

Active Beauty

Neodermyl®

The « needle-free » collagen and elastin filler

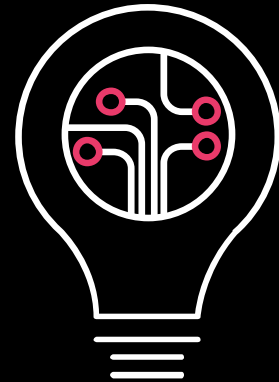
Crafted by white technology



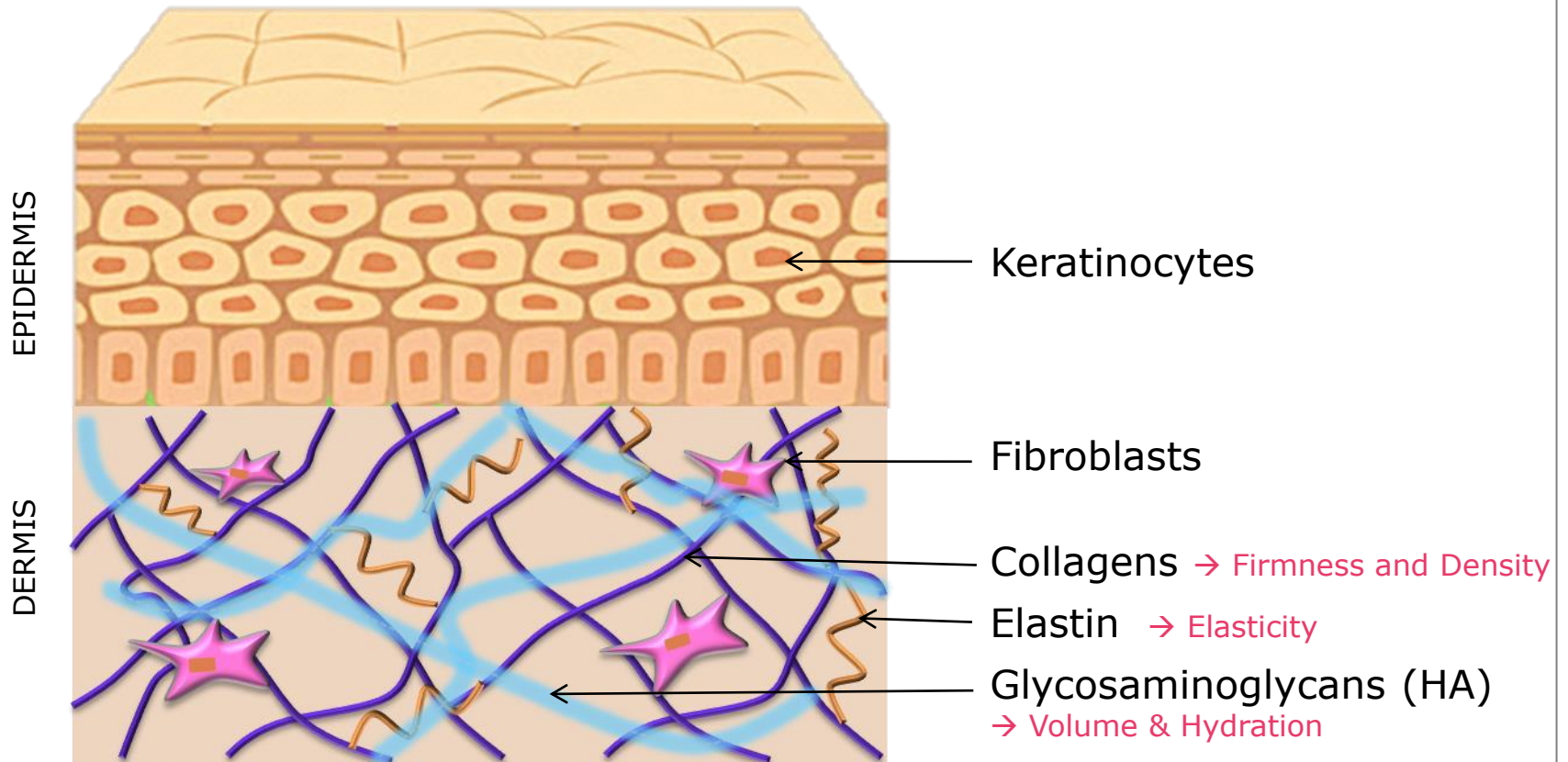
Givaudan

engage your senses

Concept of the product



The Extra Cellular Matrix



Collagen(s)

- ▶ Create the **scaffold** of the ECM.
- ▶ Support skin tissues, gives skin its **mechanical strength**, gives cells their outside shape.
- ▶ **Total collagen: 25% to 35%** of the whole-body protein content.
- ▶ Key skin fibrillar collagens: **collagen I and III**
- ▶ **Collagen I = 90%** of body total collagen.
- ▶ **Collagen III= “youth collagen”**.
Less concentrated in human skin than collagen I.
- ▶ Ratio **collagen I / collagen III** is **increasing** upon age.
- ▶ **Collagens are produced by fibroblasts.**

Varani et al. 2006, Am. J. Pathol.
Cheng et al., 2001, Af. J. Biotech
Smith et al., 1986, Am J. Anat.

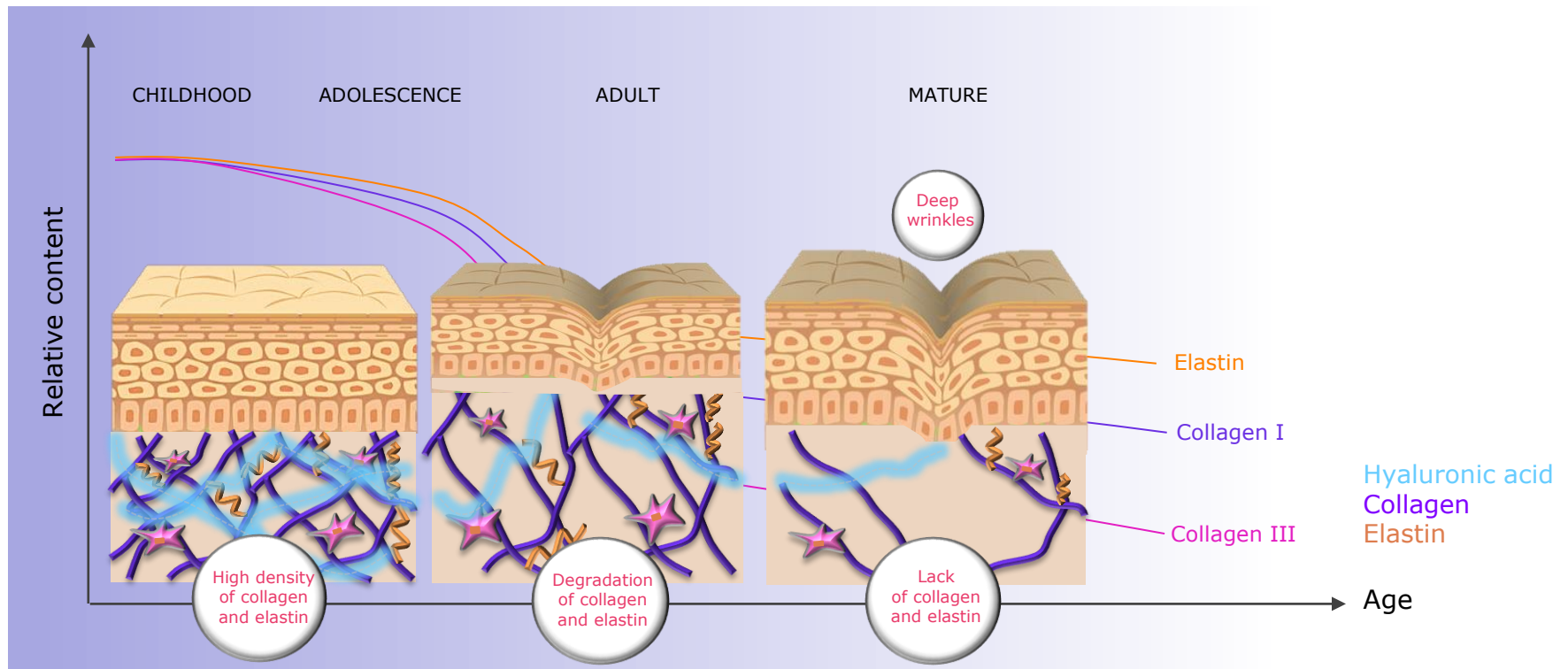


Elastin

- ▶ Gives skin its mechanical **elasticity**
- ▶ Synthesised mainly during early stages of life
- ▶ Elastin half life : 74 years (Shapiro *et al.*, 1991)
- ▶ Replaced by non extensible collagen fibers upon ageing
- ▶ **Elastin is produced by fibroblasts**

