



DIGITAL WORKSHOP
RECOMBINANT HUMANIZED COLLAGEN
AND ITS APPLICATIONS IN MEDICAL DEVICES
5 GIUGNO 2025 – ORE 10:00

RECOMBINANT HUMAN COLLAGEN: LA NUOVA ERA DEI BIOMATERIALI
Dr.ssa Irene Li, Medical Manager & Dr. Fu Shengwei - R&D Scientist

BRINGING A HEALTHY FUTURE

Trautec Recombinant Collagen



01

COMPANY INTRO

02

RECOMBINANT COLLAGEN
RAW MATERIAL

03

RECOMBINANT COLLAGEN
MEDICAL DEVICE

04

SUMMARY

About Trautec

A platform company of the whole industry chain of recombinant collagen oriented to clinical medicine

Founded in 2015, Trautec is a clinical medicine oriented recombinant collagen whole industry chain platform company with a biosynthesis platform and a medical device transformation platform, focusing on the R&D, production and sales of new biomaterials and innovative proteins, nucleic acid drugs and foods, with 9 authorized recombinant collagen core sequence patents in the field of recombinant collagen.

With the mission of "technology close to life, creating a healthy future", we continue to create and lead the innovative development and industrial application of recombinant collagen biomaterials by combining innovation drive and professional R&D power with the precipitation in medical device and biomaterial manufacturing technology.

○ 2015
Company established

○ 9
Recombinant Collagen Core
sequence patents

○ 4
Biosynthesis and Medical
Device Translation Platforms

○ 150 Tons
Large-scale Production Lines

FUNDING ACCELERATES BIOMATERIALS INNOVATION DEVELOPMENT

- On August 10, 2022, Trautec completed its first round of financing of nearly RMB 200 million, led by Shiseido Ziyue Fund and followed by Hua Fang Capital, Dinghui Baifu and Huali Pharmaceutical.
- On September 16, 2023, Trautec completed a B-round financing of over 200 million RMB, led by L Catterton, the world's largest consumer-focused full-cycle investment firm. This round of financing also had participation from CDF-Capital Investment and MF Capital.
- The primary purposes of this round of financing are industrialization advancement, innovative technology research and development, and expansion into overseas markets.

SHISEIDO 资悦基金

鼎晖百孚 | **CDH**


HOLLEY 华立
华立医药


华方资本
HOFON CAPITAL

L CATTERTON
路威凯腾


铭丰资本

 **创东方投资**
CDF-Capital

R&D - INNOVATION DRIVEN

R&D - Innovation Driven

Eight years of clinically oriented collagen innovation and development, achieving leapfrogging from 0 to 1



Based on independent research and development, Trautec explores and manufactures advanced biomedical materials in the world. We have long-term cooperation with 30 provincial capitals and more than 1,000 hospitals nationwide, and have a large amount of clinical data.

Open up the whole chain of "basic research - clinical application - industrial transformation" and realize the transformation of high-quality R&D results.



Shanghai Changhai Hospital



Shanghai Changzheng Hospital



Shanghai Ninth Hospital



Huaxi Dental Hospital, Sichuan University



PLA General Hospital



Shanghai Huashan Hospital, Fudan University



Guangdong Provincial People's Hospital,



Shenzhen Second People's Hospital



Changzhou First People's Hospital



Changzhou Second People's Hospital



Ninety-third Hospital of the Chinese People's Liberation Army



Shanghai Sixth People's Hospital

ARRAY OF EXCLUSIVE PATENTS

12

PCT

30

AUTHORIZED
INOVATION

14

INOVATION
APPLY

62

Utility Model

53

CLASS II
Licenses

60

licenses applying

7

Class III Enter to clinical trail

6 R&D PATENTS OF RECOMBINANT COLLAGEN

Industry-academia-research association,
combined with innovative research platforms for joint research and development

Scientific Research Platform

Innovative platform of new biological materials based on synthetic biology with the research direction of new biological materials for repair, regeneration, anti-aging, disease treatment, etc.

The R&D platform has independent molecular biology laboratory, protein/nucleic acid purification laboratory, cell culture room, high performance liquid chromatography analysis laboratory, and high throughput screening technology.

