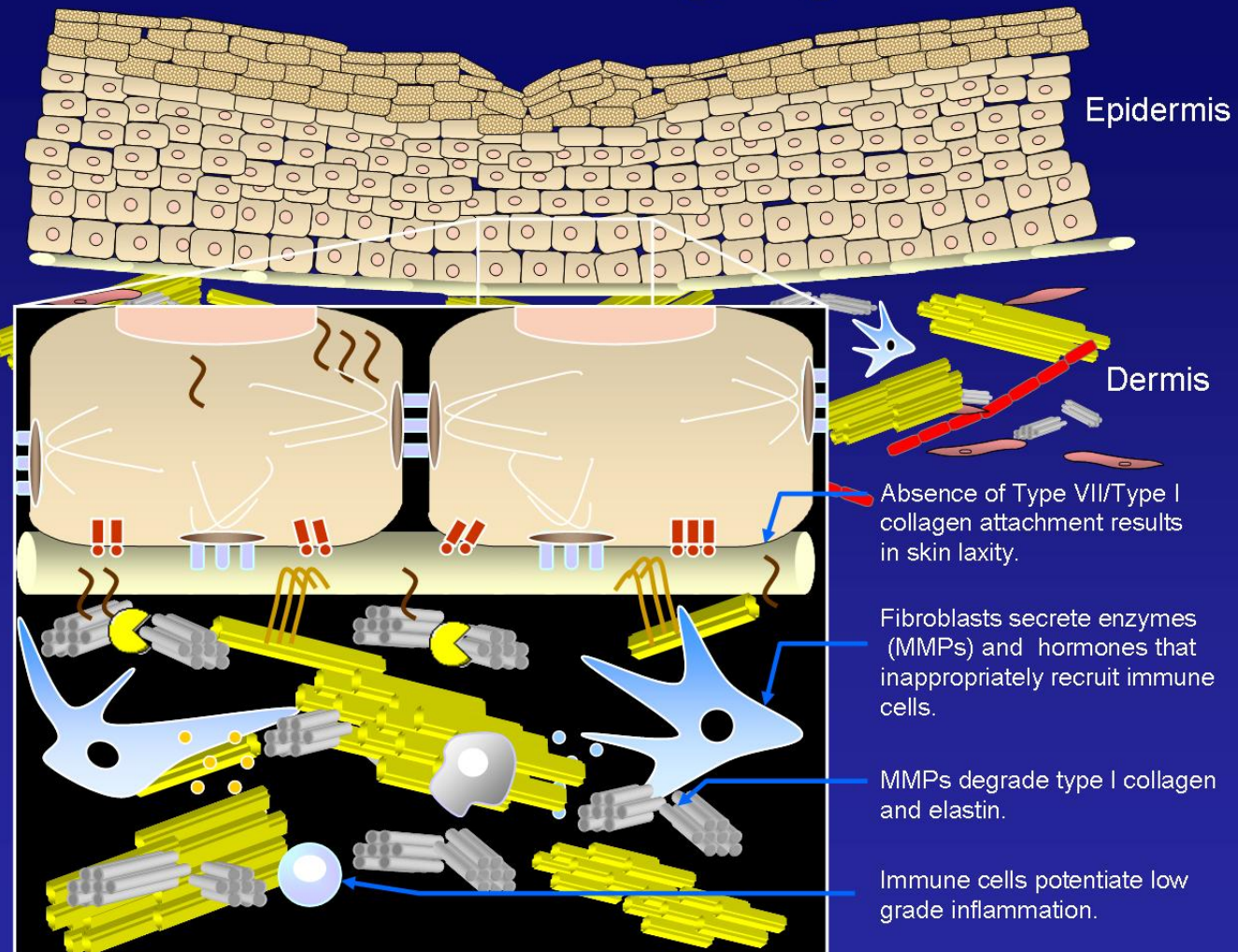
QUALIFICATIONS

- Graduated in Medicine and Surgery at University of Parma in 1987.
- Specialized in Dermatology e Venereology in Parma in 1990 with scores 50/50 cum Laude.

SPECIALIZATIONS

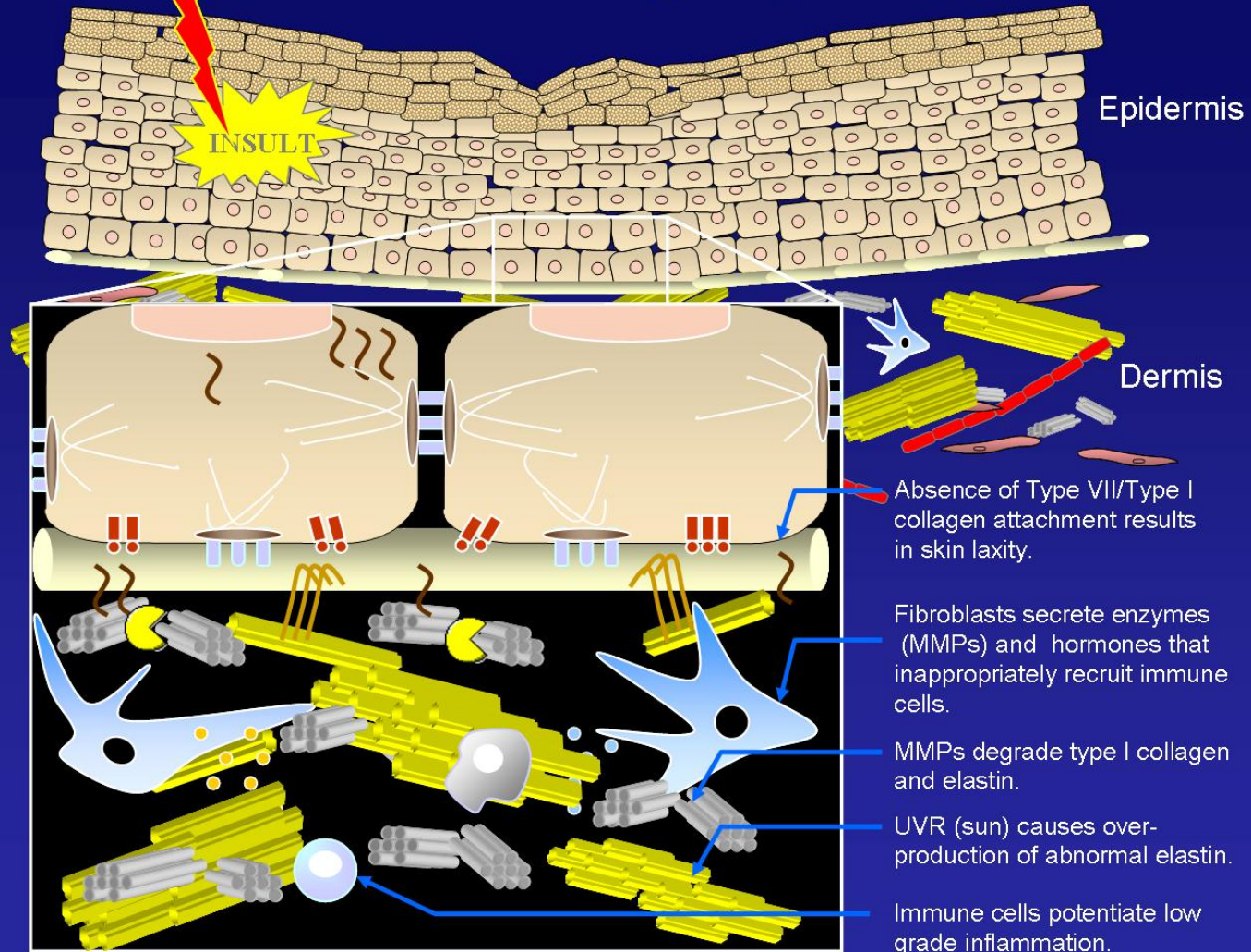
- 1984 - Modena: First formation course in Ecotomography and Doppler. *Center for permanent learning & teaching in ultrasoundgraphy and image diagnostics.*
- 1989 - Milan: Hahneman Aesthetic Medicine School of Libera Università Medica.
- 2003-2004 - Trieste e Pordenone : Character Psicology (Enneagramm), Bioenergetics e Psicosomatics (Gestalt Institute).
- 2005-2007 - Alonissos (Greece): three-years Master Course I.A.C.H. 3 *"International Academy of Classical Homeopathy" Prof. G. Vithoulkas.*

Intrinsic Aging



UV Light

Photoaging

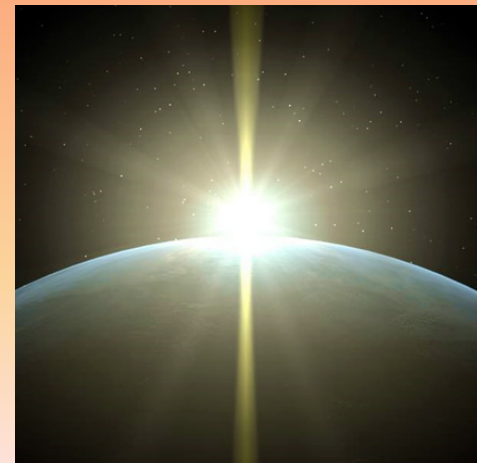
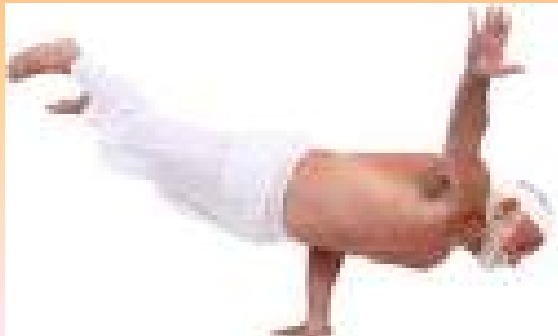


YOUNG AGAIN® PROJECT

➤ **PHOTO-BIOSTIMULATION +**

➤ **PHOTO-EUDERMIA =**

Vitality & longevity

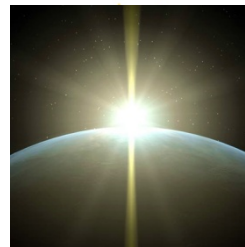


YOUNG AGAIN® PROJECT



1. PHOTO-BIOSTIMULATION

FULL-POWER TO THE CELLS
OF HAIR AND SKIN





ENERGY USED BY CELLS

All the reactions in all the cells of our body use **Energy** as

ATP (adenosine3P)
the UNIVERSAL FOUNT OF CELLULAR ENERGY.

When cells need energy, they break an high energy P-bond:

ATP => Energy + ADP (adenosine2P)

If need more, cells break the second high energy P-bond:

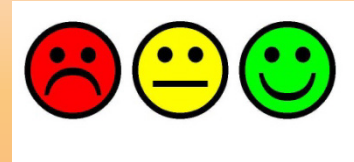
ADP => Energy + AMP (adenosine1P)

ENERGY USED BY CELLS

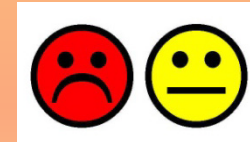
@ = adenosine



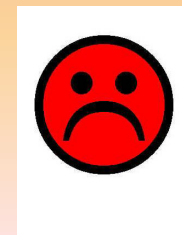
ATP = HIGH ENERGY
(@+P+P+P)



ADP = MEDIUM ENERGY
(@+P+P)



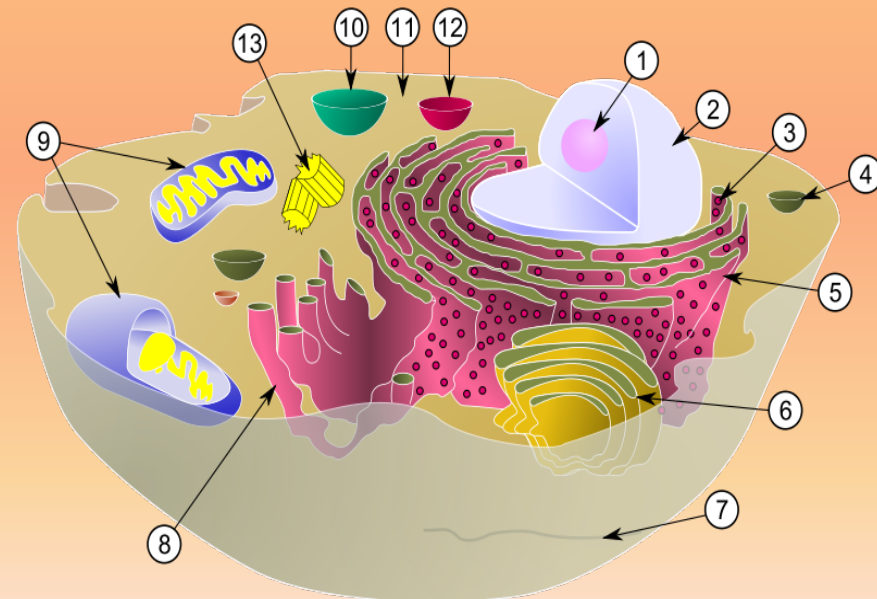
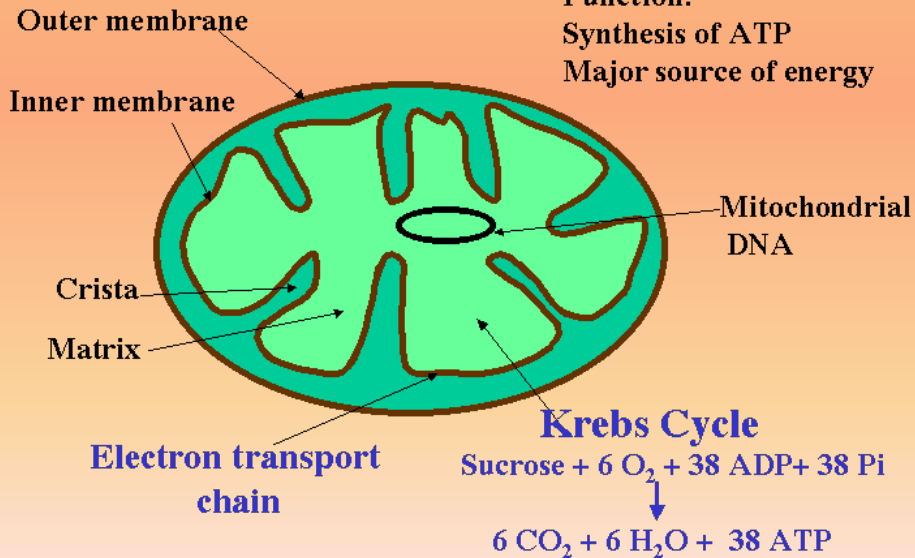
AMP = LOW ENERGY
(@+P)

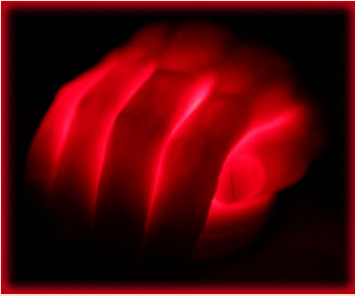


HOW TO RECHARGE CELLULAR ENERGY?

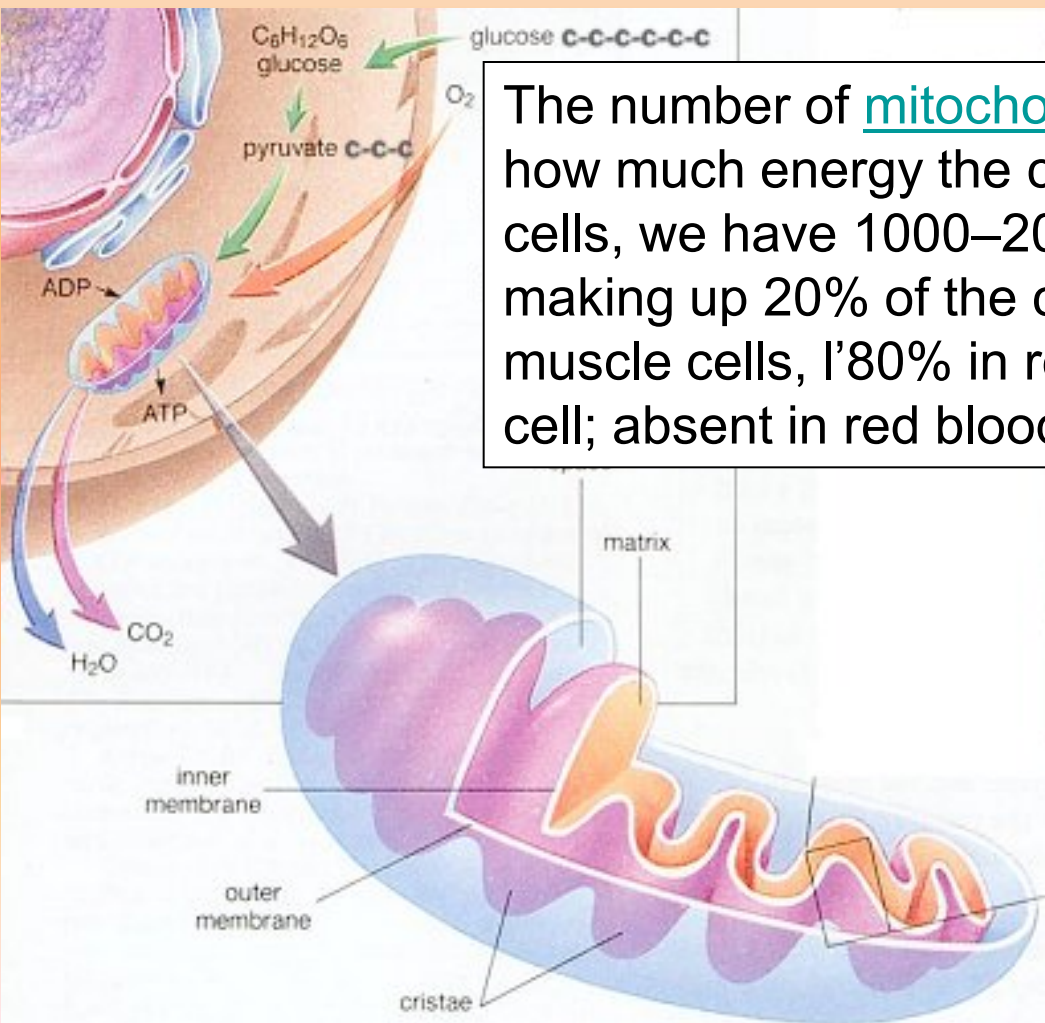


Mitochondria





HOW TO RECHARGE CELLULAR ENERGY?