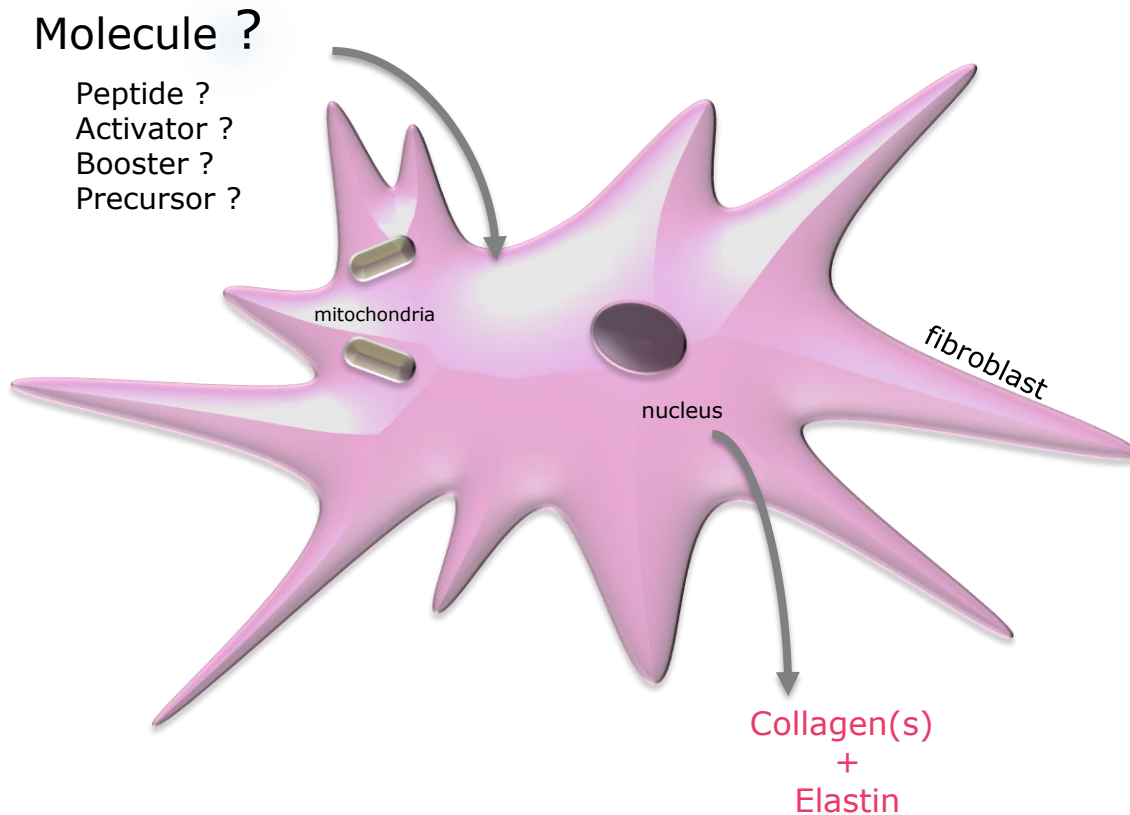


Evolution of collagen(s) and elastin production during life

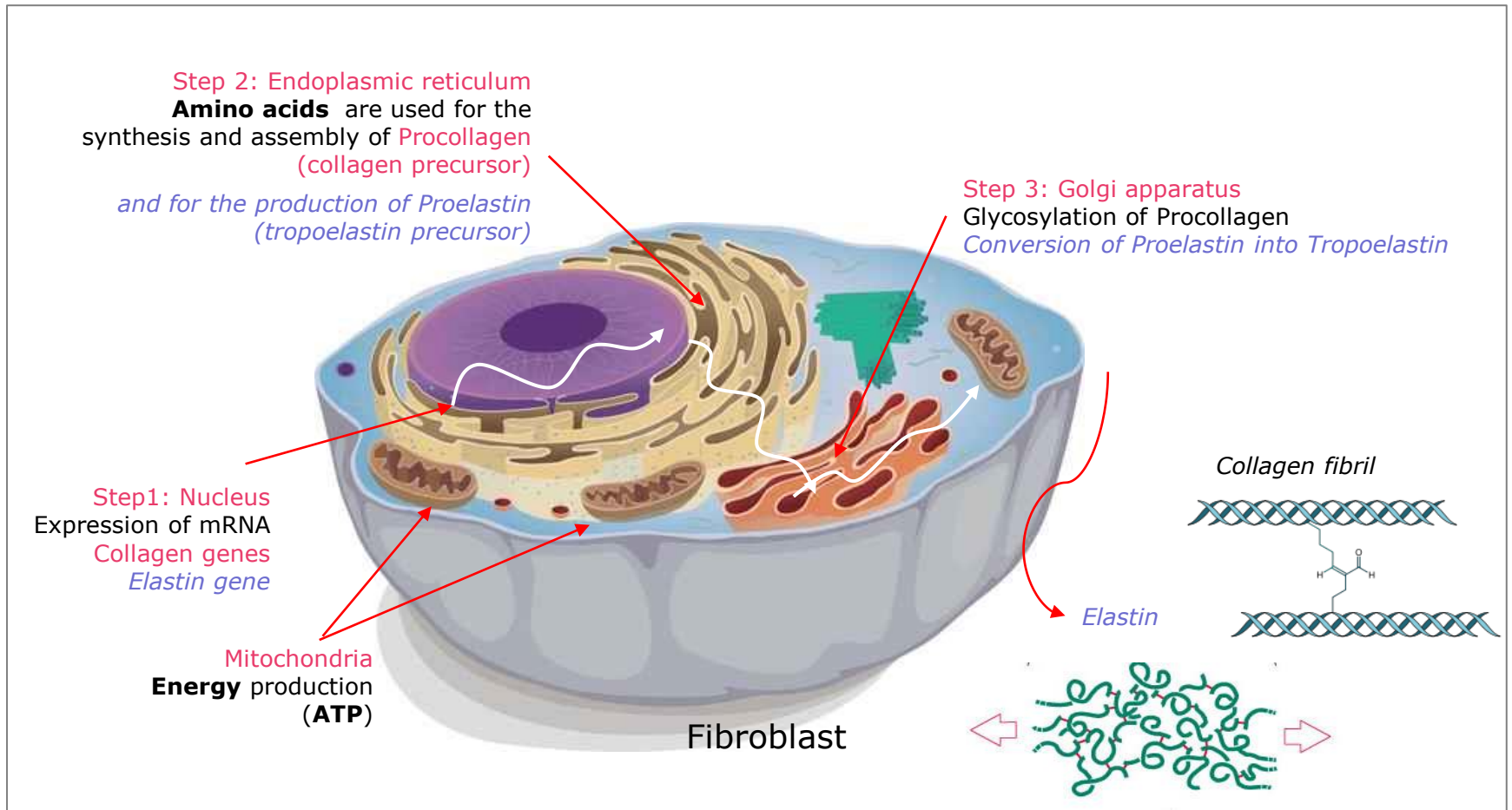


Derived from Cheng et al. 2011

How to reactivate collagen and elastin production in ageing fibroblasts?



Collagen and Elastin synthesis pathways



“Shopping list” to restart collagen and elastin production

Collagen(s) and elastin are proteins

Requirements for Collagen(s)

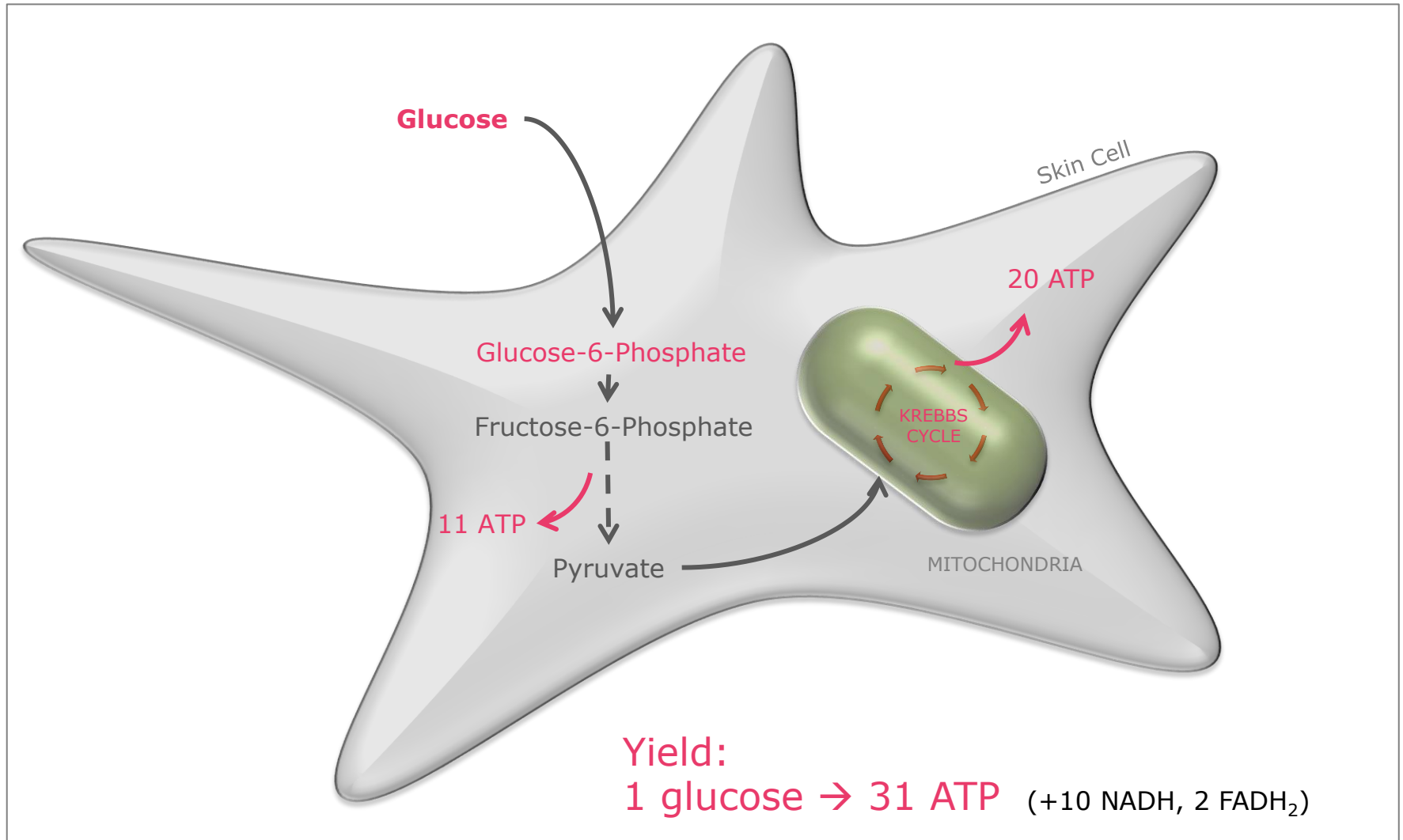
- Proline
- Lysine
- Lysyl oxidase activity
- A lot of energy

Requirements for Elastin

- Proline
- Lysine
- Lysyl oxidase activity
- A lot of energy



The energy pathways in skin cells



What could be a good source of energy?