United
Research Institutes

- The Chinese University of Hong Kong Chuang-Heung Medical Joint Laboratory
- Sichuan University Joint Research Laboratory of Chuangjian Medical
- Shenzhen Bay Pingshan Center Chuangjian Medical Joint Research Institute
- Changzhou University Chuangjian Medical Joint Laboratory
- Jiangsu Province Postdoctoral Innovation Practice Base
- Jiangsu University of Technology Cooperative recombinant collagen research and development project

**Testing platform
construction**



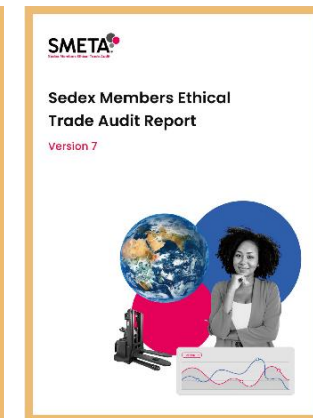
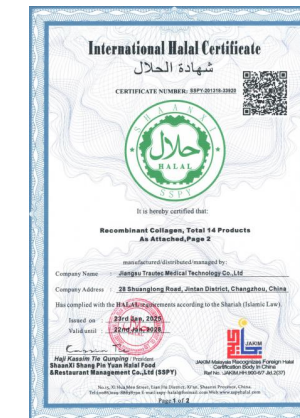
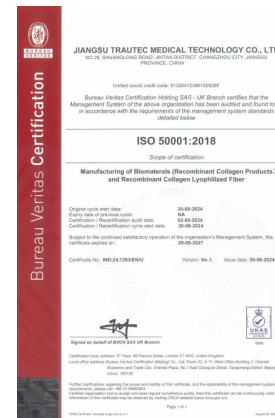
CMA + CNAS certified testing platform construction, with a planned total area of 3,000 square meters and an expected total investment of over 50 million yuan, covering medical-related projects, cosmetics-related projects, cellular medicine related projects and other testing

MANAGEMENT SYSTEM

We pass:

- ISO13485 Medical device-Quality management system-requirements for regulatory
- ISO9001 Quality Management System
- ISO22716 Cosmetics-Good Manufacturing Practices
- ISO14001 Environmental Management Systems
- ISO45001 Occupational health and safety management systems
- SMETA

We are fully certified by "Five Systems" and have high standard production lines that meet the requirements of China GMP and GMPC (US).

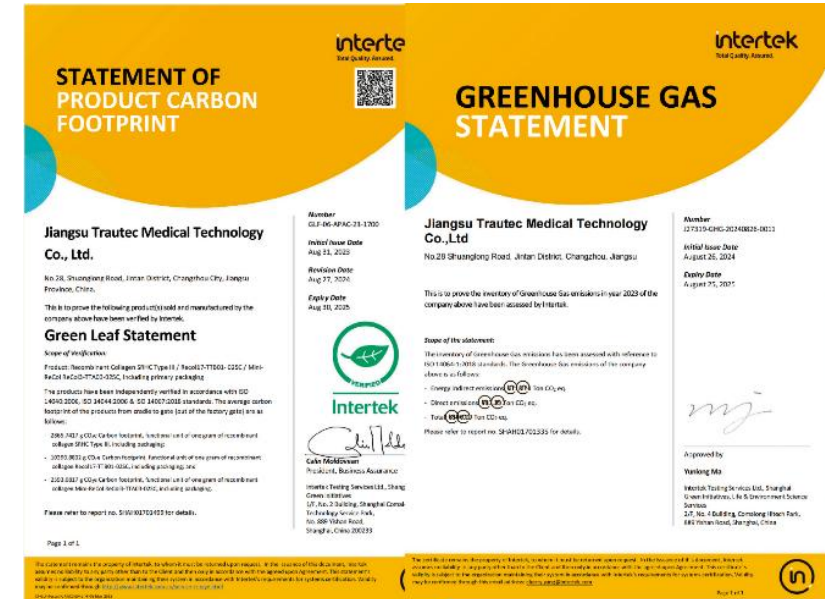


Green, Sustainable,
Environmental friendly
Constructing a restructured future

SUSTAINABLE DEVELOPMENT

- With a view to a sustainable future, Trautec is further investing in biosynthesis research and innovation. Our green biomanufacturing approach through cell factories improves productivity and also reduces greenhouse gas emissions.
- Trautec strives to explore science and technology to promote low carbon emission reduction and green production. We are moving forward together towards a better future and ultimately achieving a sustainable social ecology. Trautec has successfully applied **ISO14064** for enterprise, **ISO14067** for product carbon footprint.