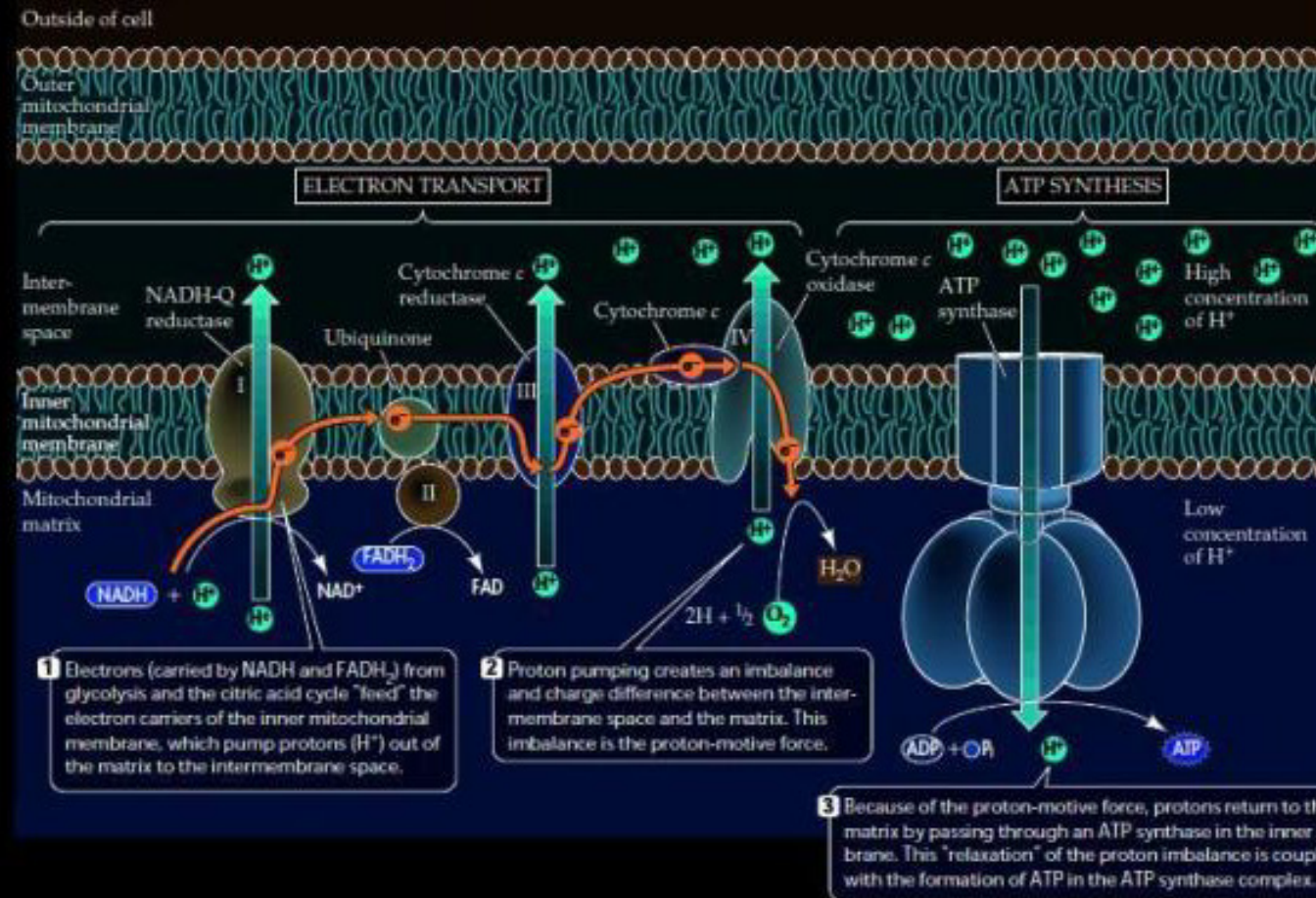
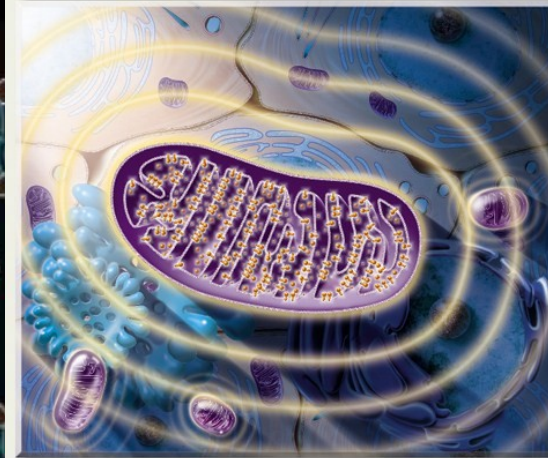
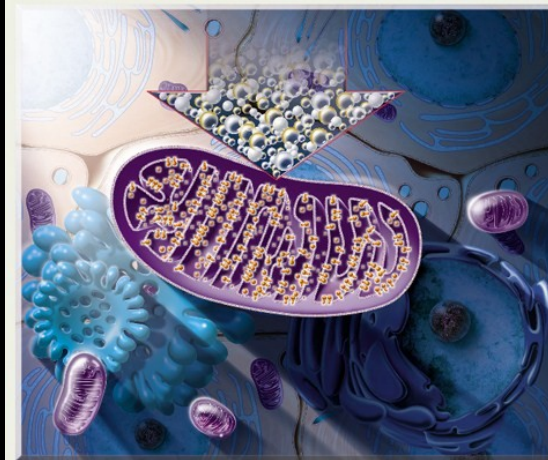


The number of mitochondria varies, according to how much energy the cell needs. In human liver cells, we have 1000–2000 mitochondria per cell making up 20% of the cell volume; 60% in the muscle cells, 1'80% in retinic cells, 40% in heart cell; absent in red blood cells (eritrocites).

They convert energy into forms that are usable by the cell, all the cell.

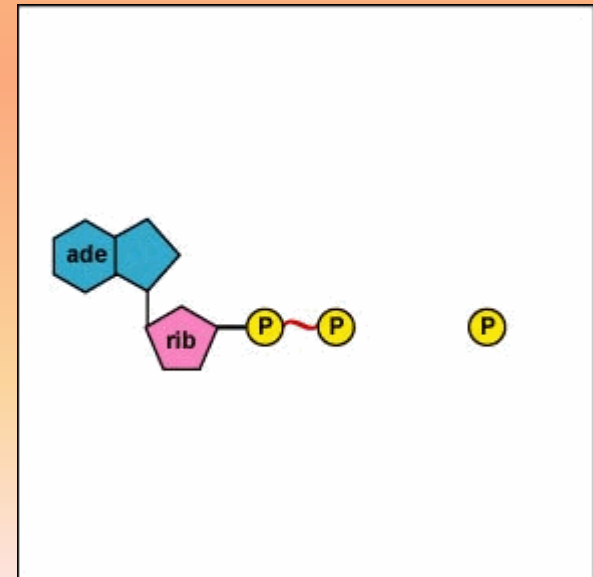
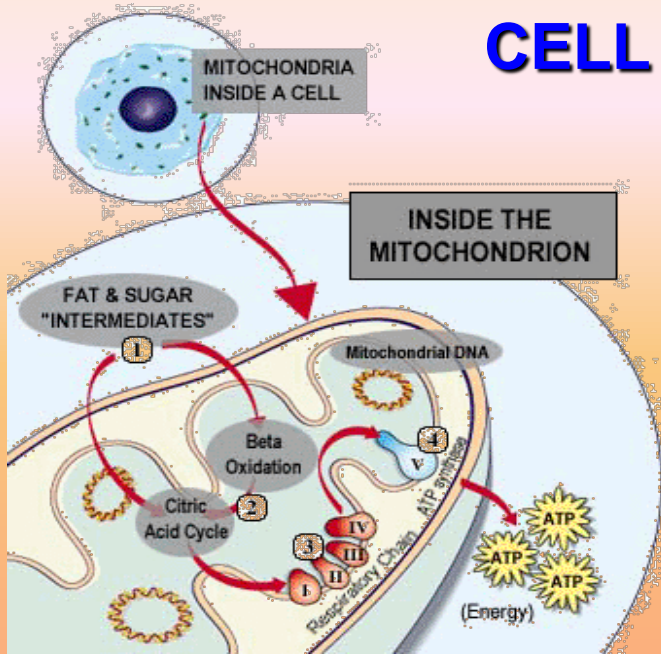
They are the sites of cellular respiration which generates fuel for the cell's activities.

Cellular Respiration



MITOCHONDRIA ARE THE CELL POWER PRODUCERS

Only mitochondria can
RECHARGE OUR CELLS
producing **ATP**
from **ADP** and **AMP**.



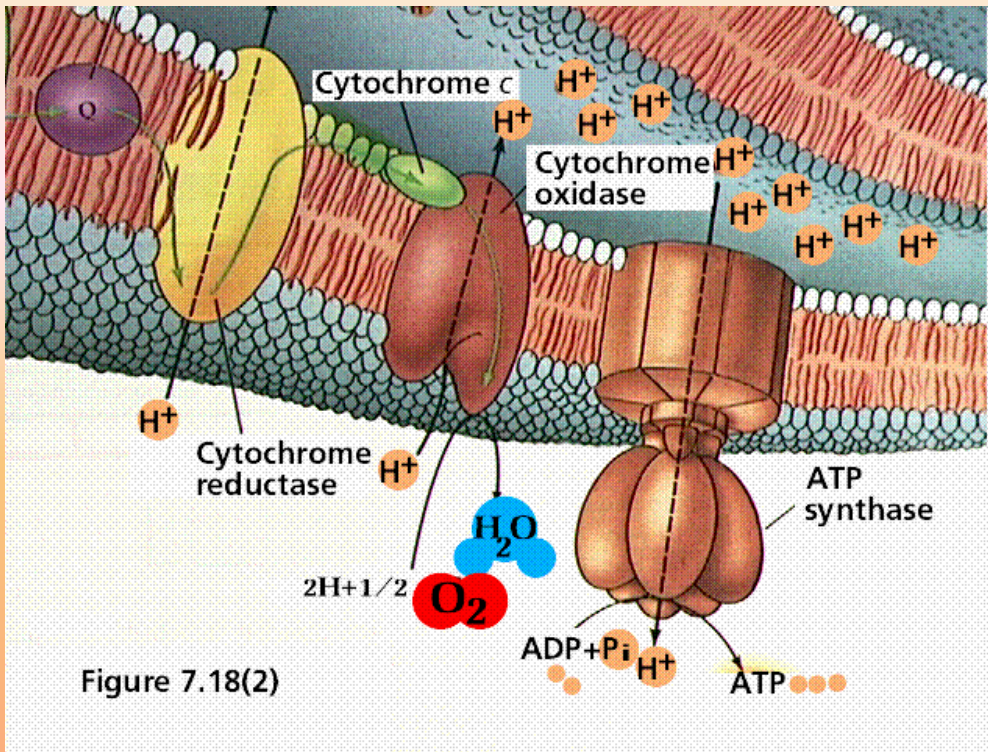
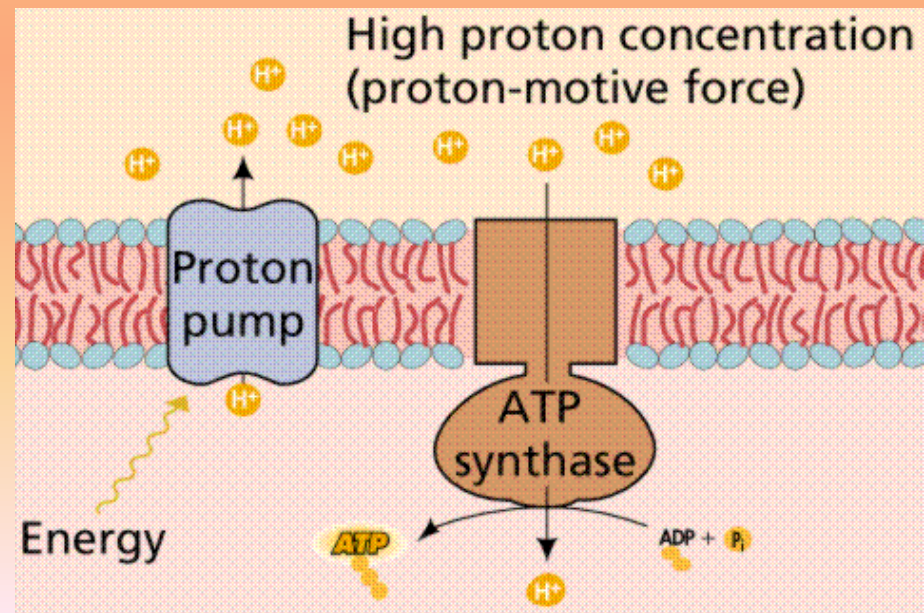
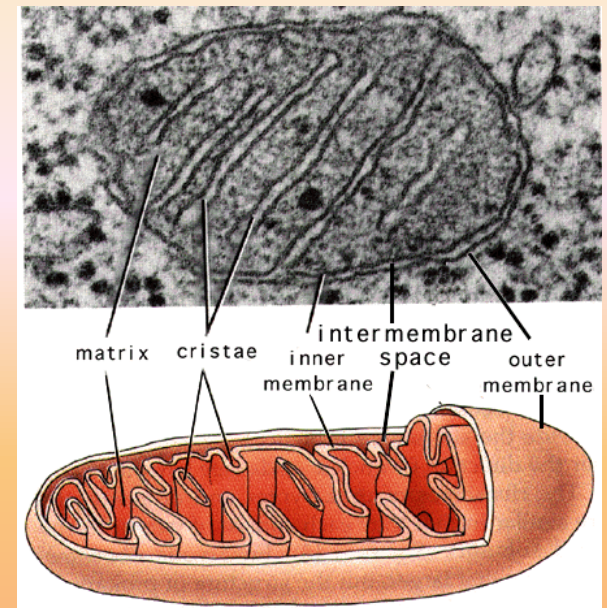
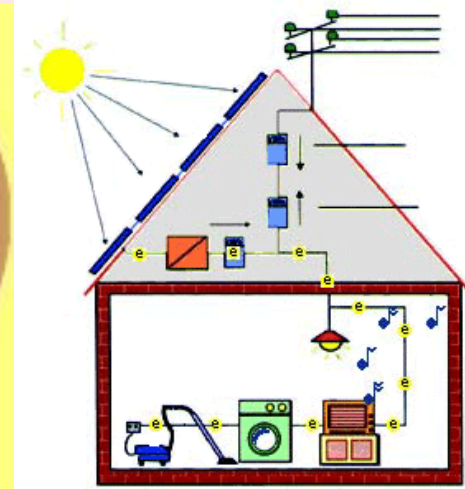
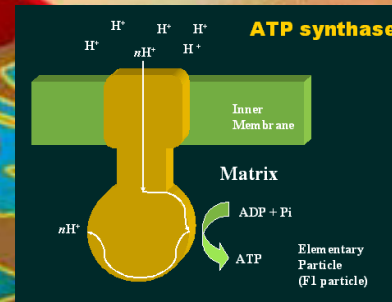
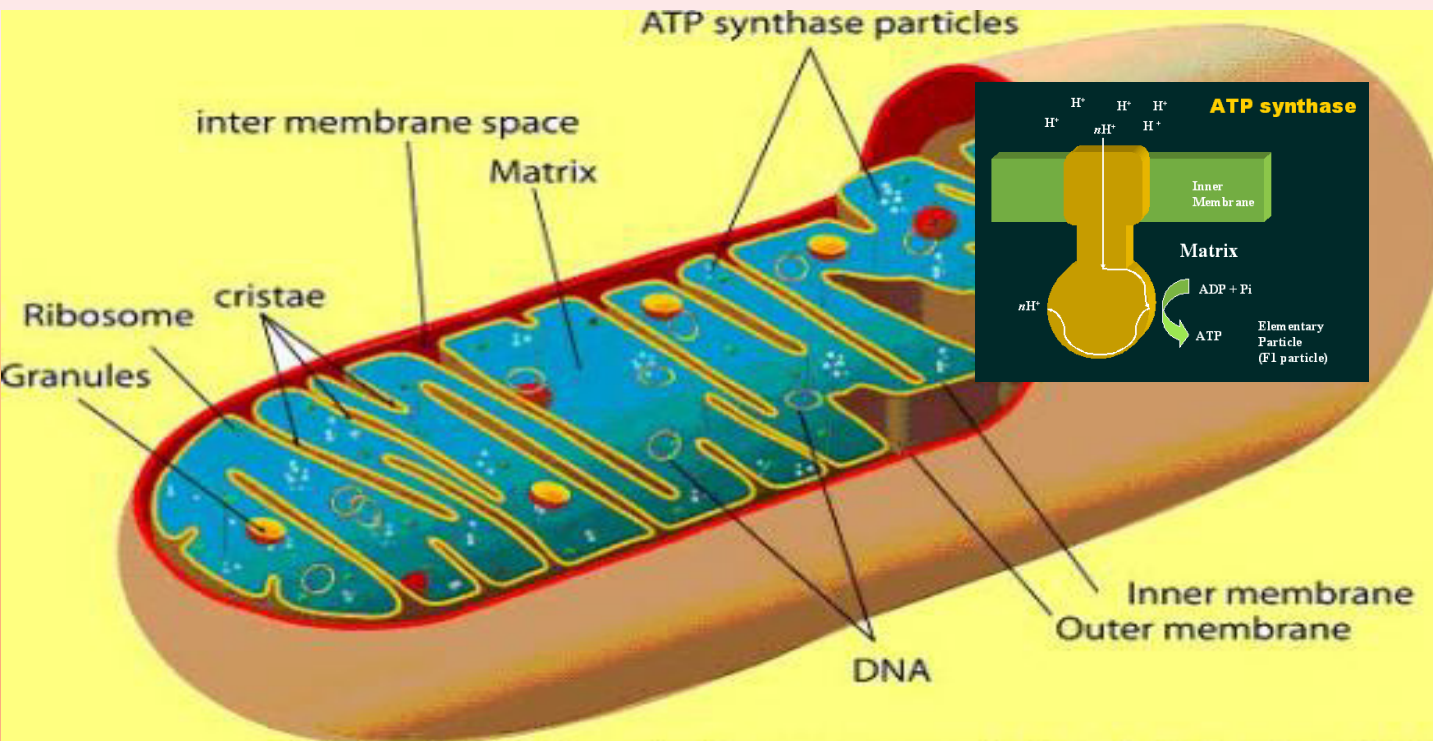