Glucose is one of the first source of cellular energy

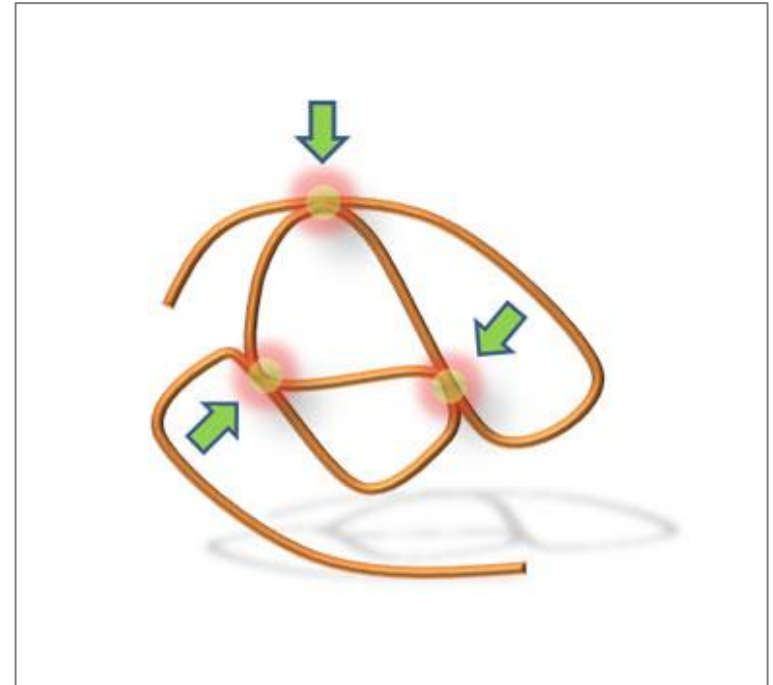
But:

- It needs to be activated into **Glucose-6-phosphate** to be used by cells
- It has a reducing moiety/part that creates glycation reactions (AGE)



What is glycation?

- The chemical bonding of the reducing moiety/part of a sugar molecule to a protein or lipid.
- It disrupts normal metabolic pathways
- It produces AGE (Advanced Glycation Endproducts) that affect cells, and damage skin proteins (collagen, elastin, ...).



**It can promote certain health risks,
and participate in premature ageing**

Rational design of a bio-renewable cellular energy source

- Starting from Glucose backbone
- Activation by grafting a 6-phosphate
- Grafting of methyl to prevent AGE formation
- Result: **MG6P**
(methyl-glucoside-6-phosphate)
- Patented manufacturing process
- **Produced by Green chemistry**



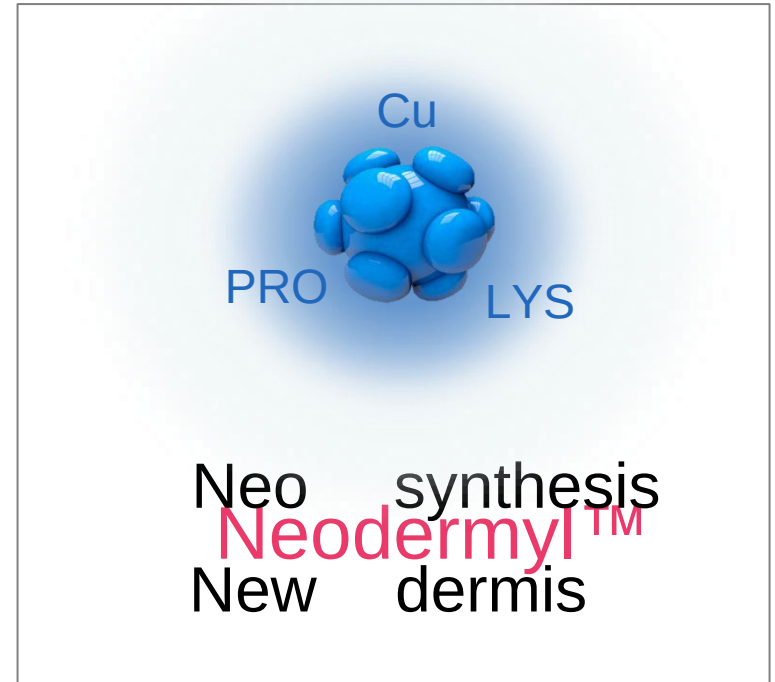
MG6P

Safe (no reducing properties)
Preactivated (high energy phosphate ester)
High energetic potential

Neodermyl[®]'s secret

1. A new source of Bio-Energy (= Life)
 - MG6P
2. Derived in salts of essential amino acids
 - Proline
 - Lysine
3. And in salt of Copper

Neodermyl[®] is not a mix of separate ingredients: MG6P, amino acids and copper are associated by ionic links.



In vitro evaluations

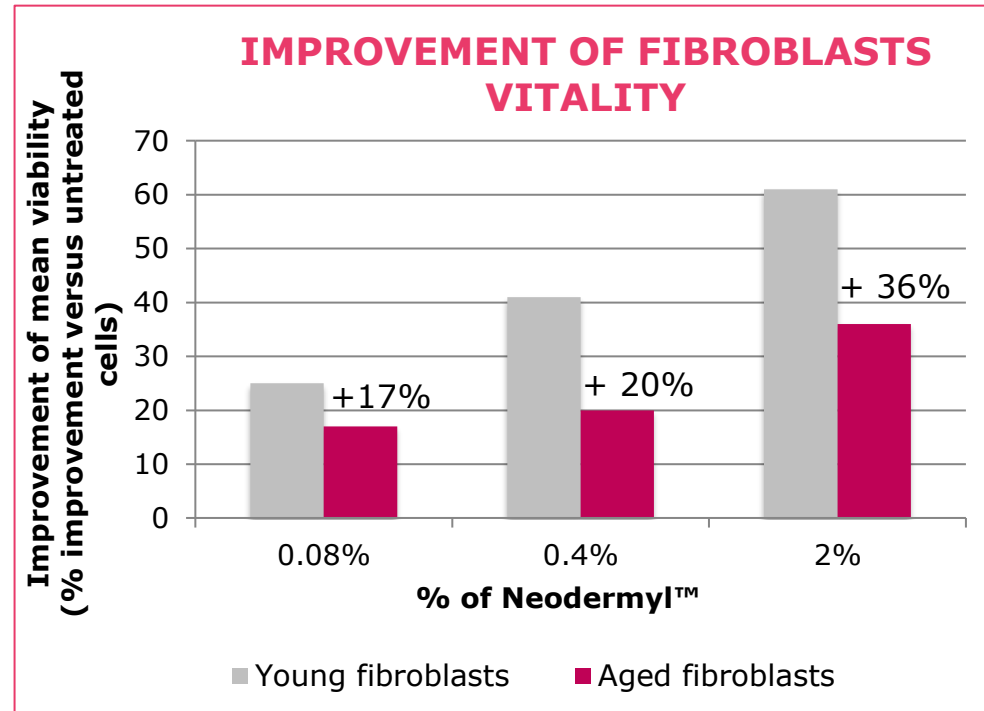


Activation of fibroblasts' metabolic activity (*in vitro*)

PROTOCOL:

Incubation of human fibroblasts (young or aged) with increasing concentrations of Neodermyl® .
Measure of metabolic activity.

→ Neodermyl® enhances the metabolism of fibroblasts, including senescent fibroblasts (up to +36%)

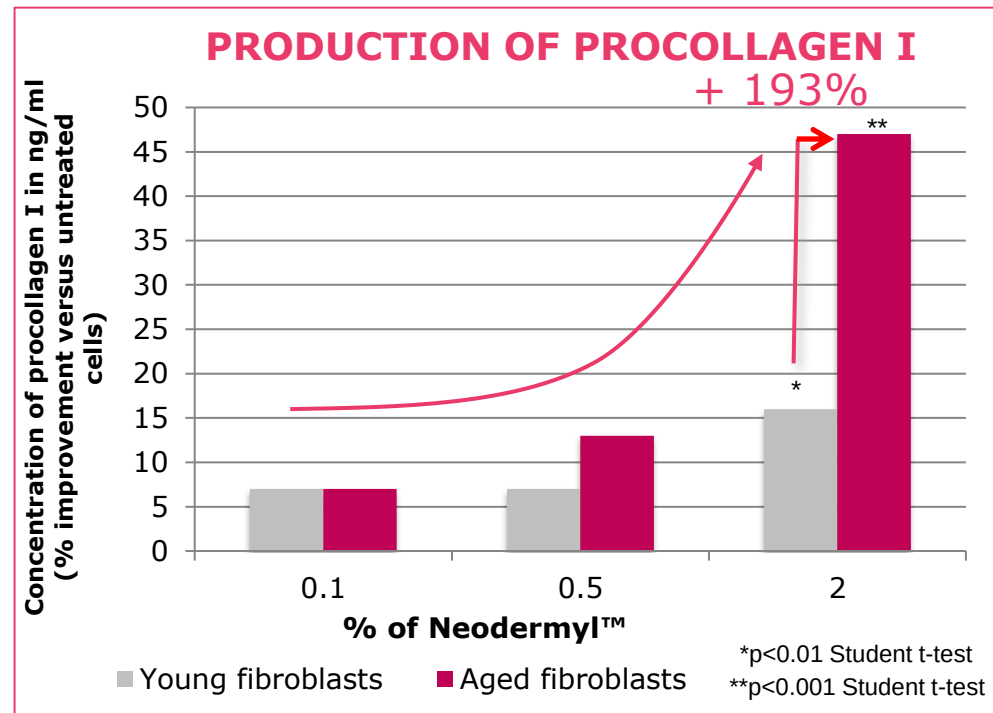


Stimulation of fibroblasts' procollagen production (*in vitro*)

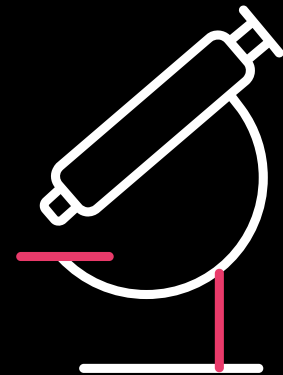
PROTOCOL:

Incubation of human fibroblasts (young or aged) with increasing concentrations of Neodermyl® . Quantification of procollagen I after 3 days (ng/ml).