Figure 7.18(2)



MITOCHONDRIA: THE POWERHOUSE OF THE CELL



Mitochondria help to maintain proper concentration of calcium ions within the various compartments of the cell.

Mitochondria stores calcium.

The major function of the mitochondria is to produce energy.

Mitochondria helps in the formation of blood components and hormones such as testosterone and estrogen.

Mitochondria in the liver helps to detoxify ammonia.

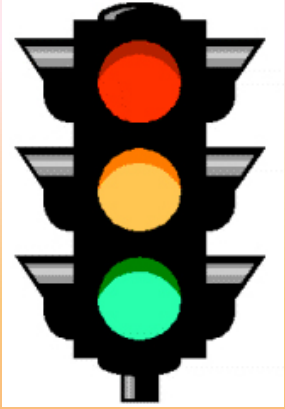
Production of heat is another function of mitochondria.

Mitochondria helps in the regulation of membrane potential, cell proliferation and cell metabolism.

Mitochondria cause apoptosis or programmed cell death.

Mitochondria helps in the the biosynthesis of heme and steroids.

MITOCHONDRIA AS THE CENTRAL CONTROL POINT



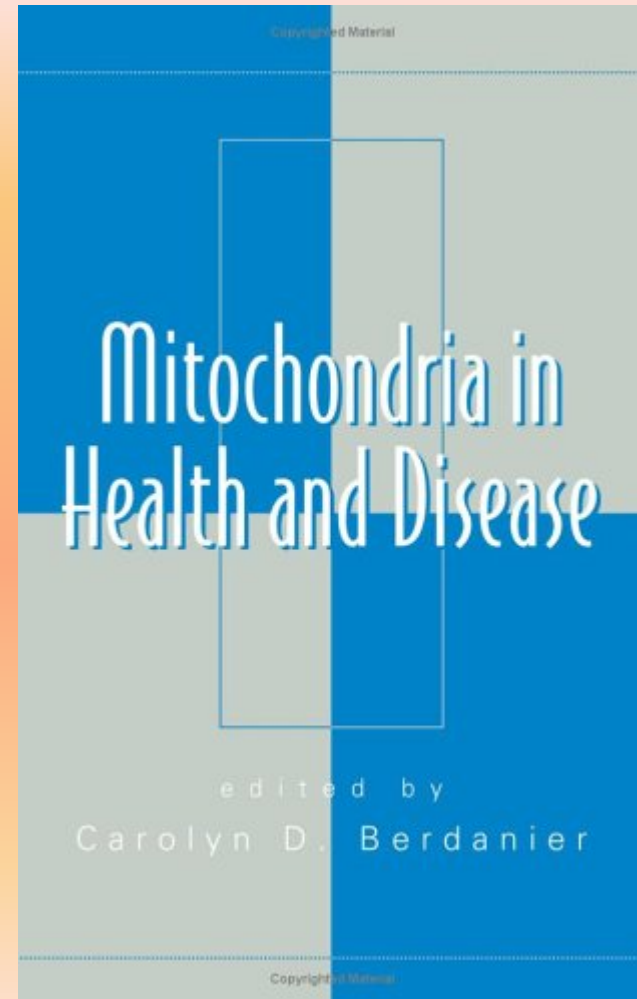
Mitochondria are also involved in other cell processes such as [cell division](#) and growth, as well as [cell death](#).

Mitochondria controls cell activity and vitality; when free-radicals, toxins, drugs, mine the cell, decides to die sending apoptotic signals into the cytoplasm.

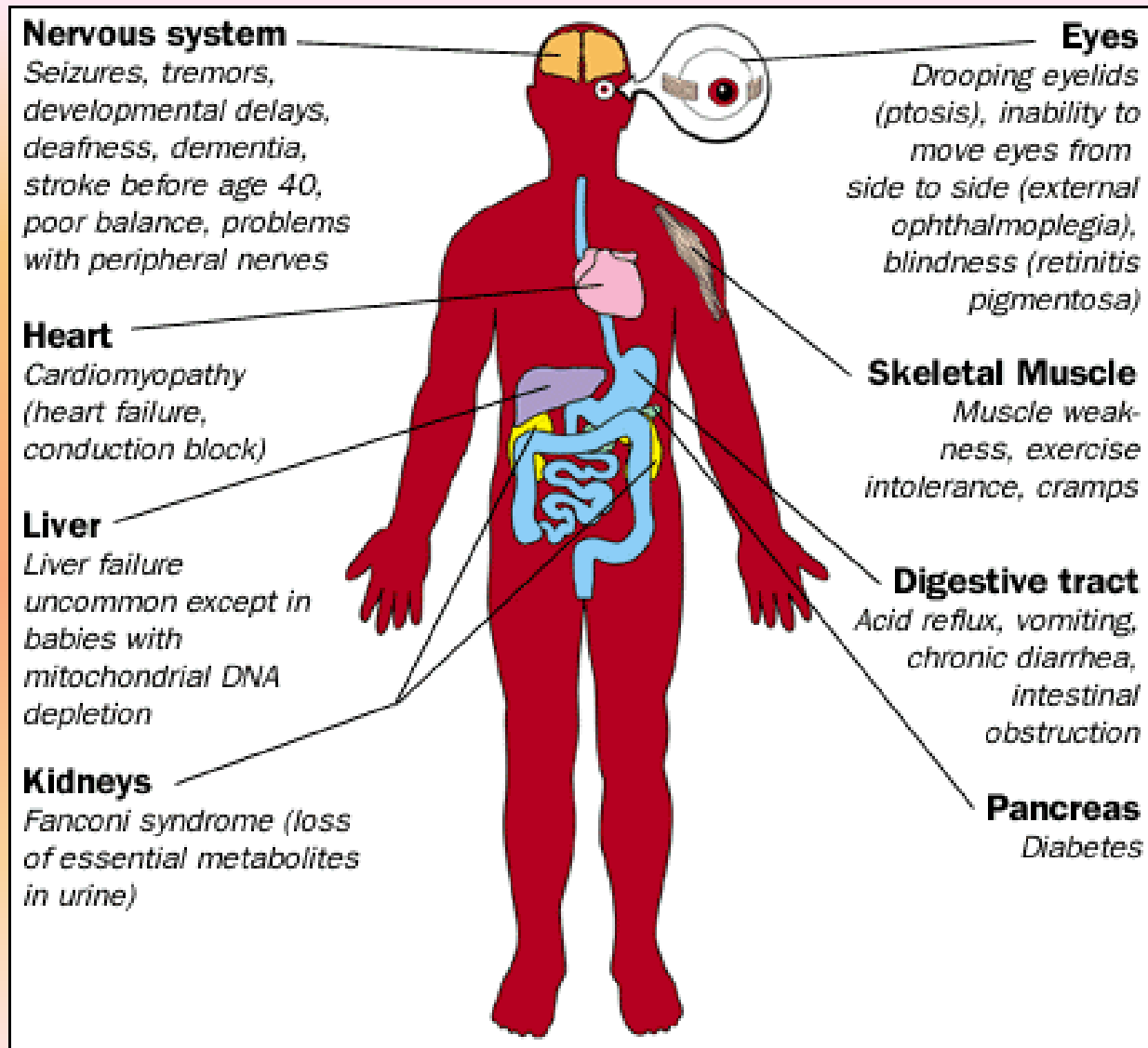


GAME OVER

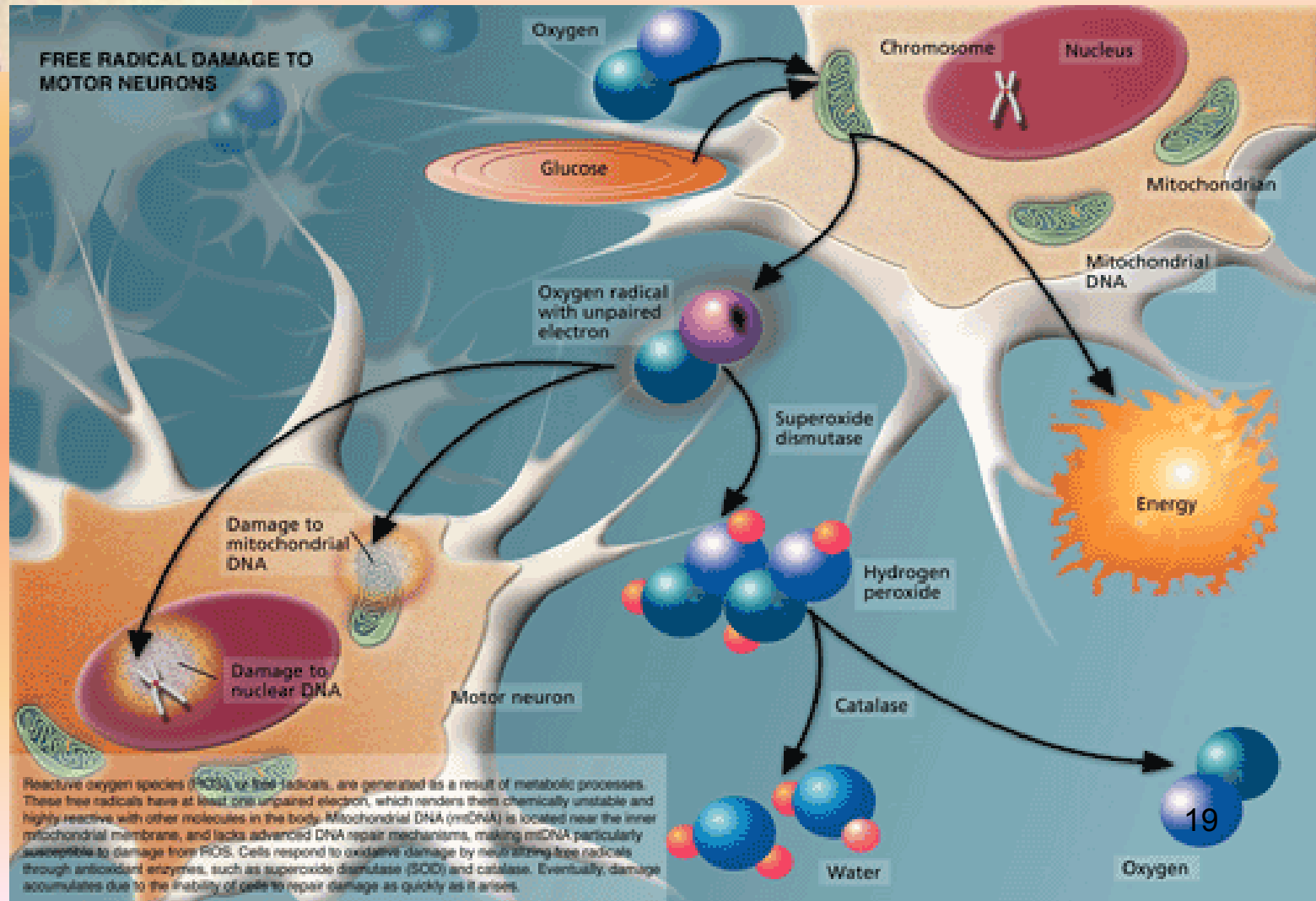
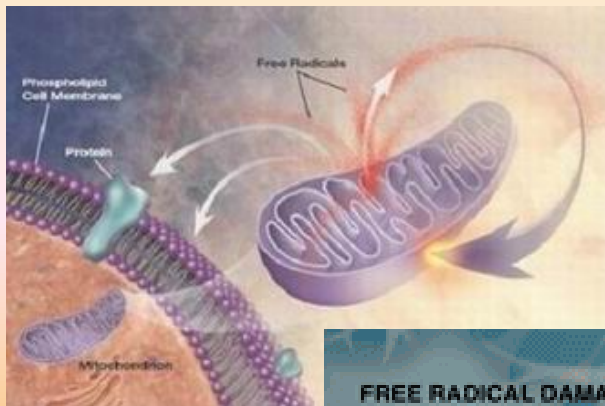
MITHOCONDRIA AND HEALTH



Commonly Affected Systems in Mitochondrial Disorders

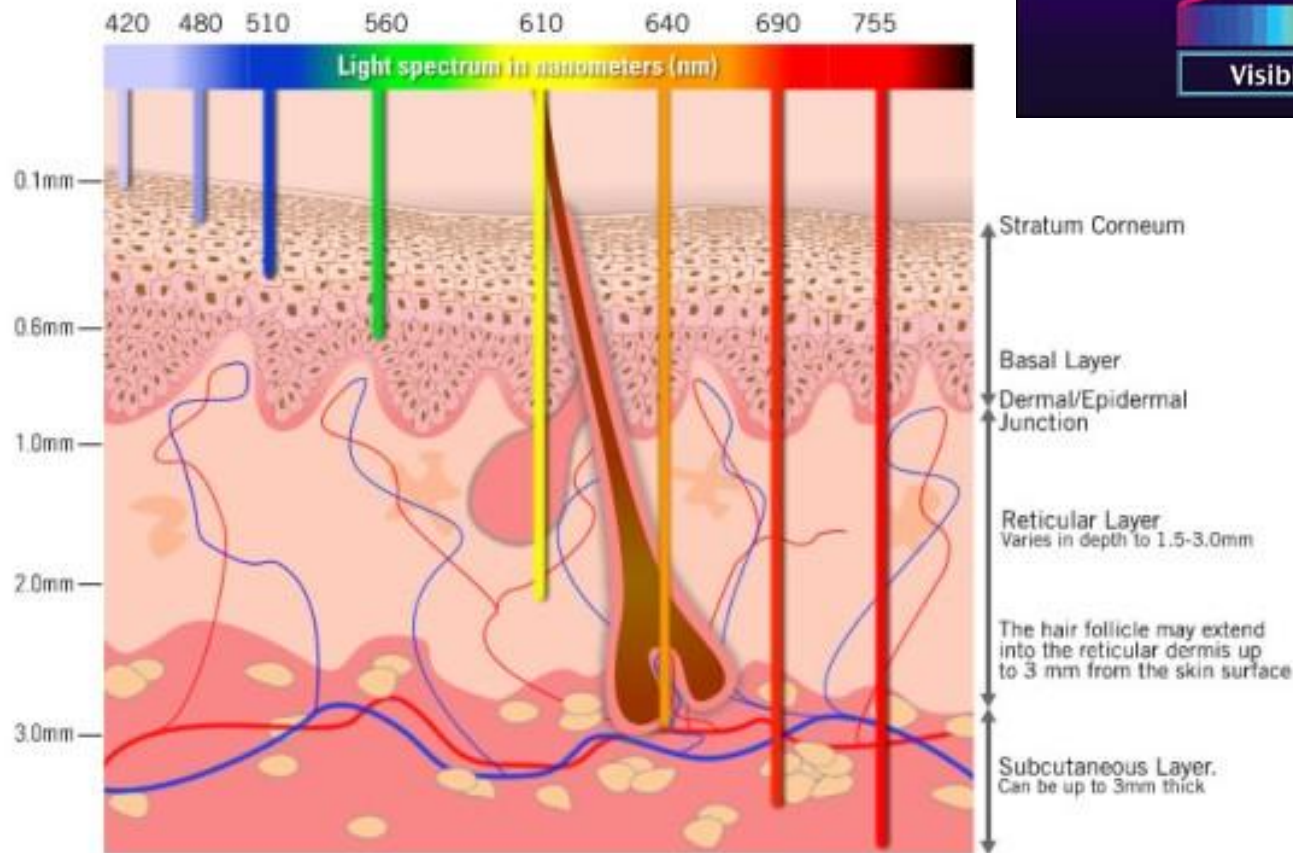


MITHOCONDRIA AND HEALTH

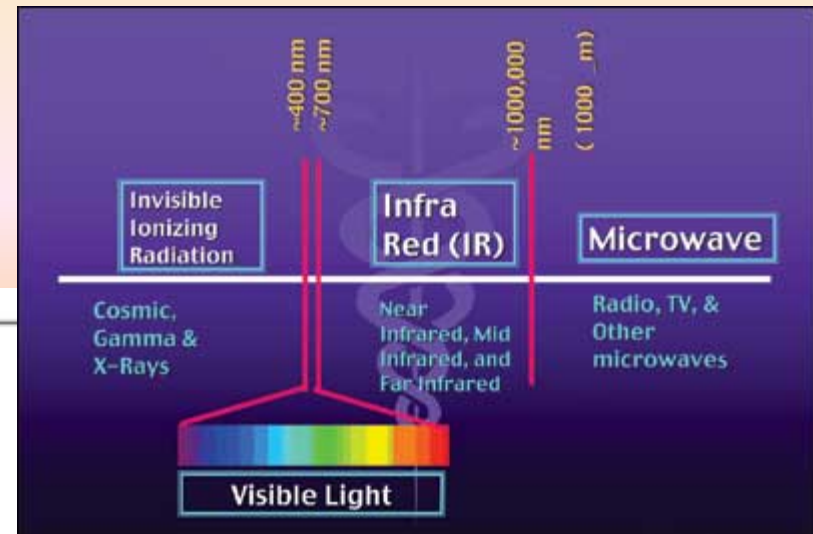


LIGHT THERAPY

Light Penetration in to The Skin



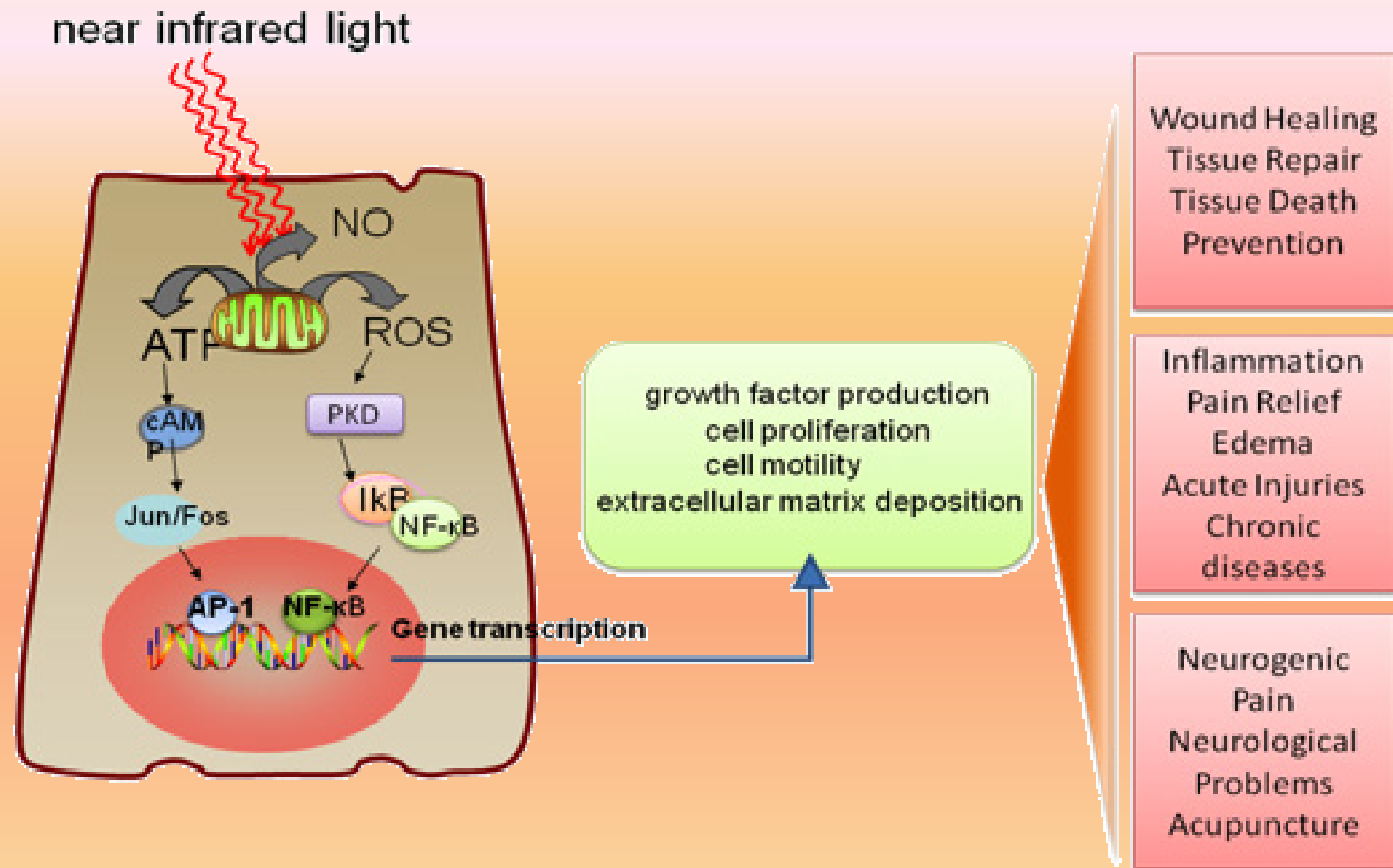
* Skin thickness can vary depending on age and the area of the body. This chart is diagrammatic and not to scale.



HIGH PENETRATION L.E.D. THERAPEUTIC EFFECTS

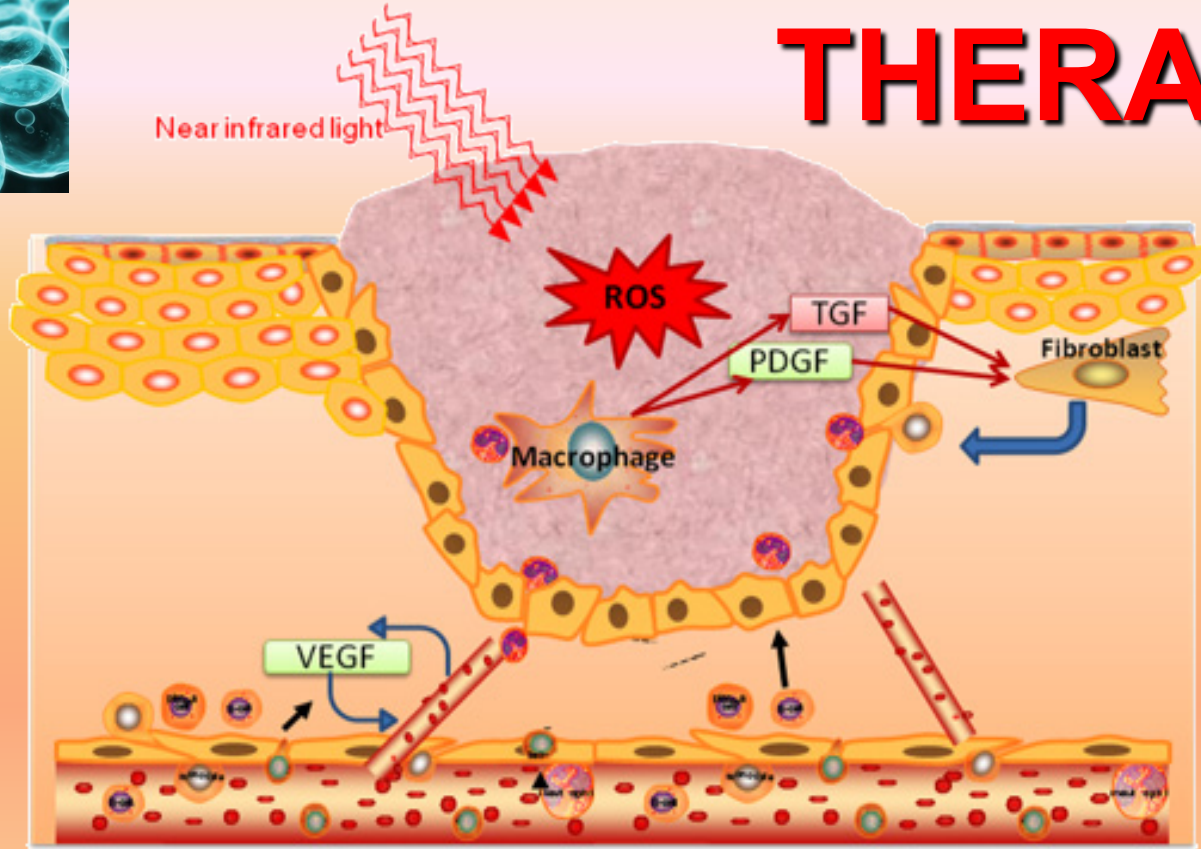
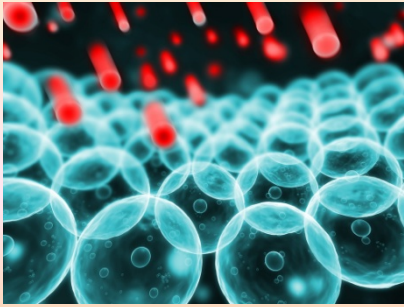
1. Increases blood capillary circulation and vascular activity by promoting improvement in the metabolism of nitric oxide (NO). Improves vasodilation and leads to the formation of new capillaries; this in turn provides additional oxygen and nutrients to accelerate natural tissue healing processes.
2. Stimulates synthesis of adenosine tri-phosphate (ATP).
3. Increases RNA/DNA synthesis - this stimulates cellular reproduction and facilitates accelerated replacement of damaged cells
4. Stimulates production of collagen, the most important component of wound healing. Stimulates fibroblastic activity, promoting repair of connective tissue and formation of collagen fibers
5. Reduces scar tissue and stimulates wound healing. Stimulates tissue granulation and connective tissue formation - an important process in the healing of wounds, ulcers and inflamed tissues
6. Increases lymphatic system activity and relieves edema and discomfort associated with swelling
7. Stimulates acupuncture points and immune response
8. Reduces inflammation and swelling in chronic conditions of arthritis, bursitis, and tendonitis
9. Increases production of endorphins and enkephelins from the brain - promoting pain reduction and mood elevation
10. Stimulates production of adrenals, which facilitate long term pain relief and resilience to stress. Relaxes muscles, reduces nerve excitability and stimulates nerve transmission

HIGH PENETRATION L.E.D. THERAPY



Incoming red and NIR photons are absorbed in cell mitochondria, producing reactive oxygen species (ROS) and releasing nitric oxide (NO), which leads to gene transcription via activation of transcription factors (NF-κB and AP1).

YOUNG AGAIN® THERAPY



Wound Healing. Cells in the wound respond to light induced reactive oxygen species (ROS) leading to the expression of growth factors, such as transforming growth factor beta (TGF), and platelet derived growth factor (PDGF), which encourage synthesis of more collagen, increased formation of blood vessels, and less inflammation, all of which increase wound healing.

YOUNG AGAIN® EXCLUSIVE FEATURES



DEDICATED WAVELENGTHS TO SPECIFIC TREATMENTS



BLUE



YELLOW



RED



INFRARED



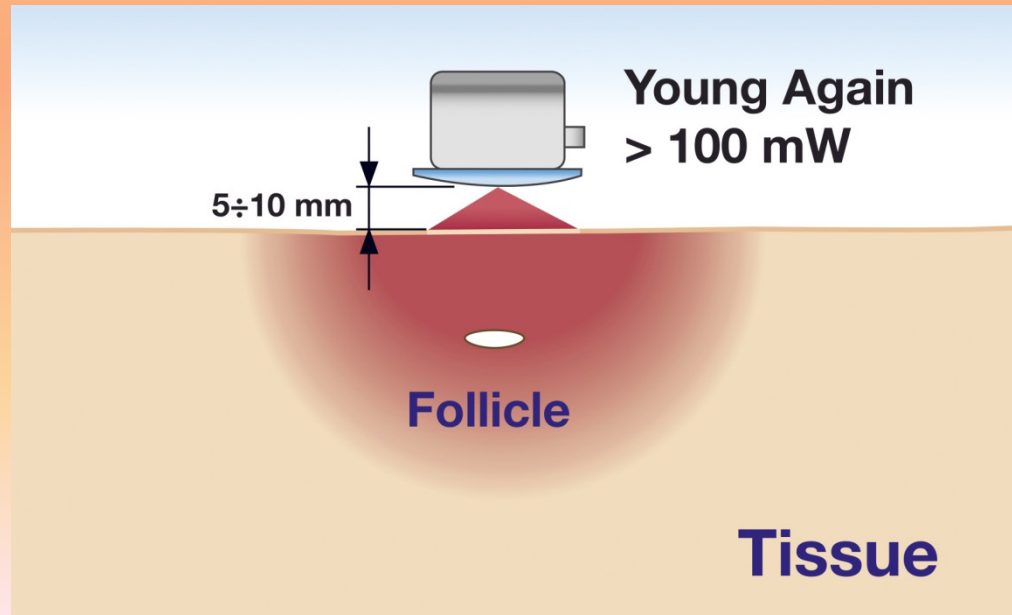
YOUNG AGAIN® EXCLUSIVE FEATURES



OPTIMAL DISTANCE BETWEEN SKIN AND HP L.E.D.