→ Neodermyl® stimulates the synthesis of procollagen I by fibroblasts, in a significant way for both young and aged fibroblasts, but in a more efficient way for senescent fibroblasts (+193%)



Ex vivo evaluation

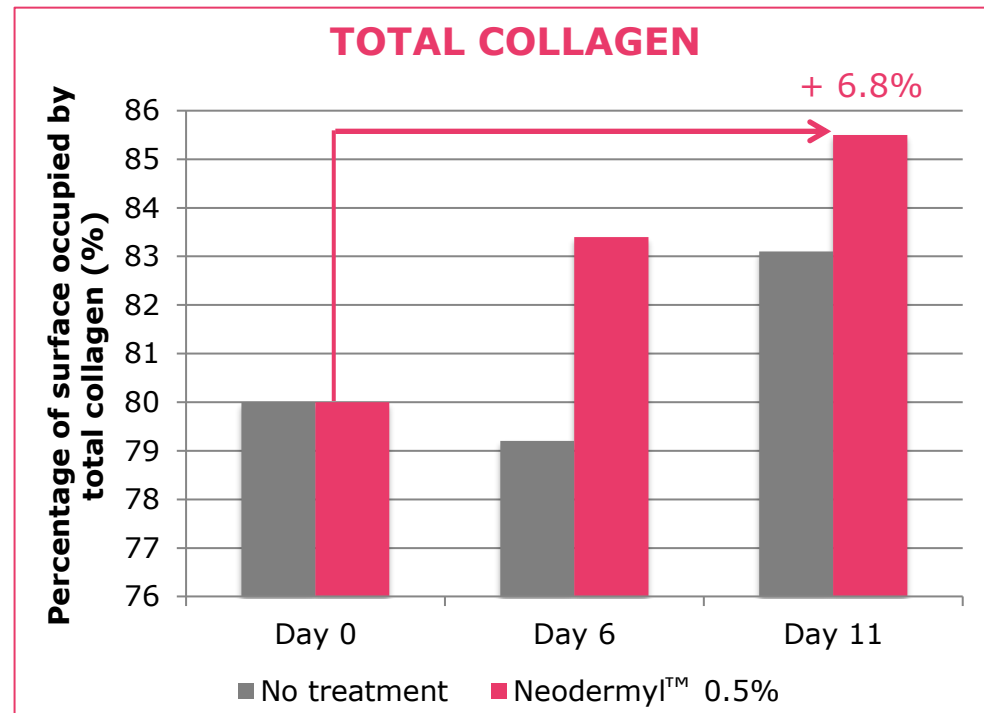


Expression of Total Collagen in skin explants

PROTOCOL:

Topical application on human skin explants (donor 74 years old) of 0.5% Neodermyl® in a water solution. Staining and quantification of total collagen.

→ Neodermyl® activates the production of total collagen in aged skin, up to +6.8% in 11 days.

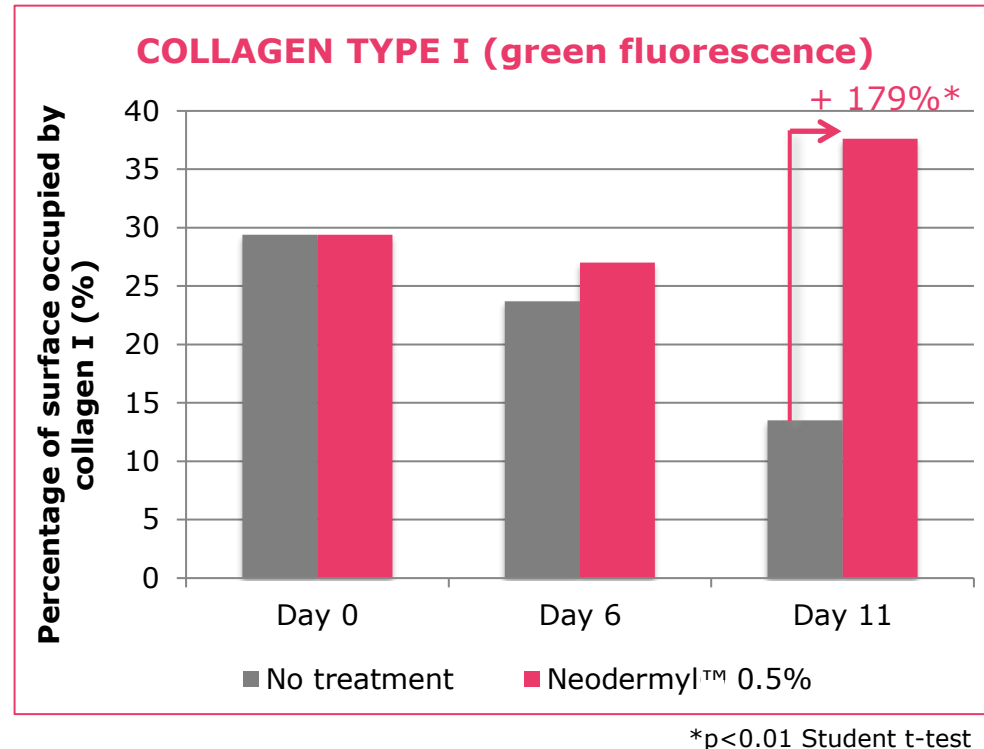
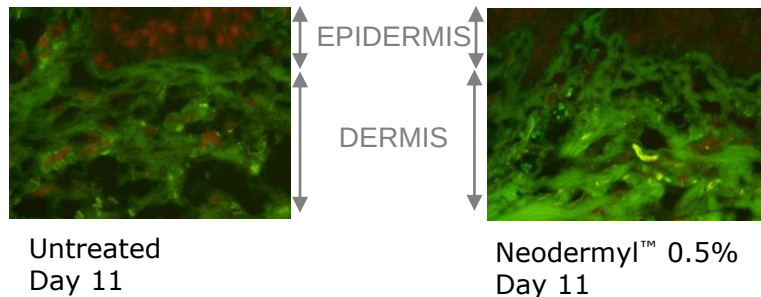


Expression of Collagen I in skin explants

PROTOCOL:

Topical application on human skin explants (donor 74 years old) of 0.5% Neodermyl® in a water solution. Immunostaining and quantification of Collagen I.

→ Neodermyl® stimulates the synthesis of Collagen I in aged skin, up to +179% versus untreated conditions in 11 days.



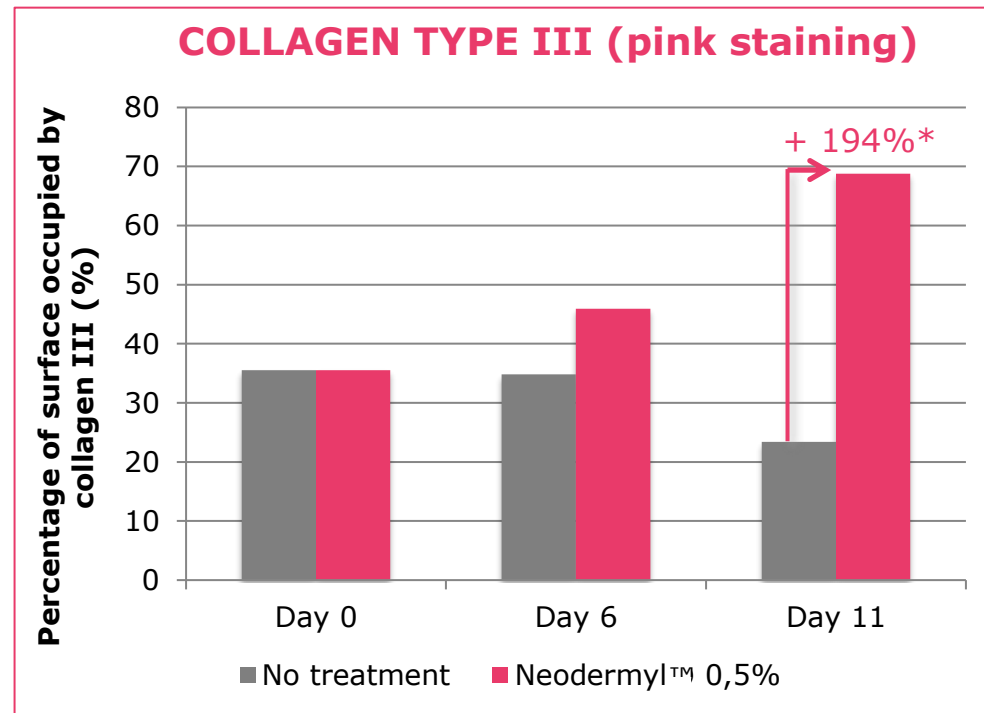
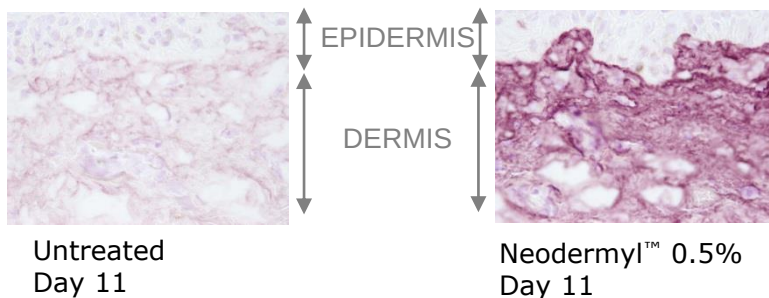
Expression of Collagen III in skin explants

PROTOCOL:

Topical application on human skin explants (donor 74 years old) of 0.5% Neodermyl® in a water solution. Immunostaining and quantification of Collagen III.

→ Neodermyl® stimulates the synthesis of “youth collagen” (Collagen III) in aged skin, up to +194% versus untreated conditions in 11 days.

→ Collagen I / collagen III decreases back to the level of a younger skin: it goes down from 0.82 to 0.55.



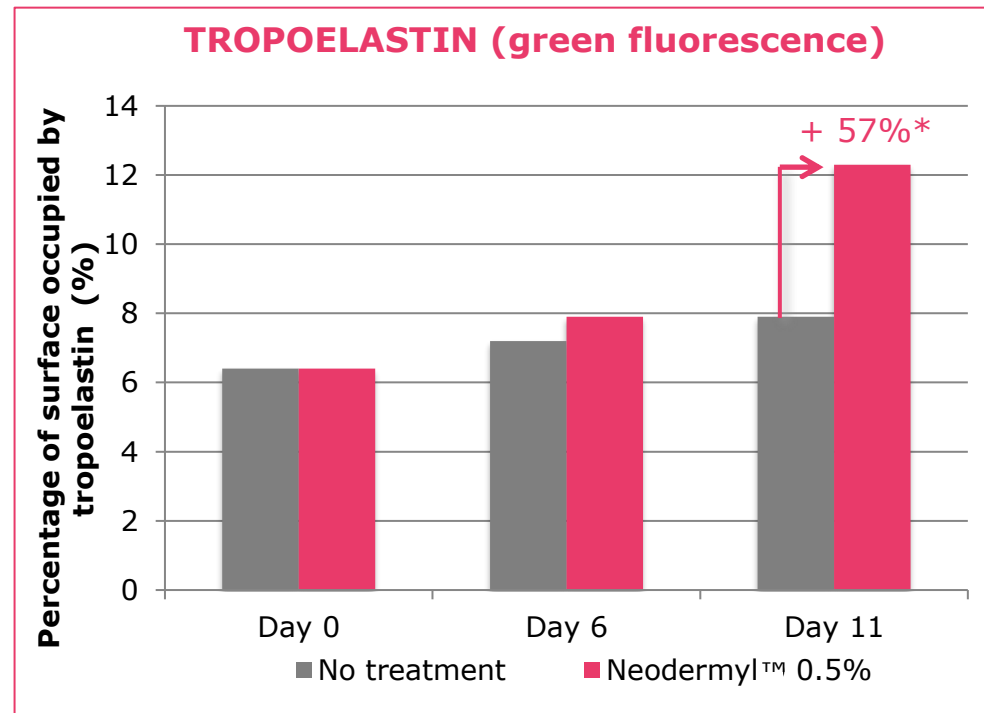
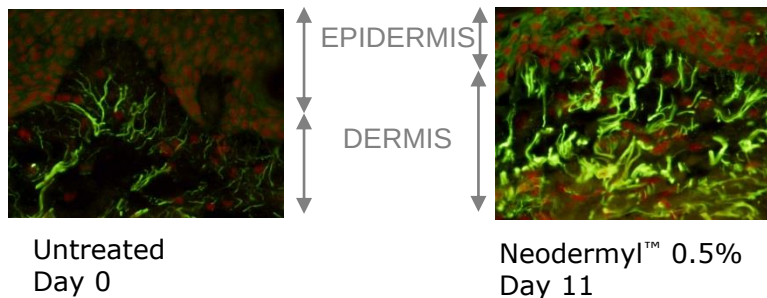
*p<0.01 Student t-test

Expression of Tropoelastin in skin explants

PROTOCOL:

Topical application on human skin explants (donor 74 years old) of 0.5% Neodermyl® in a water solution. Immunostaining and quantification of Tropoelastin.

→ Neodermyl® stimulates the synthesis of Tropoelastin in aged skin, up to +57% versus untreated conditions in 11 days.



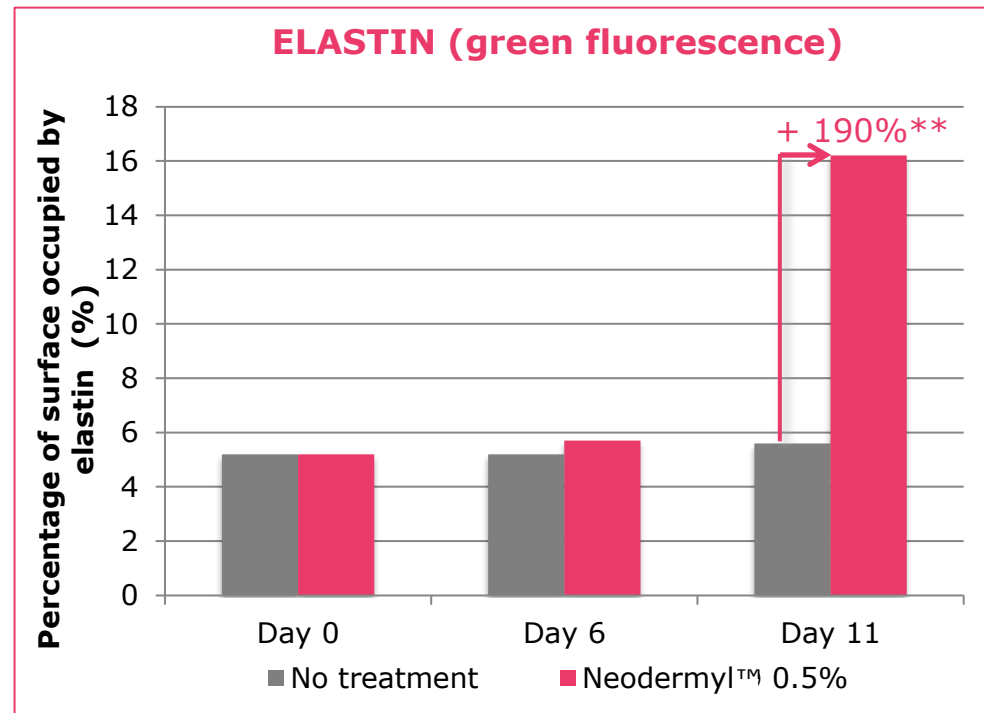
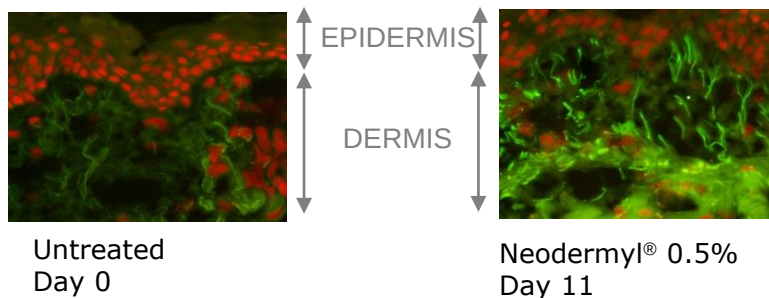
*p<0.1 Student t-test

Expression of Elastin in skin explants

PROTOCOL:

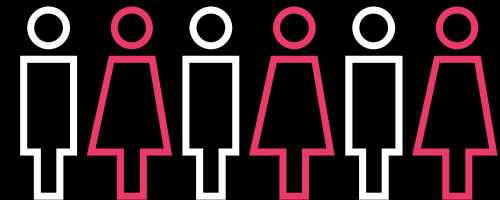
Topical application on human skin explants (donor 74 years old) of 0.5% Neodermyl® in a water solution. Immunostaining and quantification of Elastin.

→ Neodermyl® stimulates the synthesis of Elastin in aged skin, up to +190% versus untreated conditions in 11 days.



**p<0.05 Student t-test

Clinical evaluation



Protocol of clinical trial

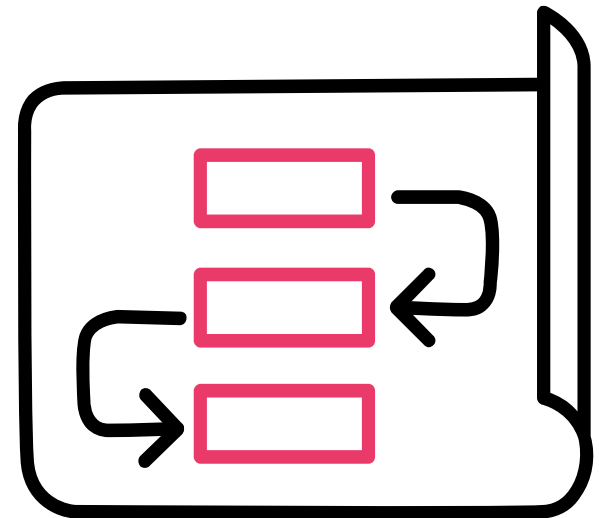
Double blind clinical trial versus a placebo

20 urban women aged 61 ± 7 years

Application twice a day a placebo cream on one side of their face and a cream containing 1% of Neodermyl® on the other side.

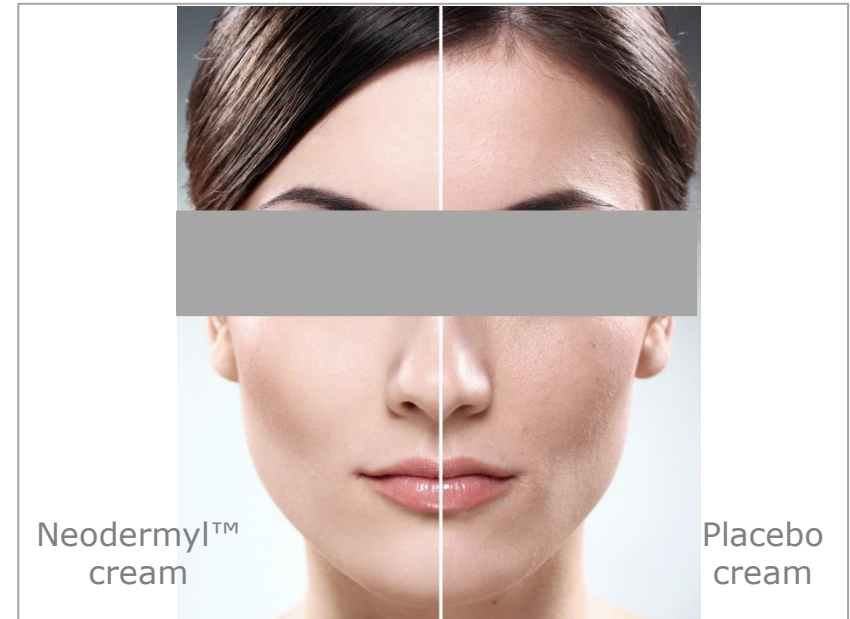
Clinical study was performed under the control of a dermatologist.

Cream formula: AQUA, OCTYLDODECYL NEOPENTANOATE, OCTYLDODECANOL, MYRISTYL MYRISTATE, ACRYLATES/C10- 30 ALKYL ACRYLATE CROSSPOLYMER, SODIUM HYDROXIDE, PHENOXYETHANOL, METHYLPARABEN, ETHYLPARABEN, BUTYLPARABEN, PROPYLPARABEN, ISOBUTYLPARABEN, (+/-) NEODERMYL™ 1%



Evaluated parameters

- Clinical measures at D0, D15 and D60
- Skin collagen density
- Collagen network (anisotropy index)
- Skin firmness
- Skin elasticity
- Wrinkles' depth
- Wrinkles' volume