5 mm > 10 mm



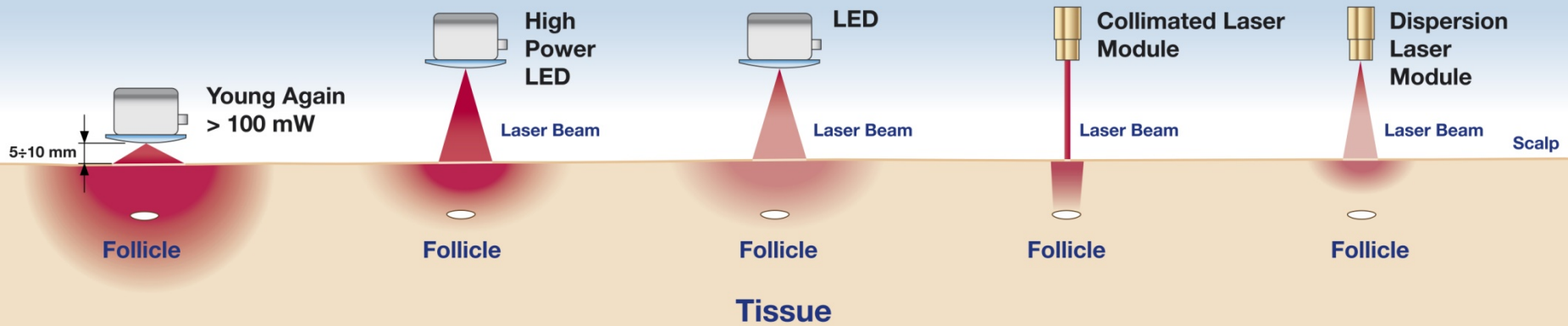
YOUNG AGAIN® EXCLUSIVE FEATURES



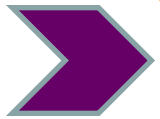
**HIGH POWER EMISSION
IN CONTINUOUS AND SCATTERING MODE**



> 100 mW

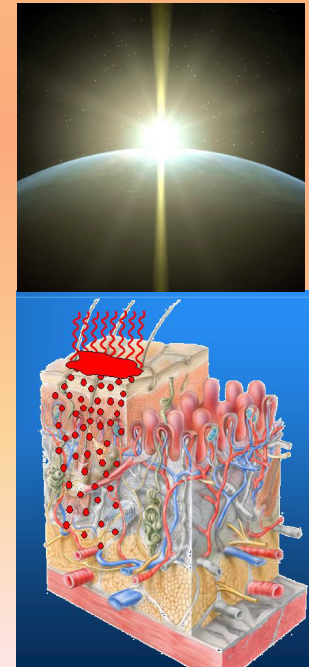


YOUNG AGAIN® PROJECT



2. PHOTO-EUDERMIA

*The Eudermic
enhancement of
skin absorption*



Dermal Absorption

Research has revealed that skin absorption occurs via diffusion, the process whereby molecules spread from areas of high concentration to areas of low concentration. Three mechanisms by which chemicals diffuse into the skin have been proposed:

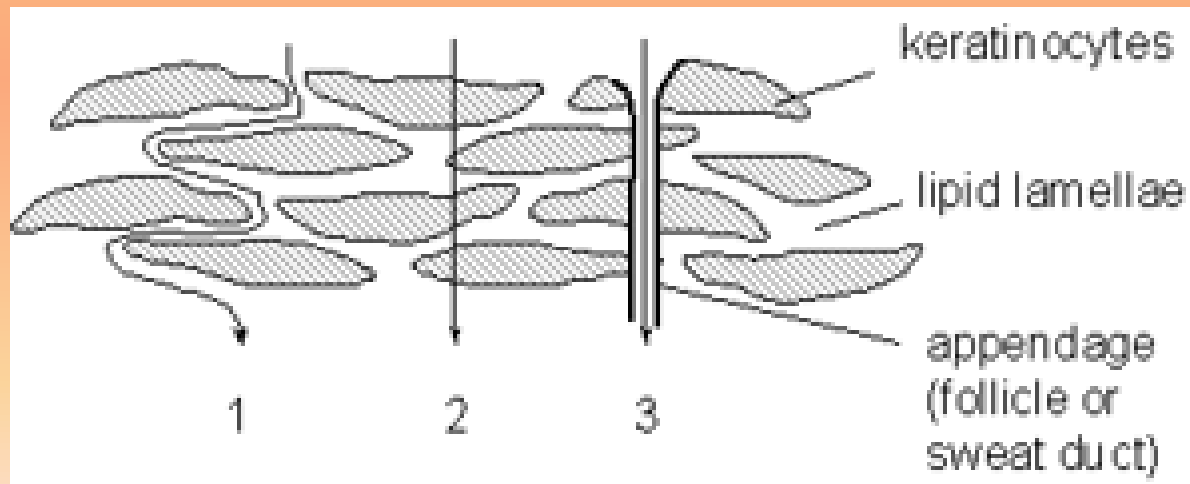
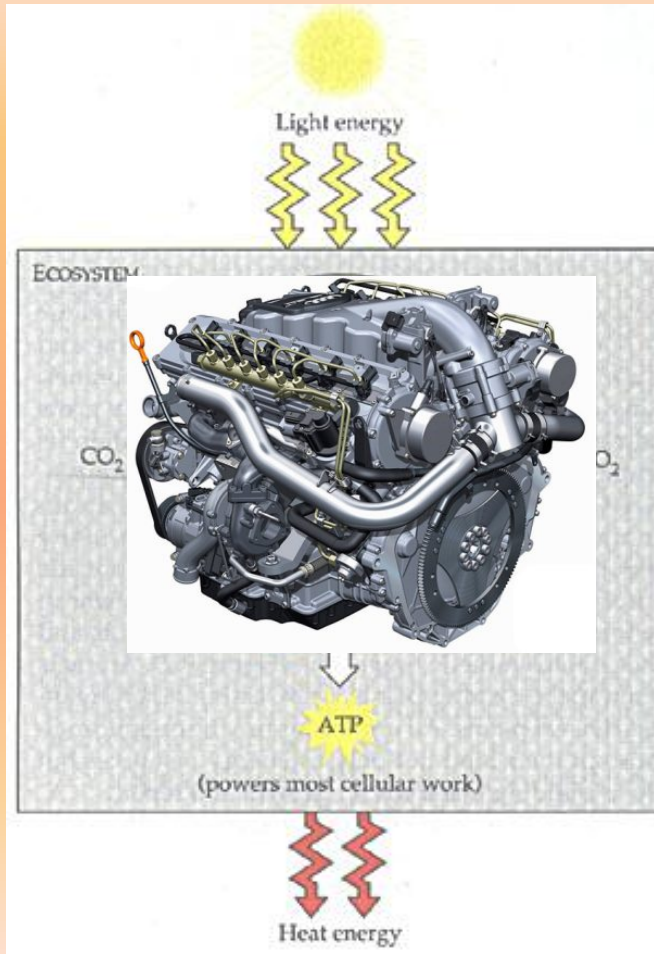


PHOTO-EUDERMIA



Light activation recharge ATP and dinamize chemical reactions in all the cells of the skin & the hair:

- the cell receptivity to cosmetics is faster and better.
- the cellular engine is much more powerfull.

PHOTO-EUDERMIA

Optimized
absorption of
cosmeceutical/
pharmaceutical
product applied
topically

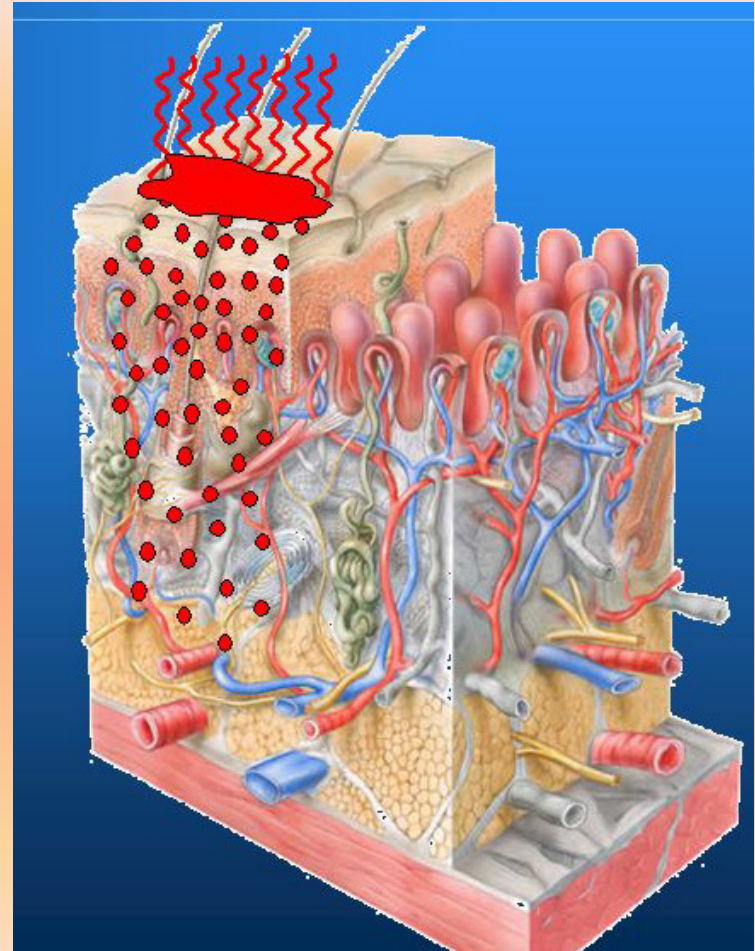
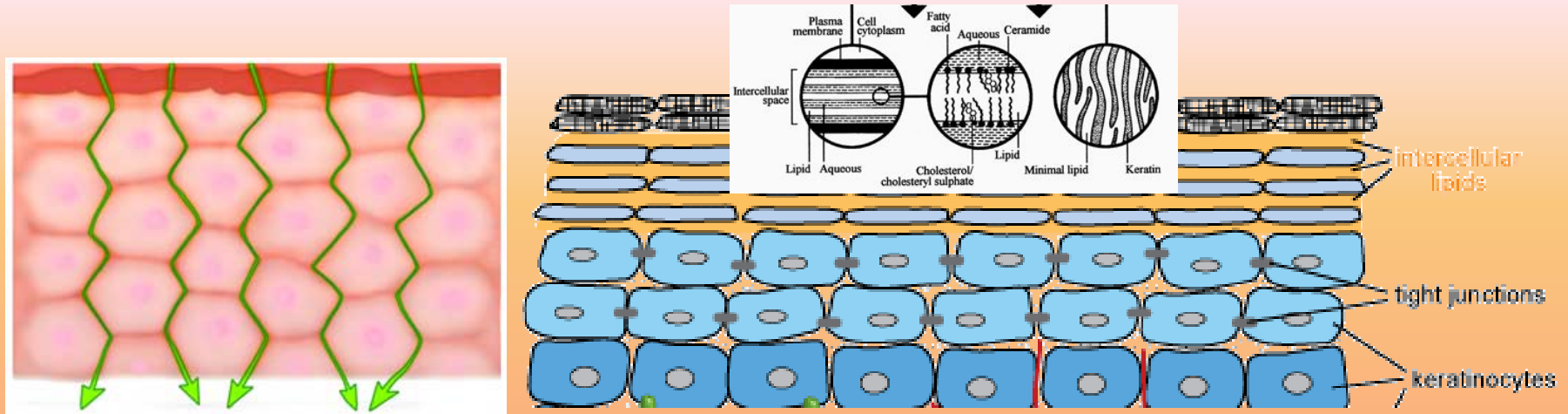


PHOTO-EUDERMIA



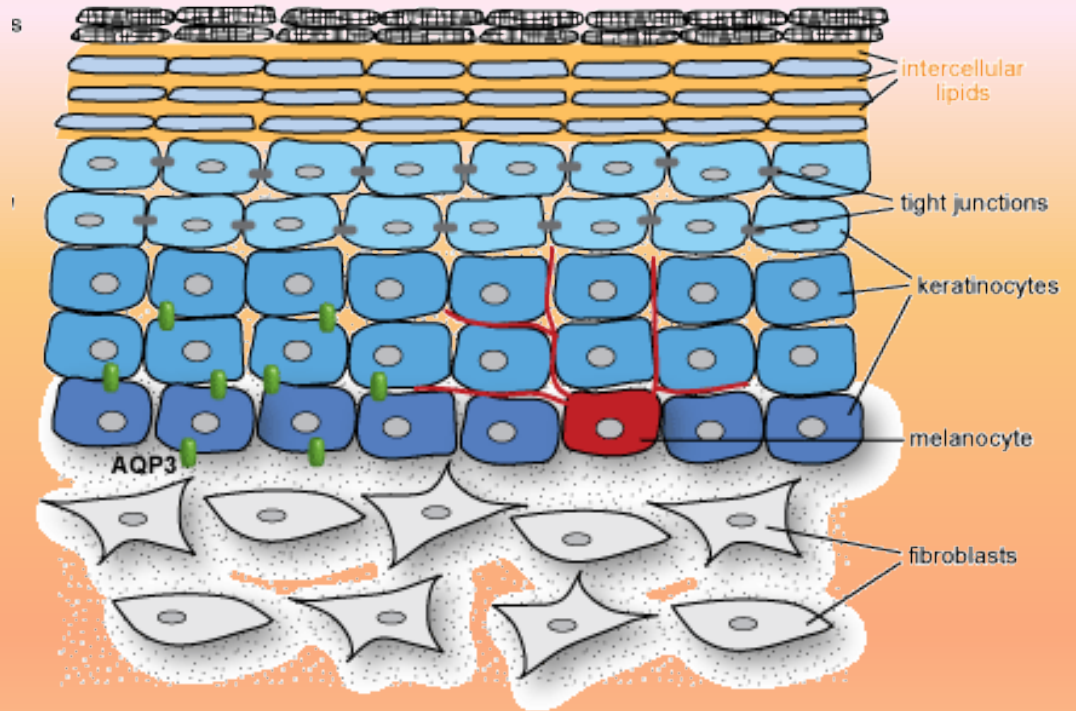
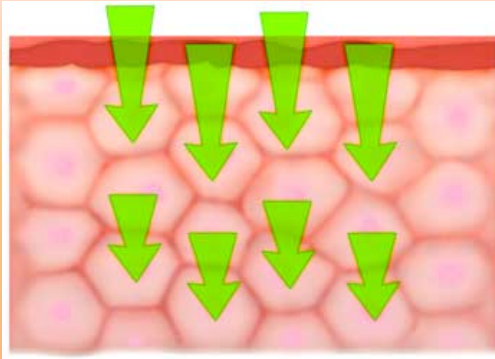
Enhances all the three way of absorption:

1. Intercellular lipid pathway



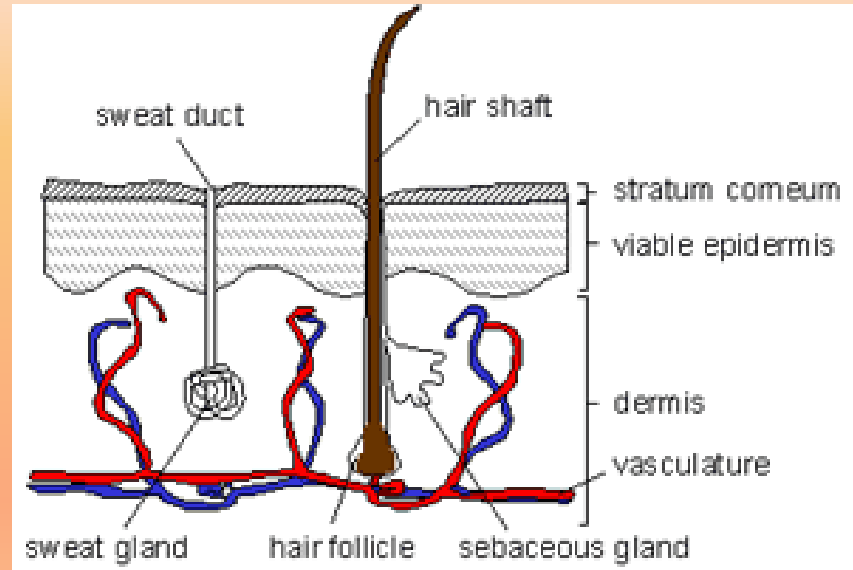
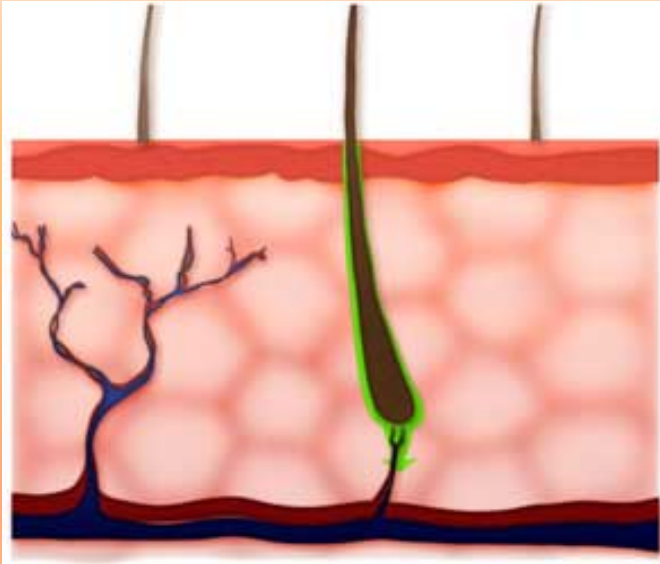
Enhancing skin drainage, and heating ceramides, the intercellular space becomes less busy and cosmetics may penetrate more quickly through keratinocytes.

2. Transcellular permeation



More active cells, means more vitality and more production of keratin, melanin, hyaluronic, collagen, ceramids: active principles are absorbed (phagocytosis and pinocytosis) faster and better (in a higher %).