Skin collagen density

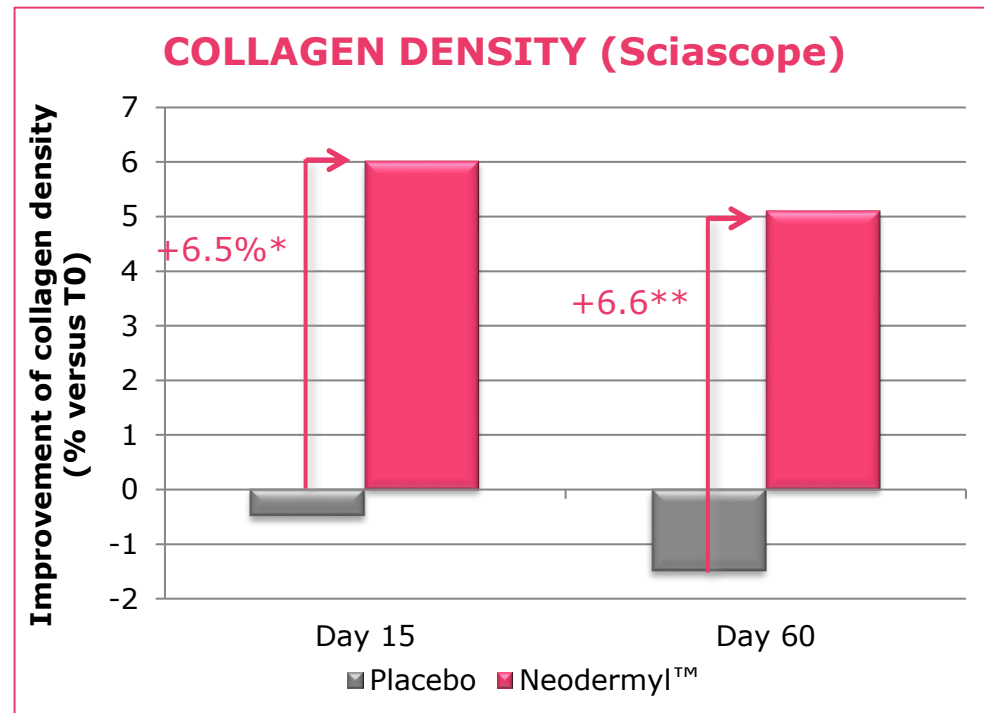
PROTOCOL:

Collagen density measured directly in the skin of volunteers with a SIAscope device

→ Skin collagen density is increased by +6.5% in only 2 weeks

→ Stable effect: +6.6% after 2 months

Neodermyl® at 1% significantly increases the collagen density

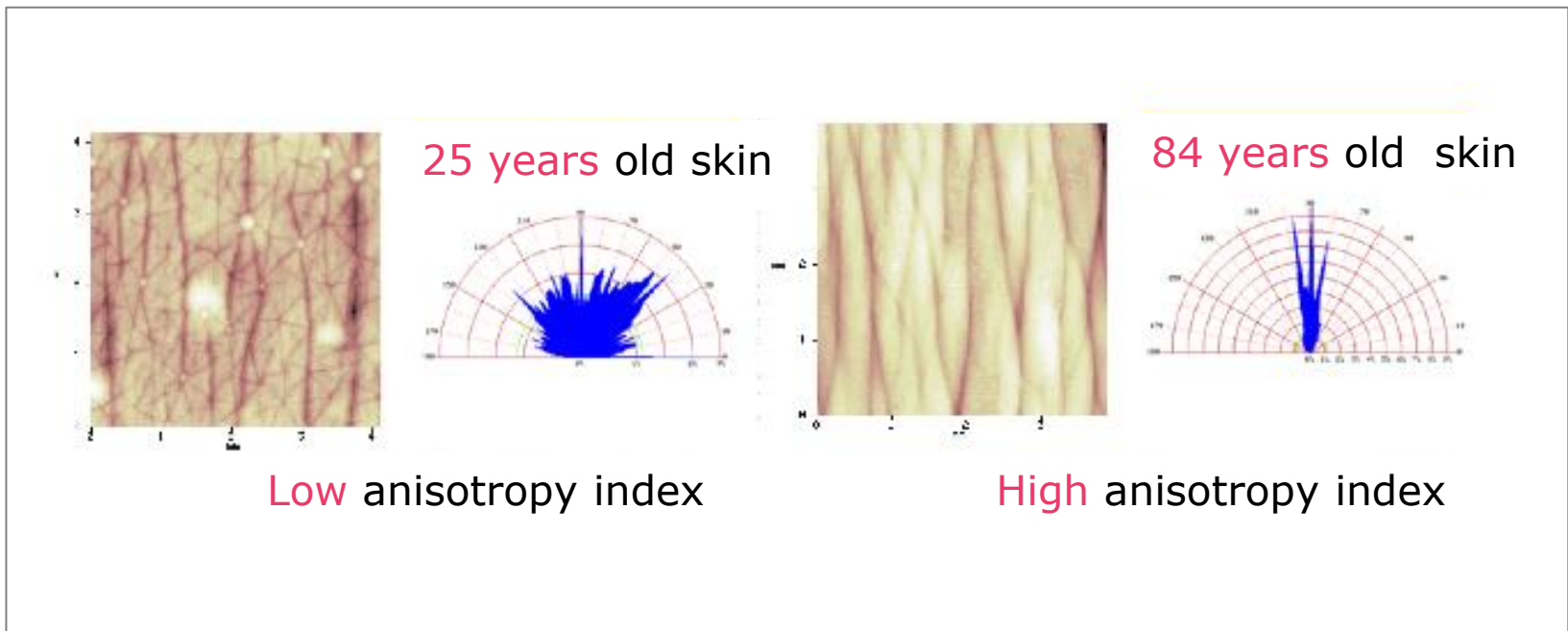


*p<0.05 Student t-test

**p<0.1 Student t-test

Neodermyl® improves “the biological age” of skin

Anisotropy index is a marker of the quality of the collagen network. It is related to the angle that forms the skin lines, and represents a good marker of the “biological age” of skin. With aging, this angle is reduced (parallel lines) due to the aging of the collagen network in the skin.



Derived from Latreille et al., 2005

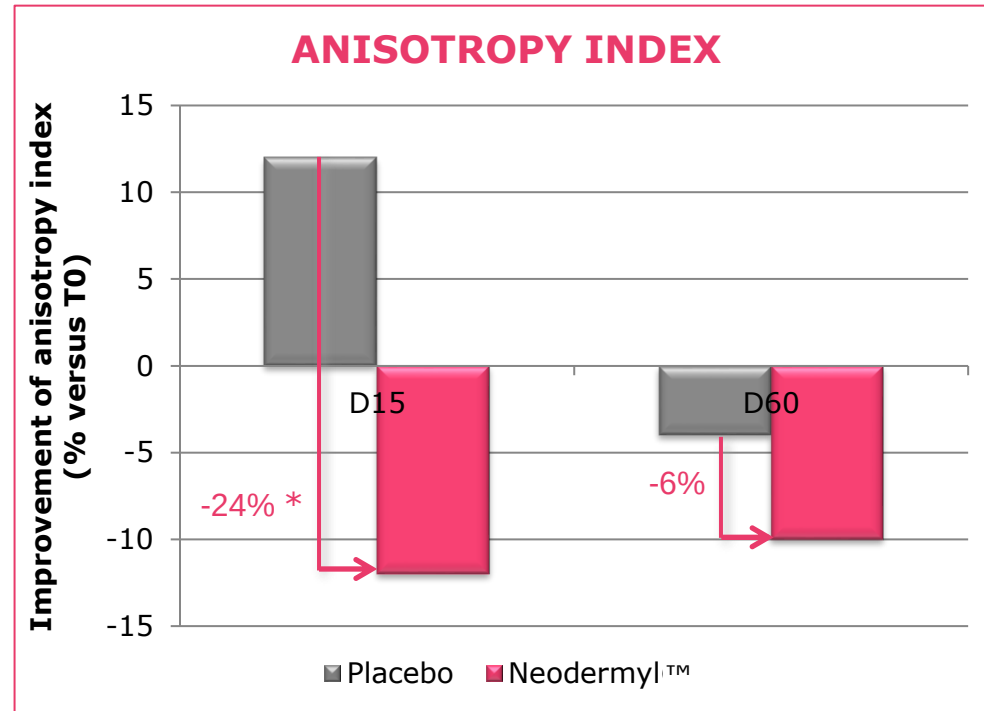
Skin anisotropy (collagen network)

PROTOCOL:

Anisotropy index measured directly in the skin of volunteers with SkinEvidence Visio device.

→ Anisotropy index is reduced by 24% in 2 weeks

Neodermyl® at 1% improves the quality of skin collagen network



*p<0.05 Student t-test

Increase of skin firmness

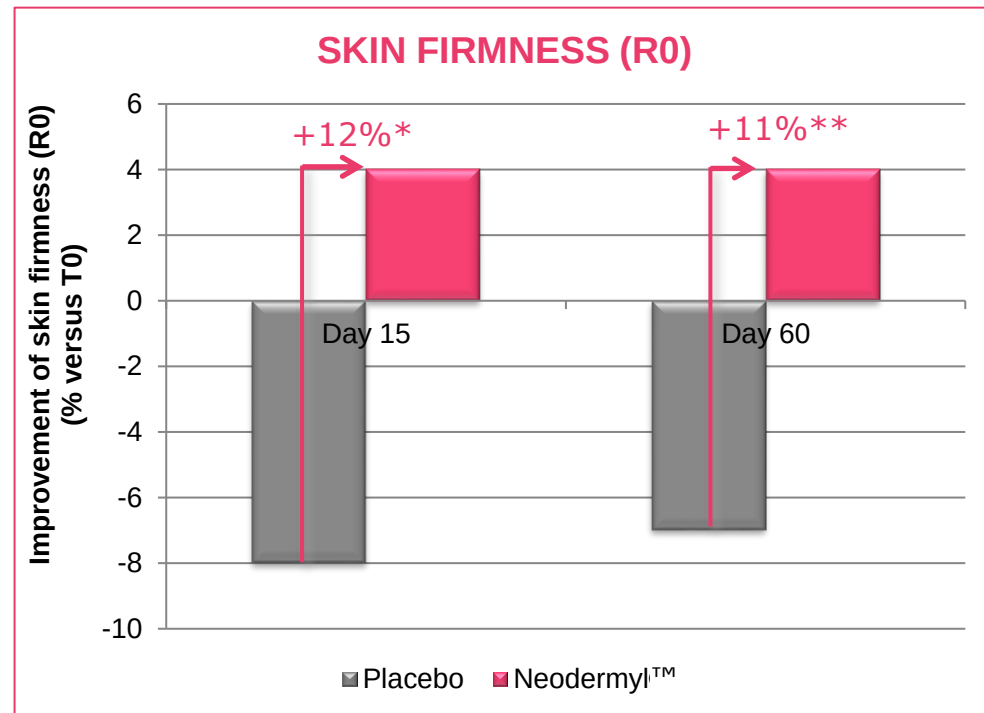
PROTOCOL:

Skin firmness measured directly on the skin of volunteers with a Cutometer (R0 parameter)

→ Skin firmness is improved by +12% in 2 weeks

→ Sustainable effect with a +11% improvement after 2 months

Neodermyl® at 1% reinforces skin's firmness, with max. results in 2 weeks



*p<0.01 Student t-test

**p<0.1 Student t-test

Recovery of skin elasticity

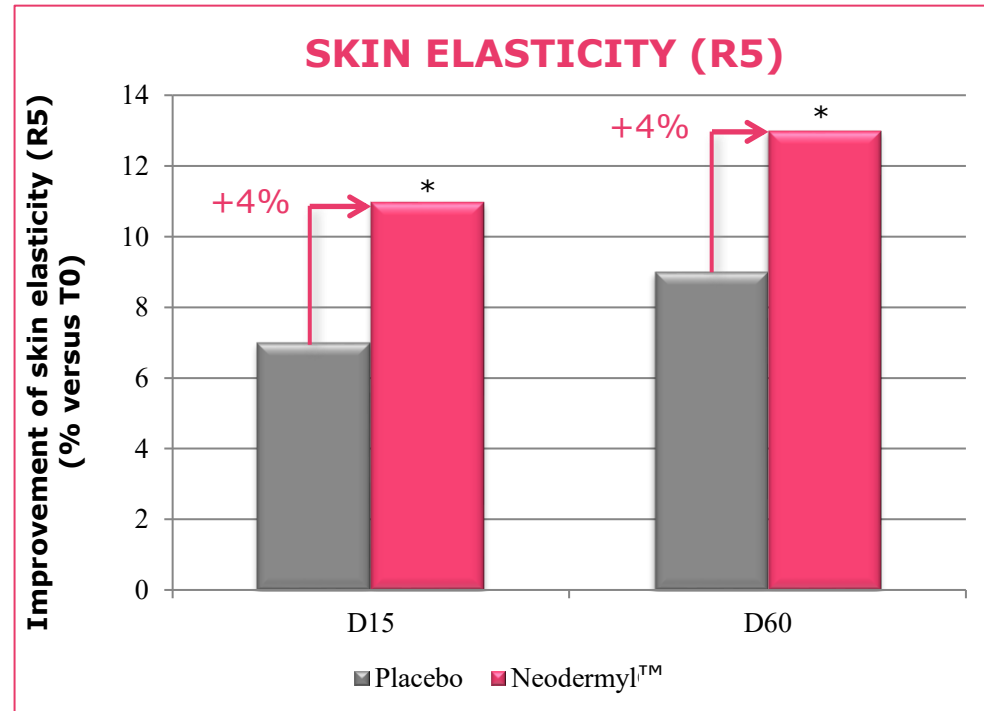
PROTOCOL:

Skin elasticity measured directly on the skin of volunteers with a Cutometer (R5 parameter)

→ Skin elasticity is improved by +4% in 2 weeks

→ Sustainable effect: +4% after 2 months

Neodermyl® at 1% increases the skin's elasticity in a fast and long lasting way



*p<0.01 Student t-test

Reduction of wrinkles' depth

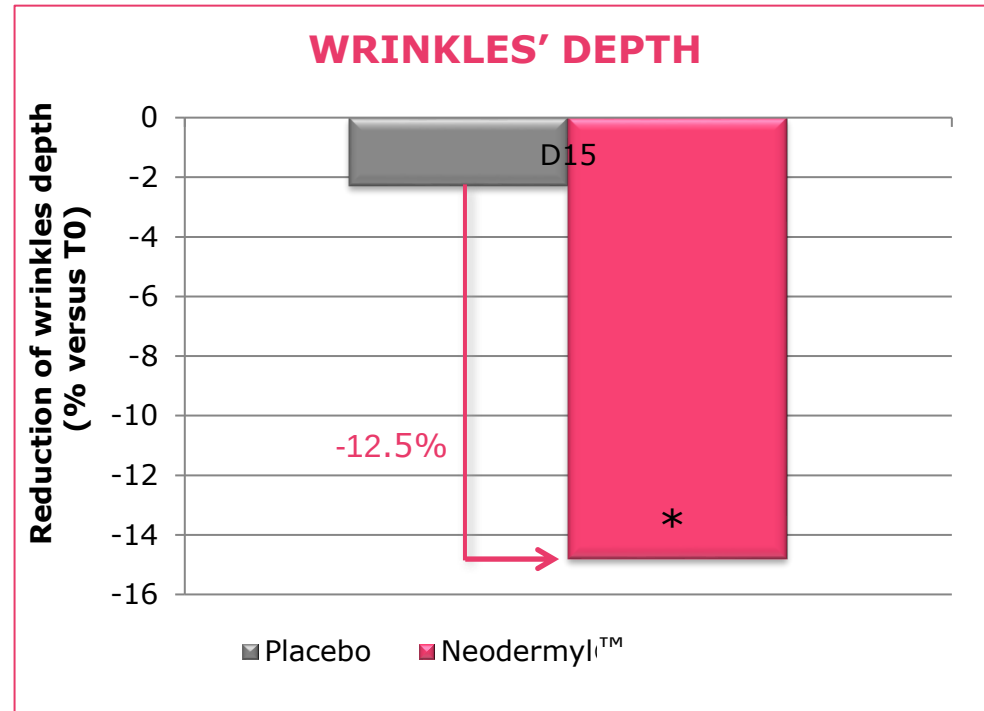
PROTOCOL:

Evaluation of the wrinkles depth by silicone replica analysis by fringe projection.

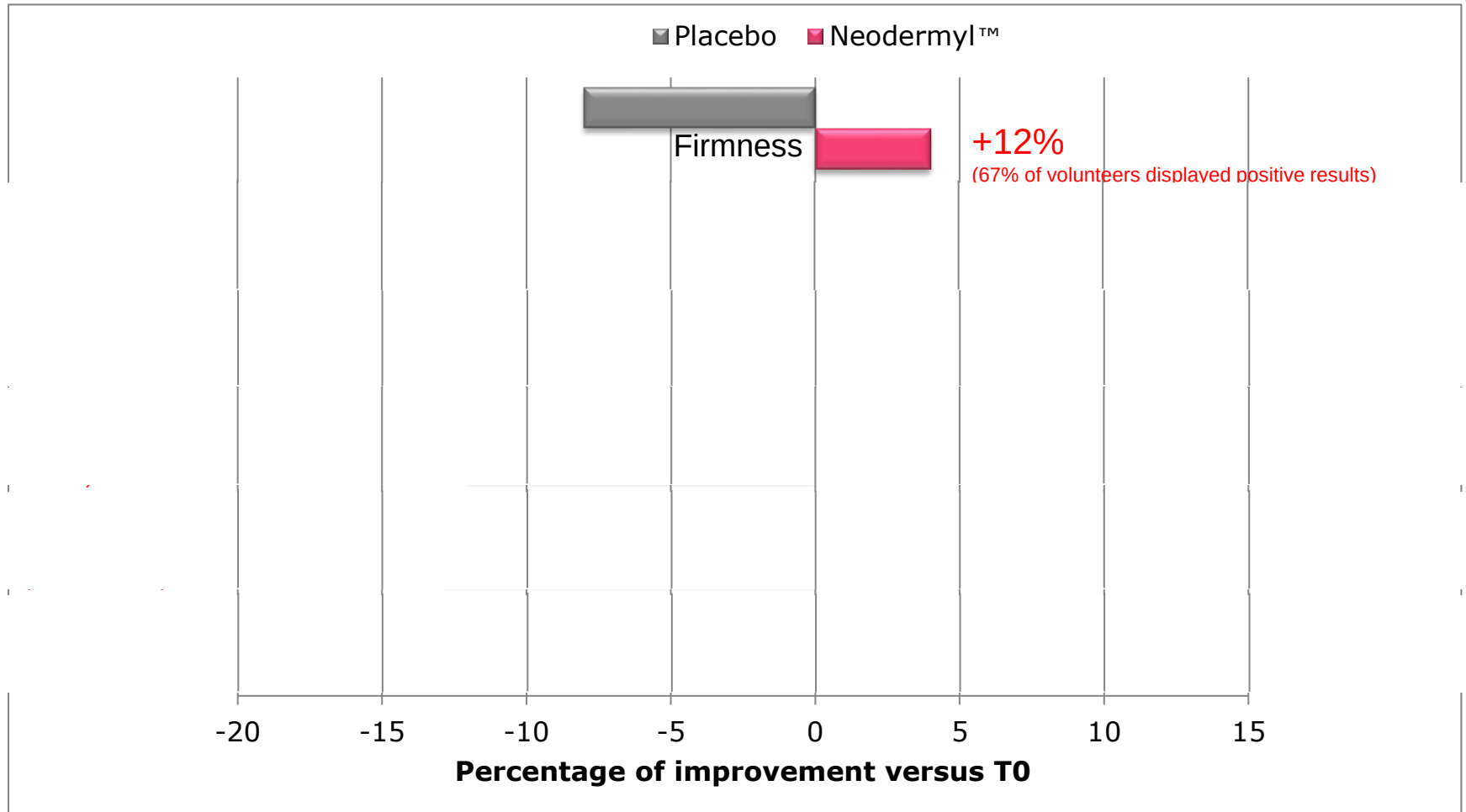
→ Wrinkle depth is reduced by -12.5% in 2 weeks