3. Through the appendages (hair follicles, glands)

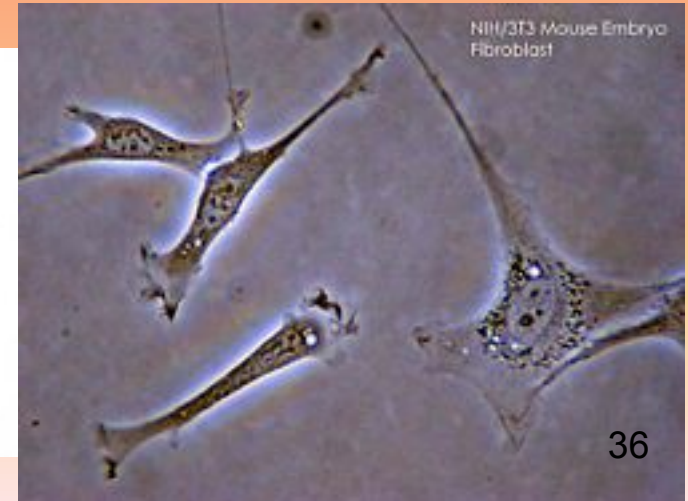
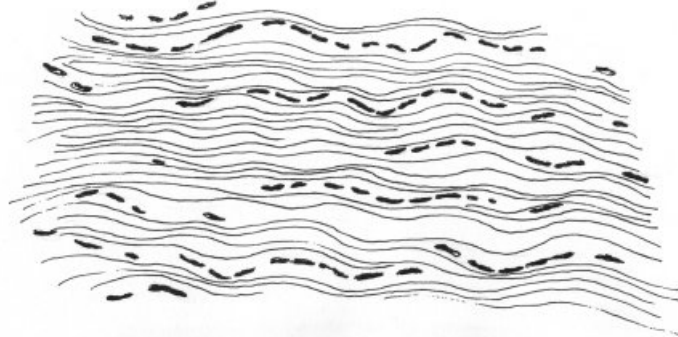
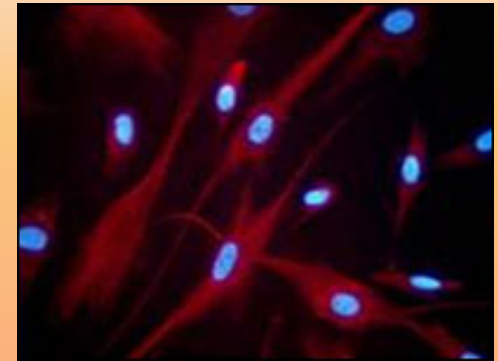
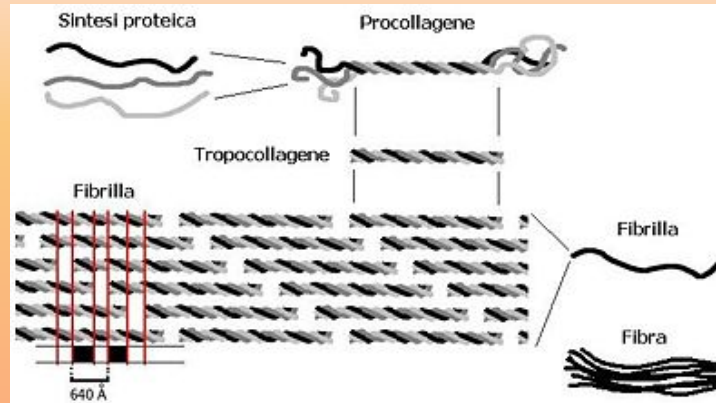


Smooth vasodilation by light stimulation increase hair follicle and sweat gland activity: these natural way of absorption are the favourite channel for deep absorption.

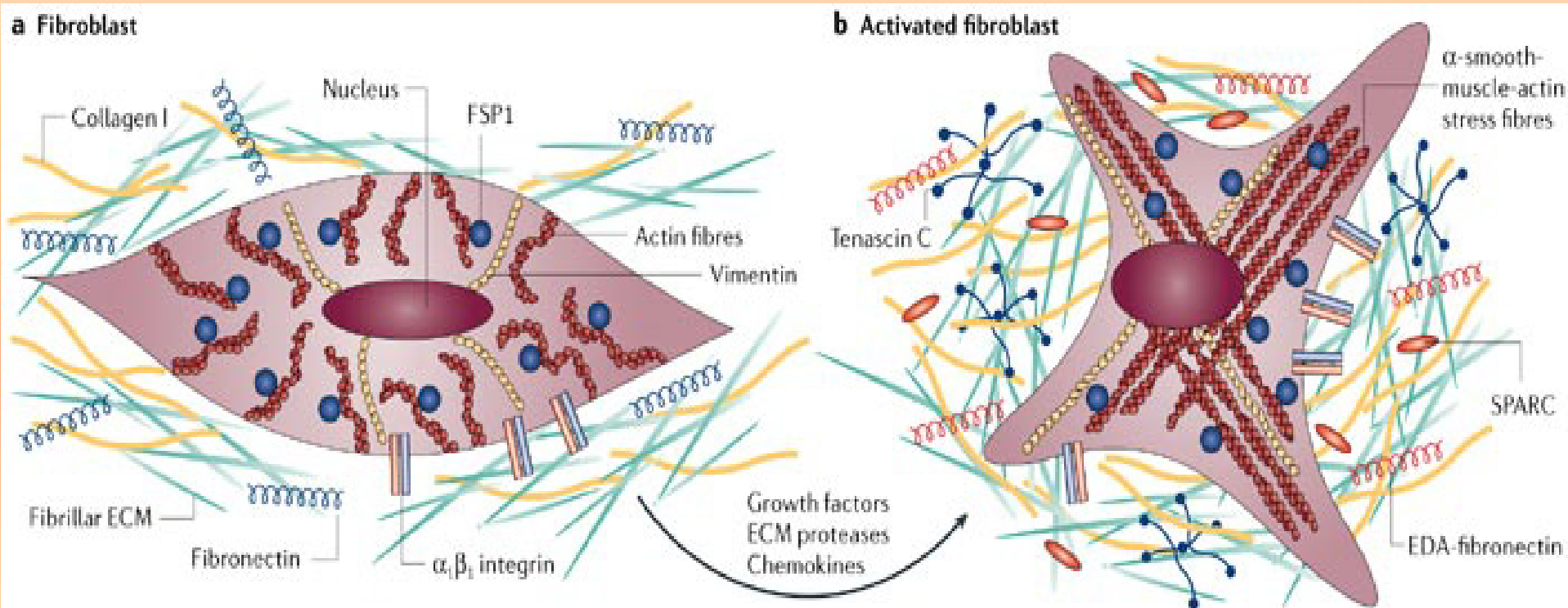
YOUNG AGAIN® PROJECT: **THE SKIN**



THE FIBROBLAST: the skin factory



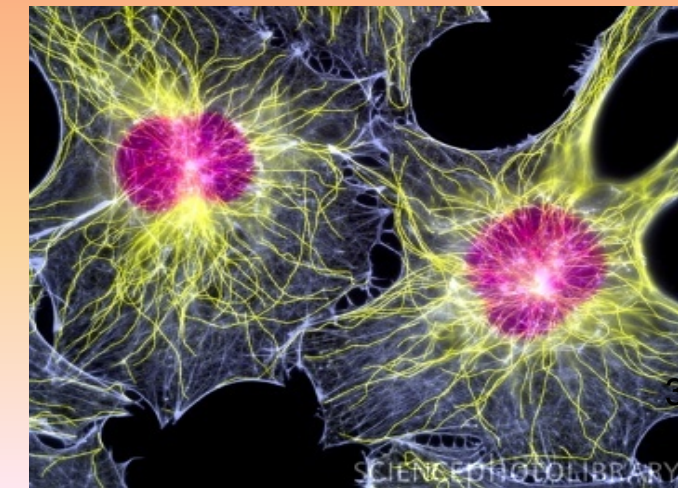
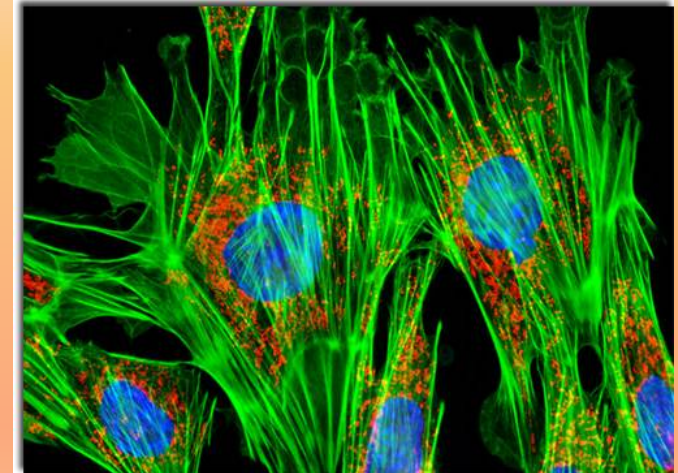
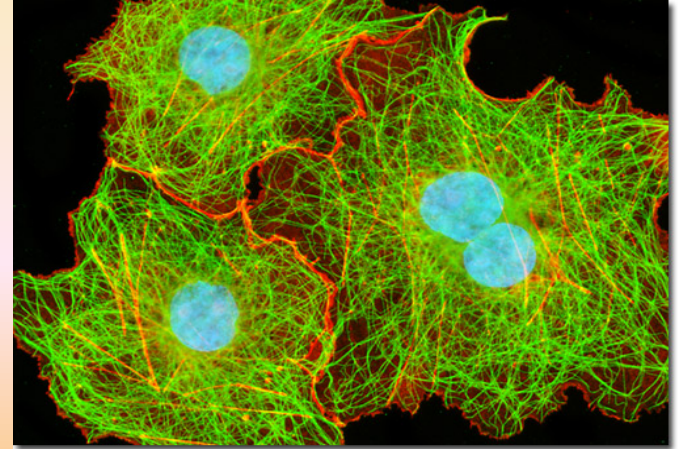
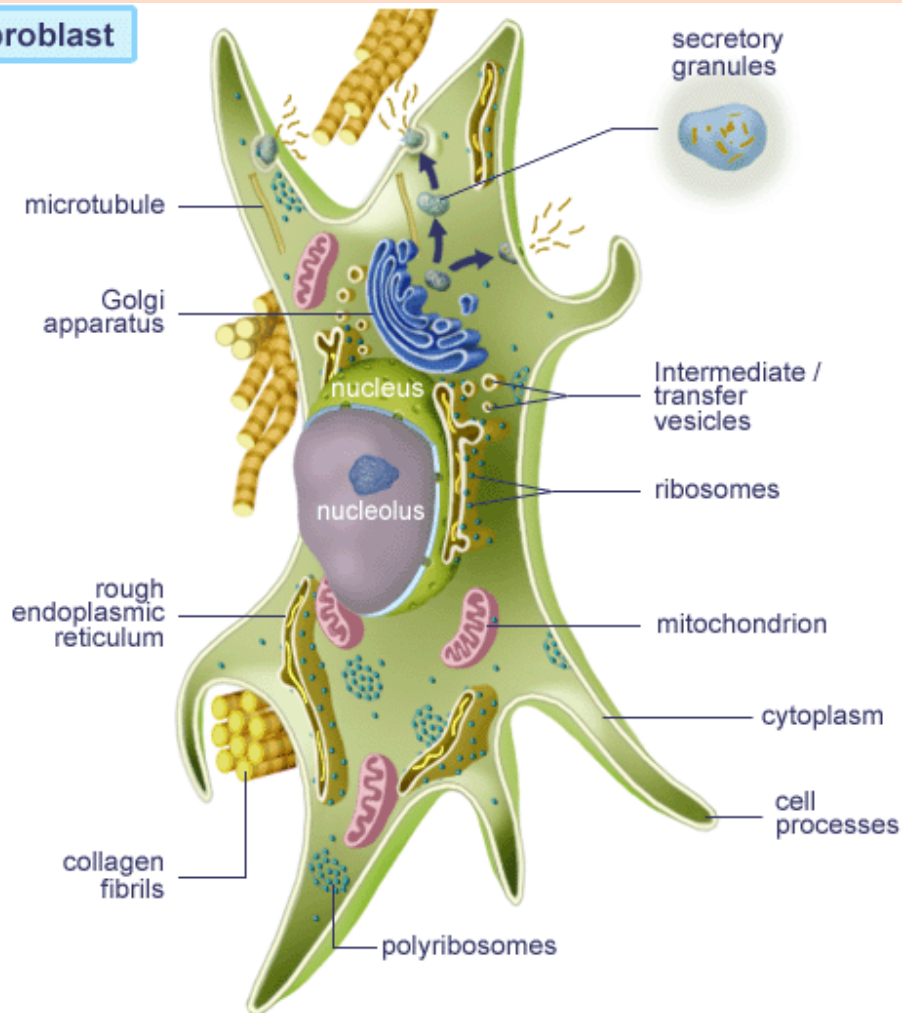
YOUNG AGAIN[®] ACTIVATION



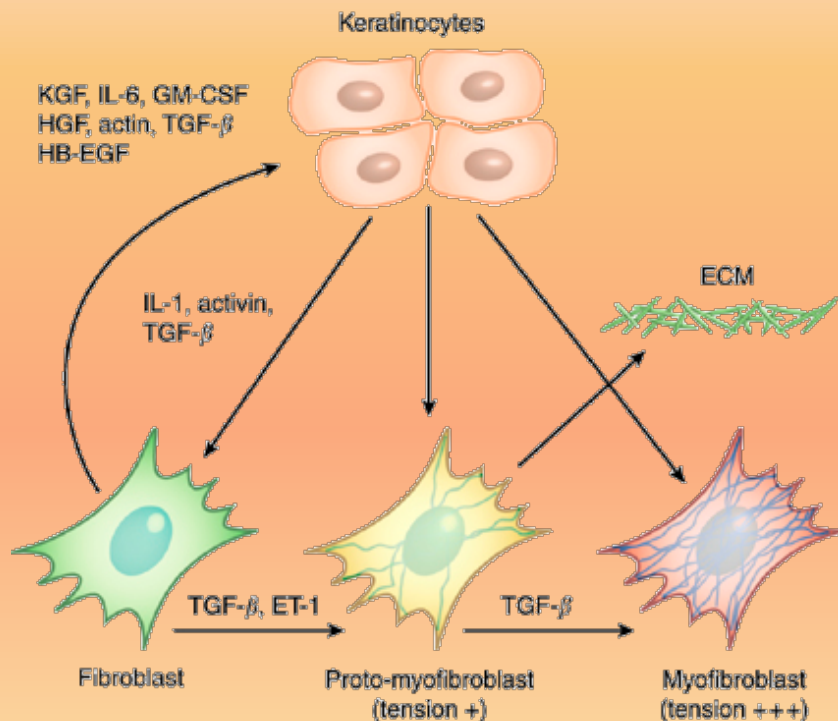
Validity & ageless

THE ACTIVATED FIBROBLAST

Fibroblast



YOUNG AGAIN[®] ACTIVATION

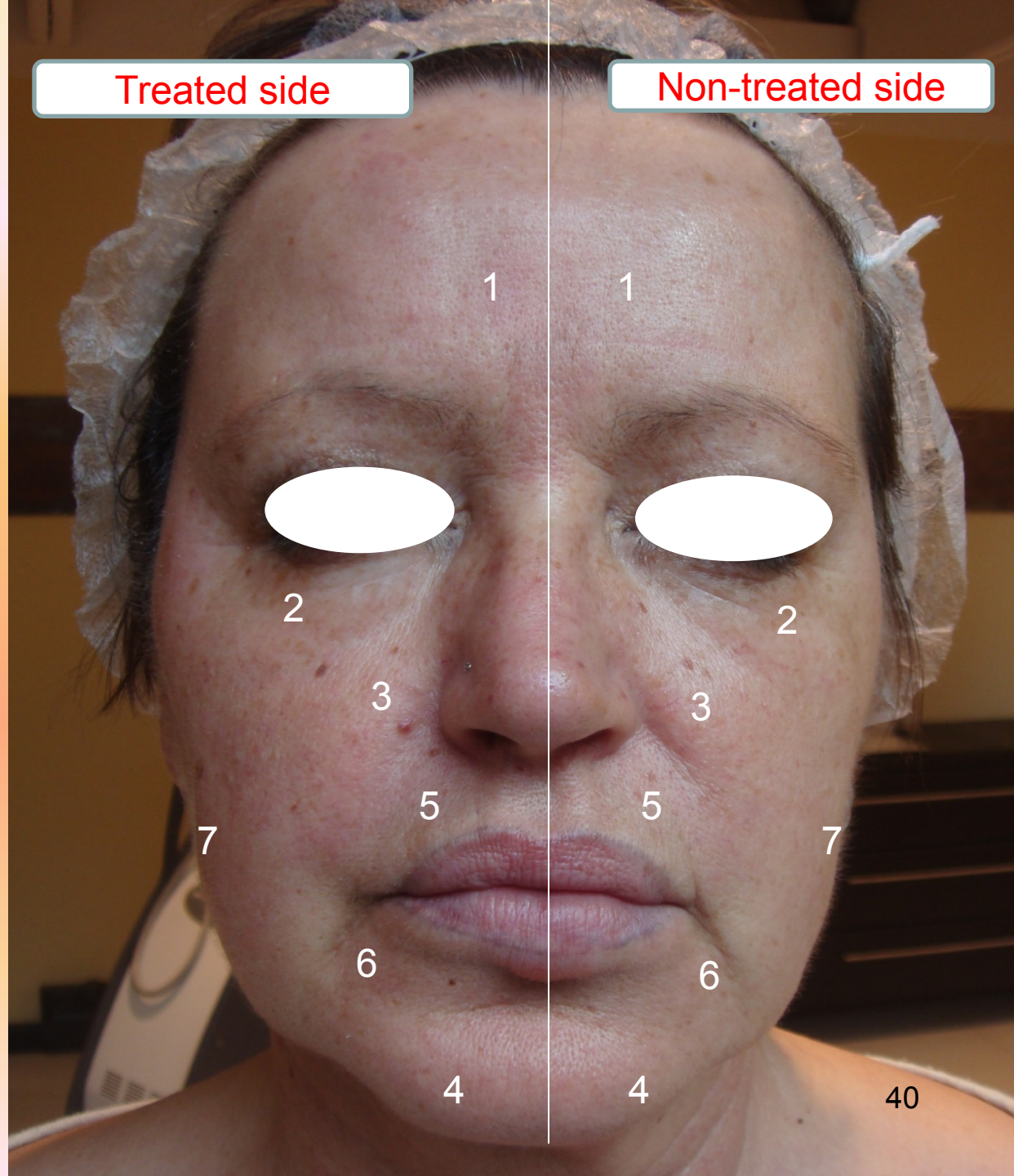


- Enhanced keratinocytes activity (stimulation of skin turn-over) = antiaging effect
- Increased skin repairing and cicatrization
- Regularization of sebaceous glands secretion (blue)
- Bacteriostatic effect (blue)

The fact:

First treatment TULIP PLUS with dedicated cosmetics and YOUNG AGAIN® RED face mask

1. Forehead wrinkles: extremely reduced
2. Eye-contour wrinkles: smoothed; less noticeable
3. Labial fold: disappeared
4. Chin wrinkles: reduced, less noticeable
5. Lips: treated side has improved tone, lifted up
6. Expression wrinkles around the mouth: much reduced and less visible
7. Face contour: lifted up



FACE MASK



YOUNG AGAIN® PROJECT: THE HAIR

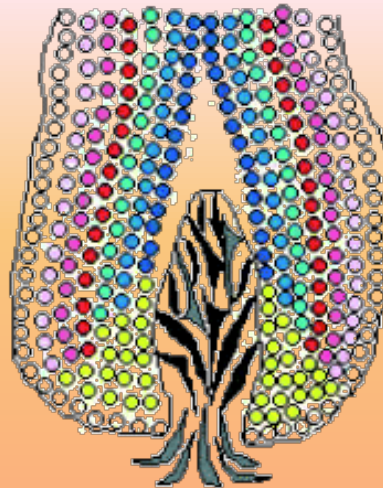


THE HAIR

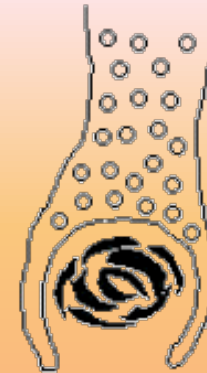
Telogen



Anagen



Catagen



Epithelial cells

- Secondary hair germ (telogen)
- Outer root sheath and germinative cells (anagen)
- Proliferating cells of the hair matrix
- Precursors of the medulla cells
- Precursors of the cortex cells
- Precursors of hair cuticulae cells
- Precursors of the Henle cells
- Precursors of the Huxley cells
- Precursors of the inner root sheath cuticulae
- Cells of the epithelial strand (catagen)

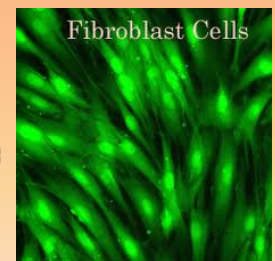
Mesenchymal cells



Dermal papilla fibroblasts



Connective tissue sheath cells

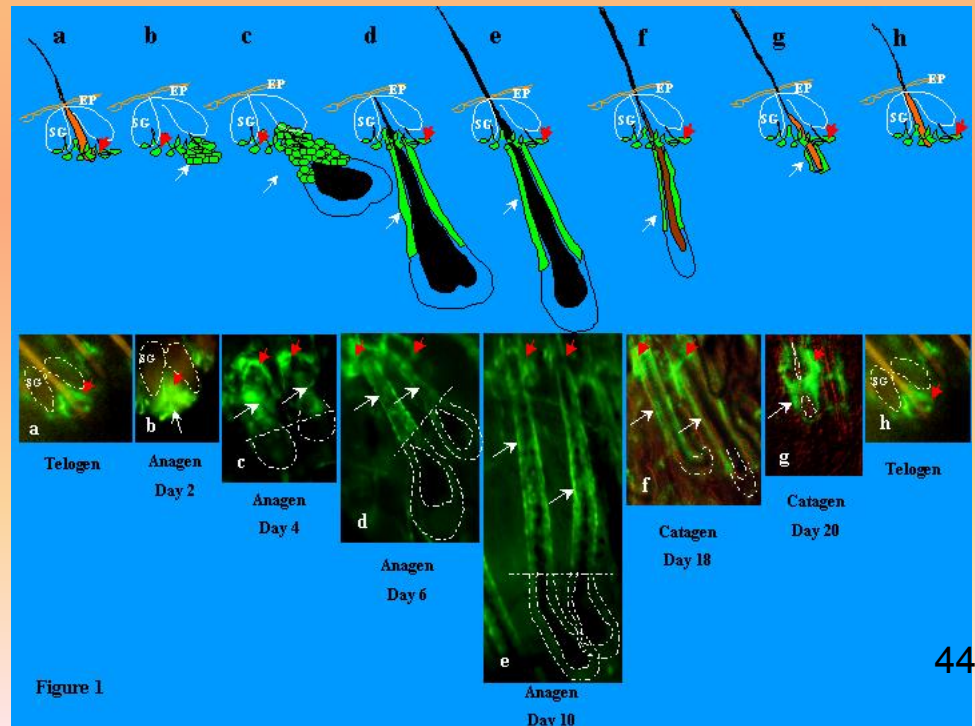
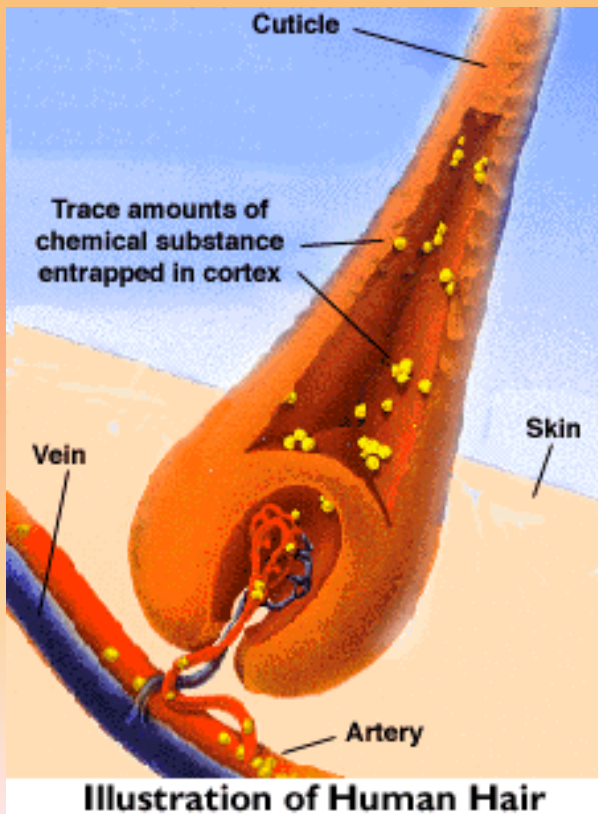
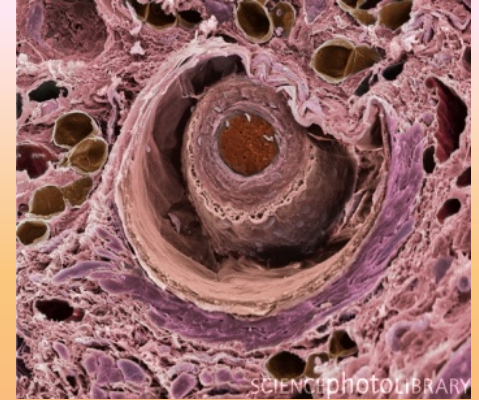
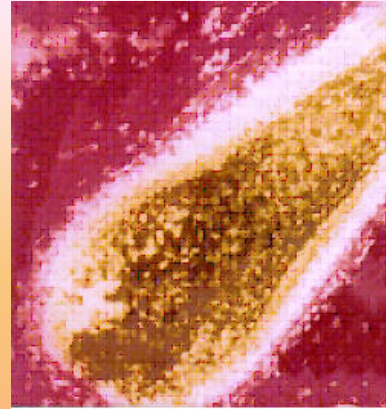


Fibroblast Cells

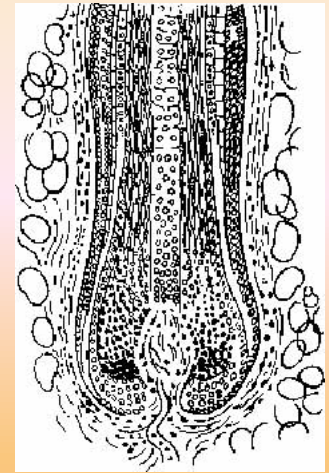
THE HAIR AGING



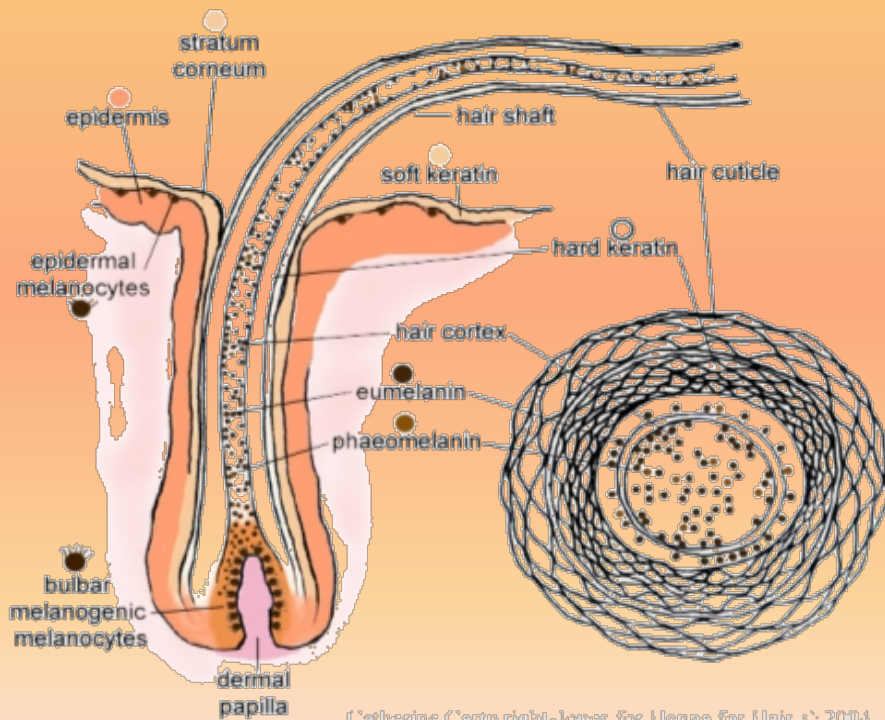
Centro Studi Cicatrizzazione



THE GRAYING HAIR

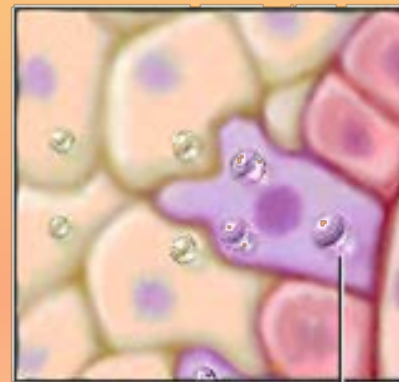


Schematic Diagrams of Graying Hair

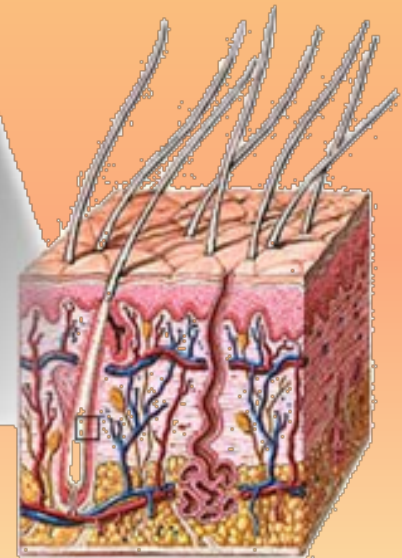


Catherine Cartwright-Jones for Henna for Hair © 2004

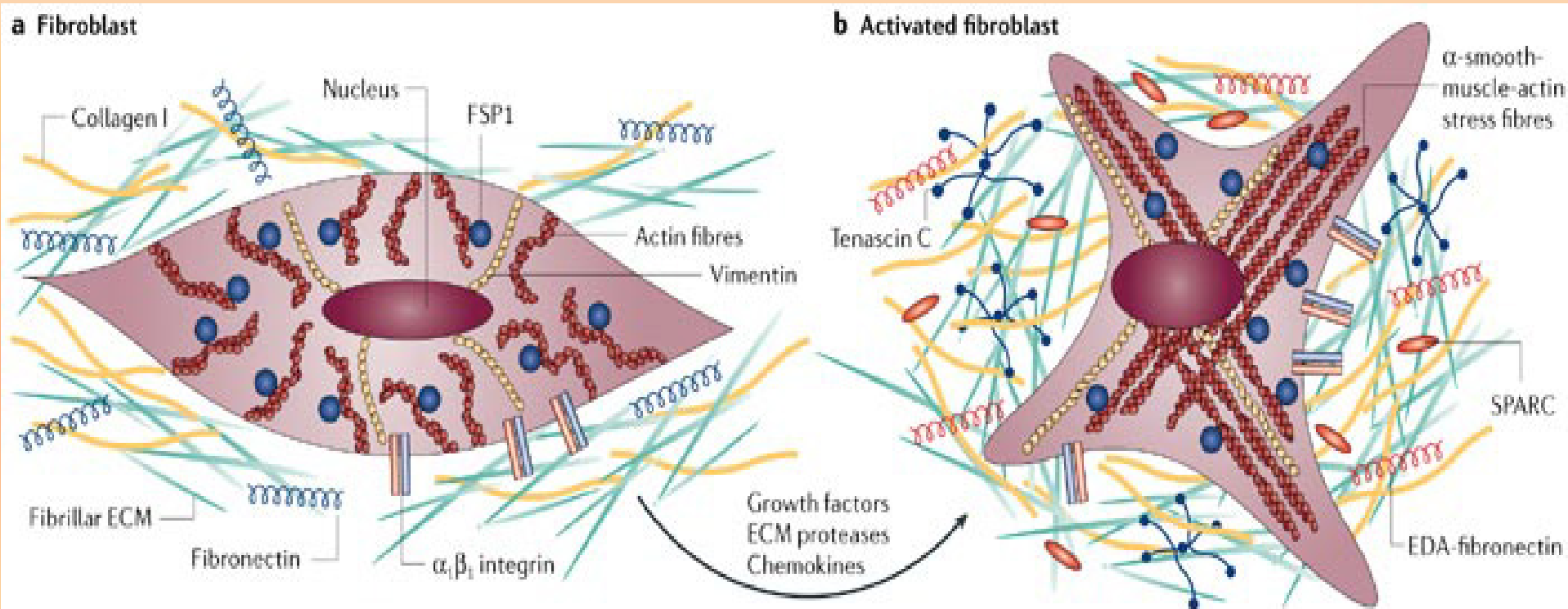
Old hair follicle



Melanin is replaced with colorless air bubbles



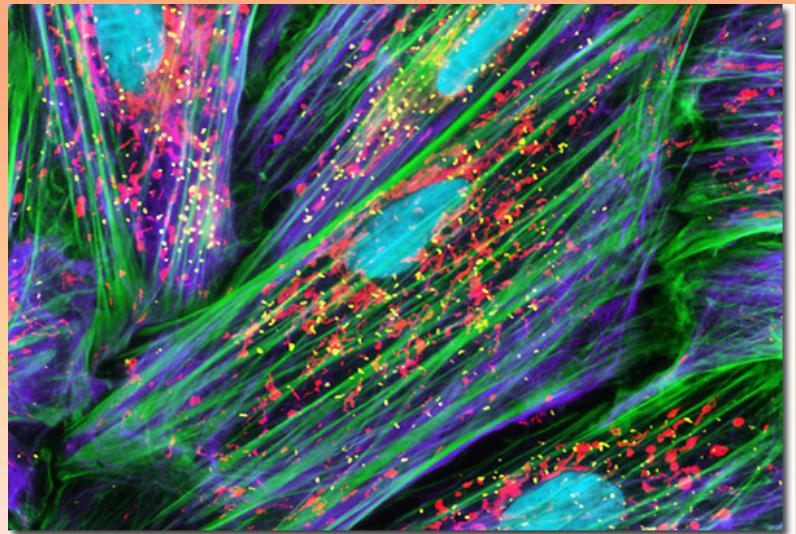
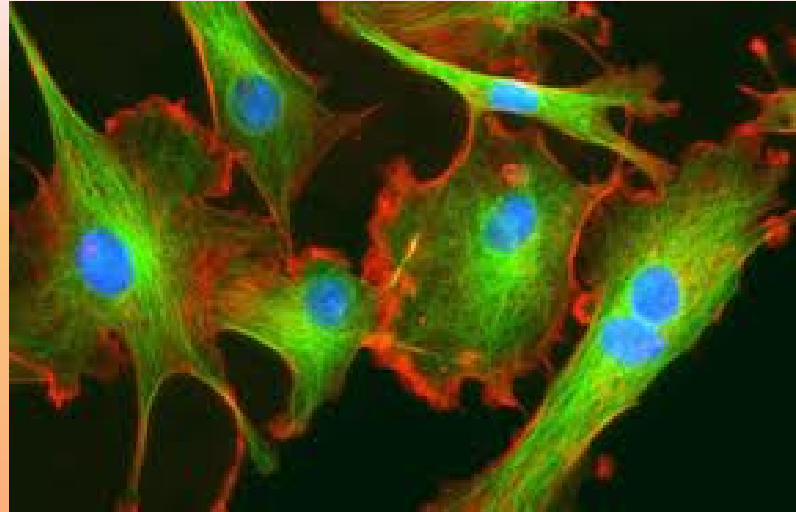
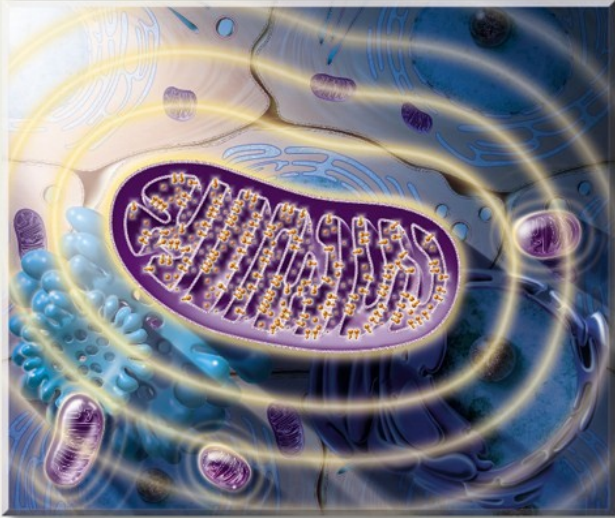
YOUNG AGAIN[®] : FIBROBLAST ACTIVATION



Vitality & longevity

YOUNG AGAIN®

HAIR PHOTO-REVITALIZATION




HAIR LOSS

In the adult hair loss, or "alopecia", has three distinct forms:

- **androgenetic alopecia** - male- and female-pattern hair loss.
- **telogen effluvium** - alteration of the normal hair cycle, due to many different stress stimuli (severe stress, chemotherapy, childbirth, major surgery, severe chronic illness, rarely occurrence in vaccination)
- **alopecia areata** - autoimmune disease, form antibodies against some hair follicles, distinct circular pattern of hair loss.