→ 86% of volunteers have shown an improvement of wrinkles' depth

Neodermyl[®] at 1% shows a fast action to reduce wrinkles' depth

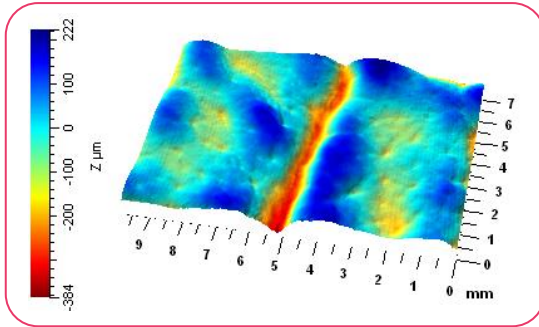


Global clinical performances of Neodermyl® in 15 days



Neodermyl[®] : a fast effect on visible signs of age

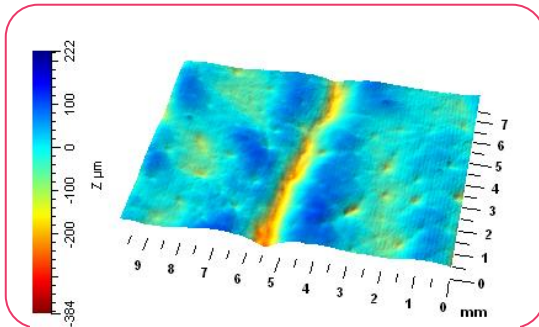
Neodermyl[™] 1%
Day 0



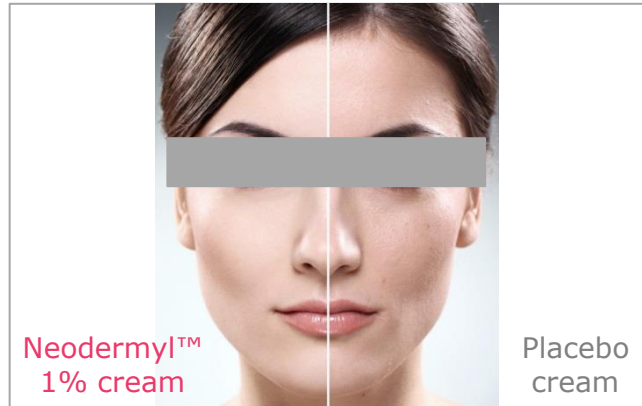
Deep wrinkles, uneven skin surface



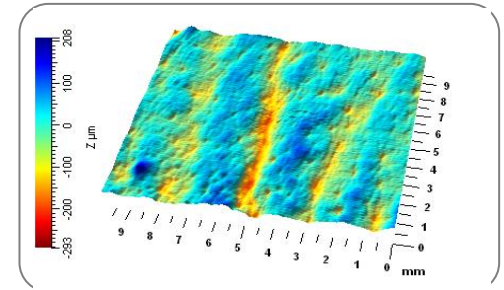
Day 15



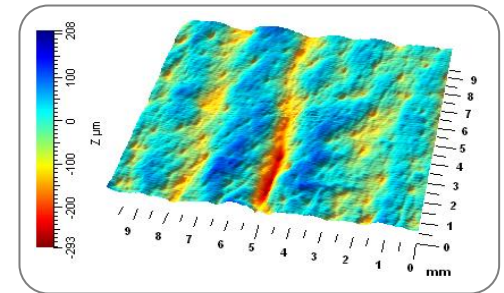
Reduced wrinkles, smooth skin surface



Day 0

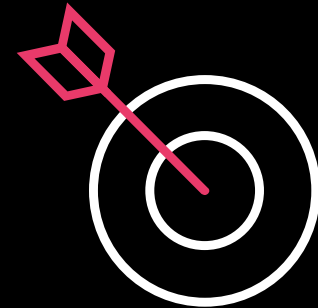


Day 15

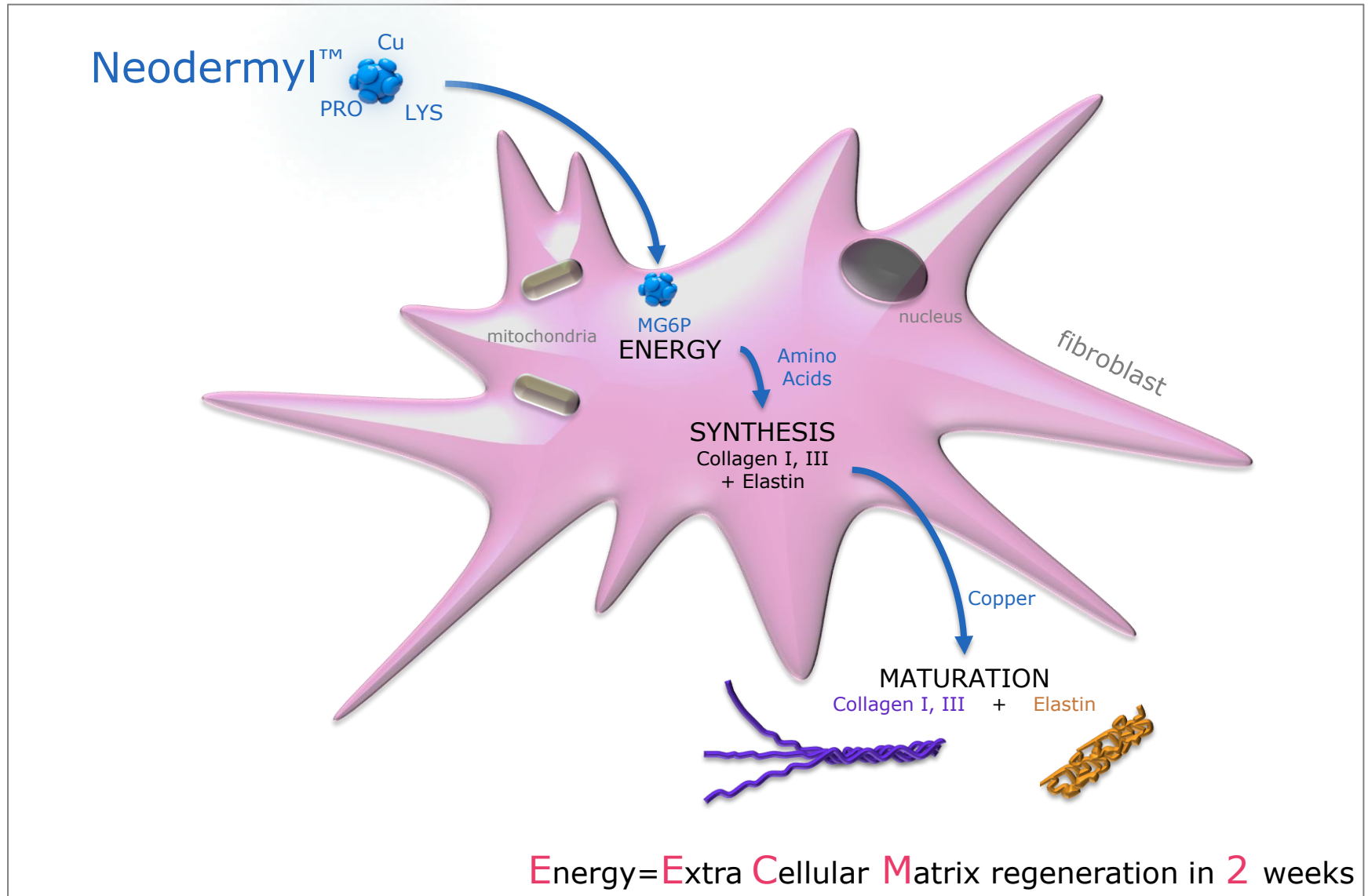


No changes

Summary



Neodermyl[®] > We redefine the theory of youth: E=ECM²

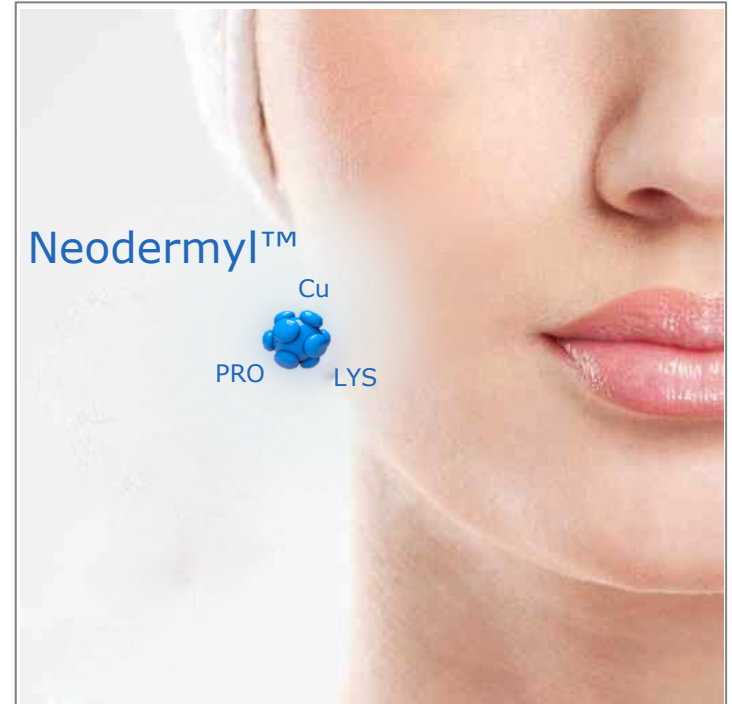


The “needle-free” collagen and elastin filler

- A new source of **bio-renewable energy** for skin cells
- Reactivation of **aged fibroblasts’ vitality** and **collagen synthesis**
- Balance of the CollagenI/III ratio
- Fast clinical results in two weeks on mature (61 ± 7 years old) volunteers:
 - skin is firmer,
 - more dense,
 - more elastic,
 - with less wrinkles

Neodermyl® shows the same efficacy in 2 weeks than a needled injection of collagen by a plastic surgeon : -15% wrinkles depth reduction

(source website 2013 American Society of Plastic Surgeons)



Applications

Anti ageing creams, serums, lotions to:

- ▶ Plump up creased areas
- ▶ Add fullness to cheeks or other facial areas
- ▶ Reduce frown lines between the eyebrows
- ▶ Reduce worry lines across the forehead
- ▶ Decrease crow's feet at the corner of the eyes
- ▶ Treat deep smile lines (nasolabial furrows), from the side of the nose to corners of the mouth
- ▶ Define the lip border
- ▶ Eliminate vertical lines on the mouth, as well as those at the corners
- ▶ Reshape face contour
- ▶ Body care (firming)



Technical information

Neodermyl[®], The beauty recharger

INCI

Glycerin (and) Water (and)
Methylglucoside Phosphate (and)
Copper Lysinate/Prolinate

Origin

Biotechnology

Preservation

Preservative free

Appearance

Clear blue solution

Solubility

Hydrosoluble

Dosage

0.1% to 2%

Processing

Can be added at the end of the
formulation process under stirring or
homogenizing.

Formulate at temperature below 45°C,
at pH 3.0 to 7.0.

Compliance



Thank you.

Active Beauty

global.cosmetic@givaudan.com

Givaudan Active Beauty Sales offices

Europe

Givaudan France SAS
19-23 rue de la Voie des Bans
FR-95100 Argenteuil (France)

Givaudan UK Ltd
Magna House
76-80 Church Street
Staines, TW18 4XR (United Kingdom)

North America

Givaudan Fragrances Corp.
40 W – 57th Street - Floor 17
NY 10019 - New York (United States)

Asia Pacific

Givaudan Singapore Pte Ltd
1 Pioneer Turn
627576 Singapore (Singapore)

Givaudan Shanghai Ltd
298 Li Shi Zhen Road
Pudong Zhang Jiang High Tech Park
201203 Shanghai (China)

Latin America

Givaudan do Brasil Ltda
Av. Engº Billings - 2185, Edifício 31, 1ºAndar - Jaguaré
05321-010 São Paulo - SP (Brazil)

global.cosmetic@givaudan.com