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NEWS RELEASE

JANUARY 4, 2011

Male Pattern Balding May Be Due to Stem Cell Inactivation, According to Penn Study

PHILADELPHIA – Given the amount of angst over male pattern balding, surprisingly little is known about its cause at the cellular level. In a new study, published in the *Journal of Clinical Investigation*, a team led by George Cotsarelis, MD, chair of the Department of Dermatology at the **University of Pennsylvania School of Medicine**, has found that stem cells play an unexpected role in explaining what happens in bald scalp.

A Note to Individuals Interested in Treatments Based on this Research

From George Cotsarelis:


Thank you for your interest in my research. Rest assured that we are continuing our work on hair follicle stem cells and hair follicle regeneration in the hopes of better understanding hair growth and developing treatments for hair loss. We are not performing any clinical trials at this time. Please refer to the National Institutes of Health website for more information.

Using cell samples from men undergoing hair transplants, the team compared follicles from bald scalp and non-bald scalp, and found that bald areas had the same number of stem cells as normal scalp in the same person. However, they did find that another, more mature cell type called a progenitor cell was markedly depleted in the follicles of bald scalp.

The researchers surmised that balding may arise from a problem with stem-cell activation rather than the numbers of stem cells in follicles. In male pattern balding, hair follicles actually shrink; they don't disappear. The hairs are essentially microscopic on the bald part of the scalp compared to other spots.

"We asked: 'Are stem cells depleted in bald scalp?'" says Cotsarelis. "We were surprised to find the number of stem cells was the same in the bald part of the scalp compared with other places, but did find a difference in the abundance of a specific type

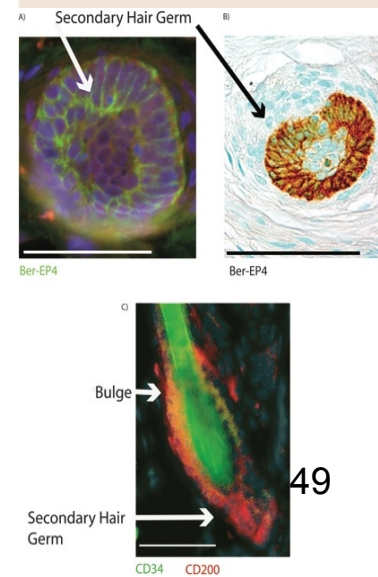
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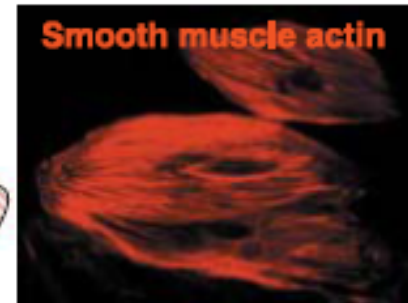
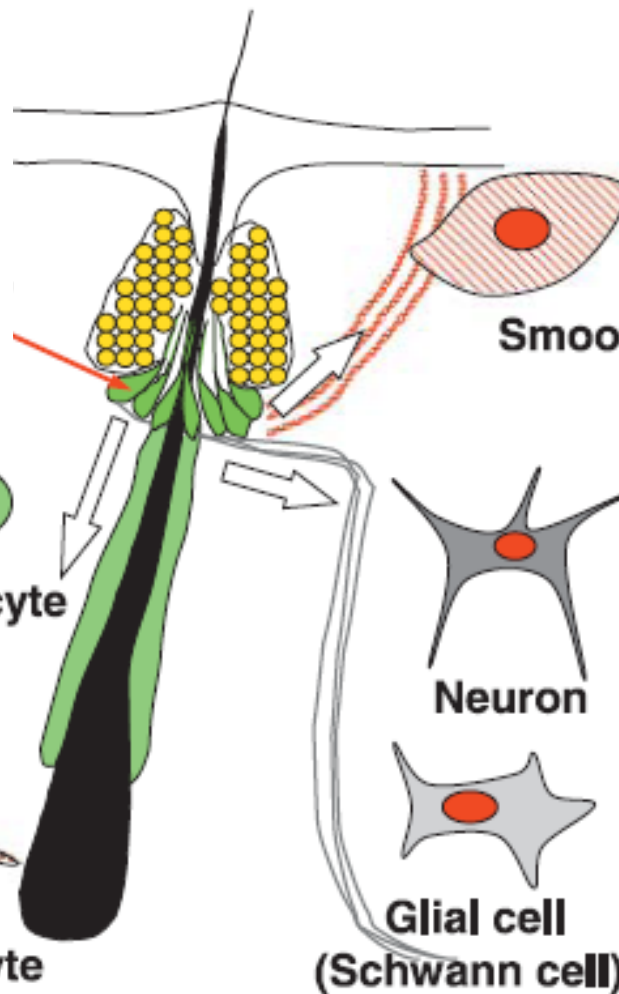
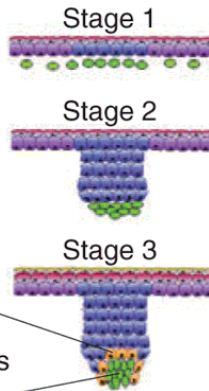
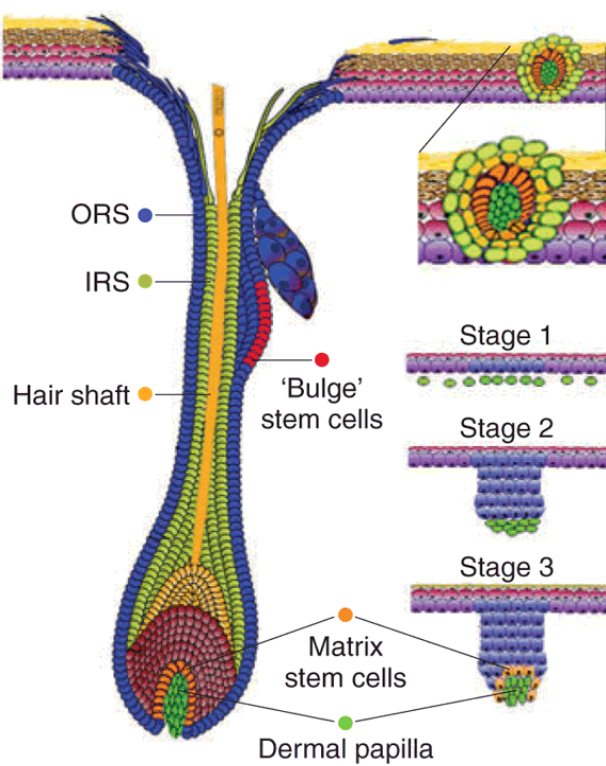
Media Contact

Karen Kreeger
215-349-5658



PHOTOBIOSTIMULATION

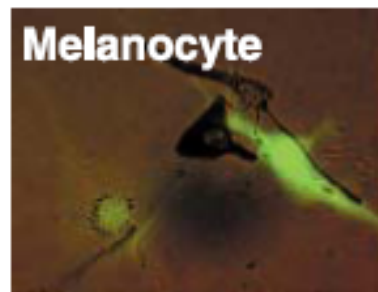
HAIR STEM CELLS



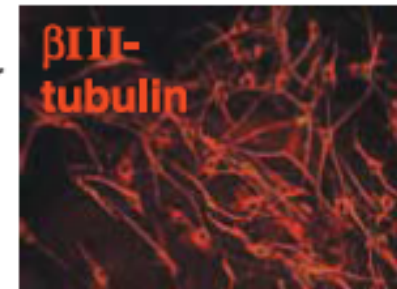
Smooth muscle cell



Keratinocyte



Melanocyte



Neuron



Glial cell (Schwann cell)

HAIR STEM CELLS

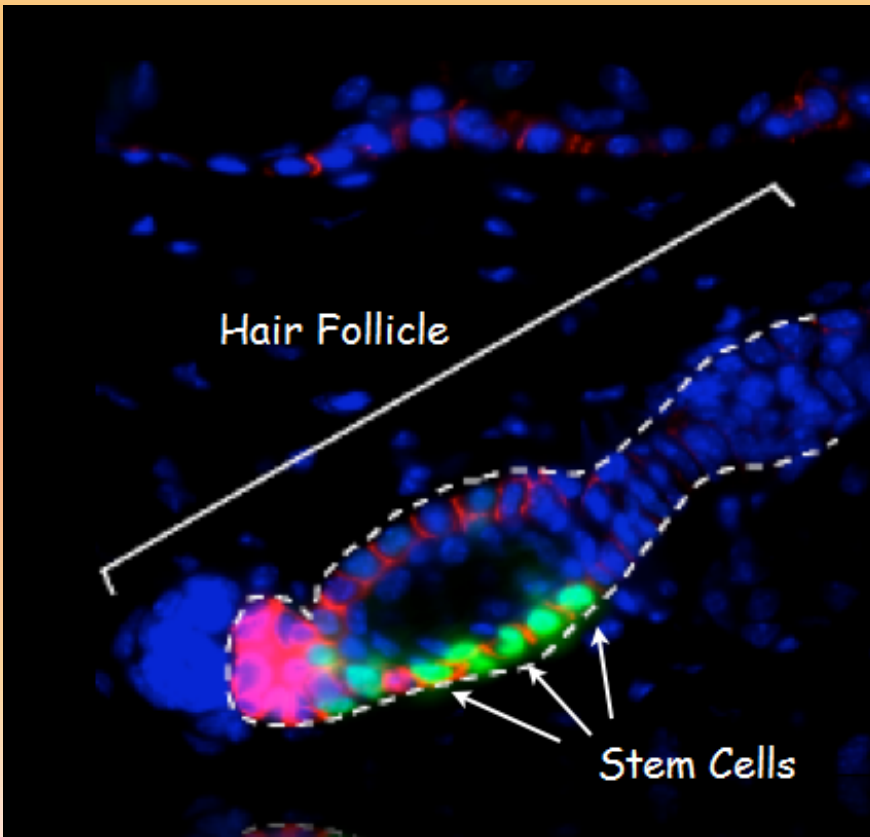
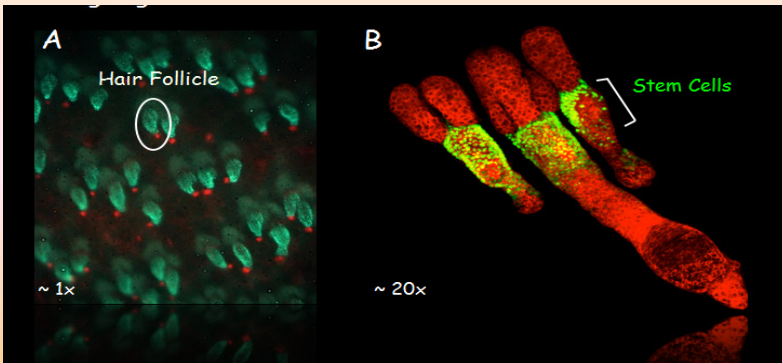
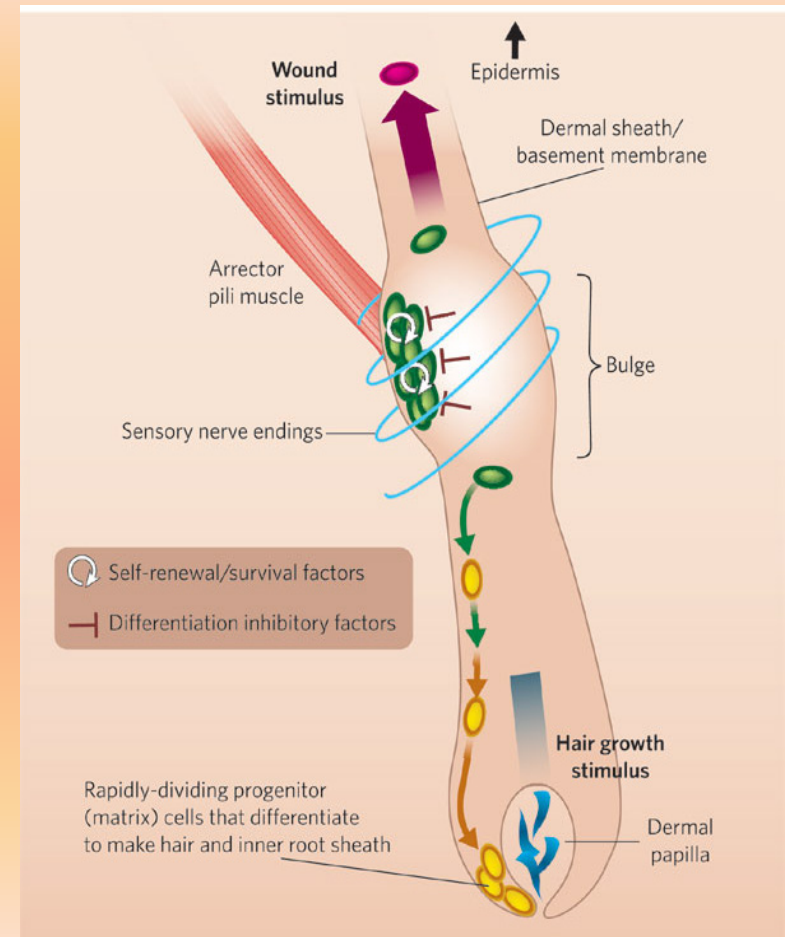
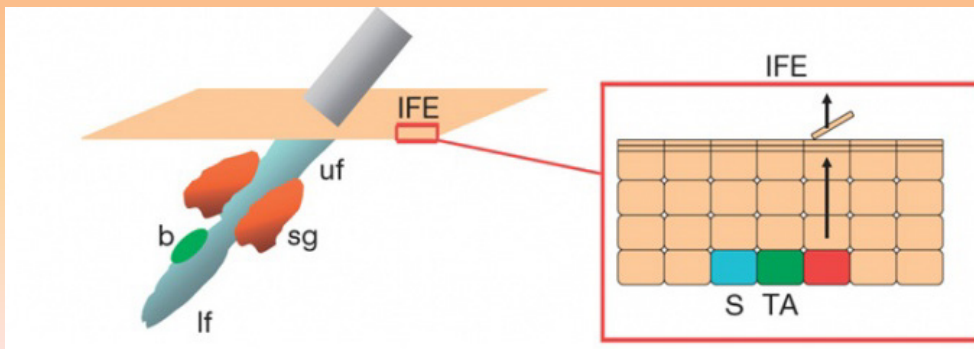


Figure 1. Stem cells are generally slow cycling, feature conserved across different tissues. Because of this property they can be identified by their ability to retain DNA intercalants such as Bromodeoxyuridine or similar. Using these methods stem cells have been identified in the skin hair follicle. In this picture the stem cells are labelled in green, the hair follicle stem cell niche outline is in red and all nuclei are marked in blue.

YOUNG AGAIN®

HAIR PHOTO-REVITALIZATION

- Increased cosmetic deep absorption
- Enhanced cell vitality and metabolism (more keratin)
- More efficient mitochondria and increased cell longevity (keratinocytes and stem cells)



The fact:

Male, 50 years old - Treated with HAIRSTIM -



BEFORE treatment



AFTER 30 treatments

HAIRSTIM



So, why age?