Carbon Footprint Certification



No Animal Tests

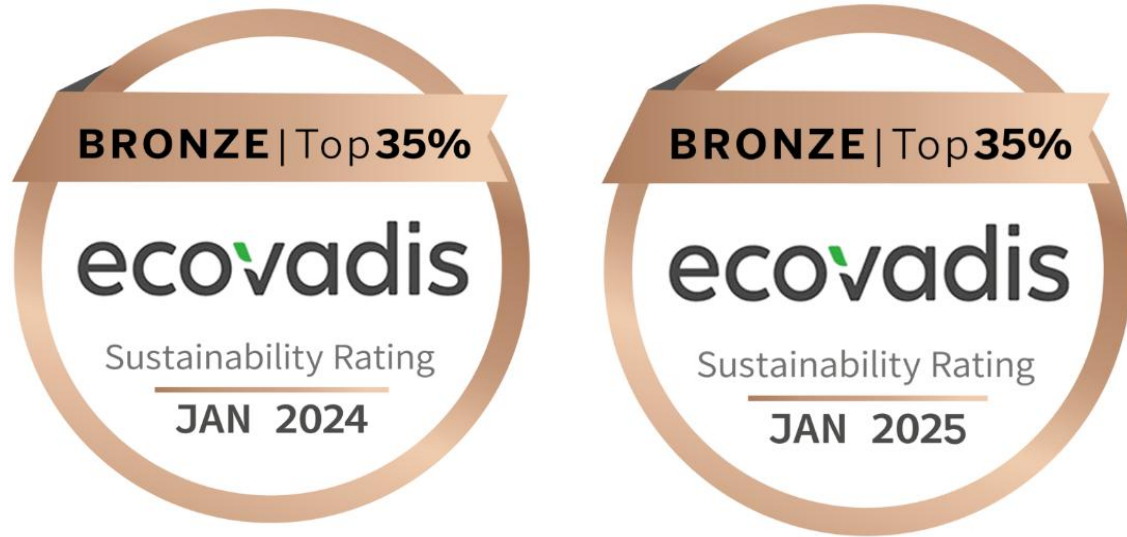


Mild&harmless



Low carbon
emission reduction

SUSTAINABLE DEVELOPMENT



As a leading company in the synthetic biology, Trautec successfully gained **Bronze** medal by **Ecovadis** certificate for **two consecutive years**.

We are dedicated to practising ESG principles, and moving toward a **green, sustainable, and regenerative** world.





GREEN SUSTAINABLE DEVELOPMENT

- Raw Material: Water, inorganic salts, glycerol, alcohols, ammonia, **animal-free**.
- **Pichia pastoris** fermentation and extraction, green, environmentally friendly and sustainable!
- According to **ISO16128**, **Natural index = 1**.

FACTORY LOCATION



Jiangsu·Changzhou

| Jiangsu Trautec Medical Technology Co., Ltd.

Focusing on the R&D and production of recombinant collagen synthetic biology and Class III medical devices. Large-scale medical biomaterials recombinant fermentation production platform, standardized production of a variety of synthetic biological products.



Hunan·Changsha

| Trautec Medical Device Co., Ltd.

Focuses on the development, production and sales of Class II medical device products related to synthetic biology biomedical materials.



Qinghai·Xining

| Qinghai Traumark Medical Device Co., Ltd.

Focusing on the development and production of Class II and Class III medical device products related to synthetic biology and biomedical materials, with ISO13485 and other complete management systems.



Anhui

| Jichuang Medical Equipment Co., Ltd.

Joyalways shares intend to set up a joint venture with Trautec to perfect the layout in the field of medical dressings and other functional skin care products and enhance the core competitiveness of the cosmetics business



Jiangsu·Changzhou

| Trautec Healthy Technology Co., Ltd.

Focuses on the development, production and sales of Class II medical device products as well as beauty and personal care products.



01

COMPANY INTRO

02

**RECOMBINANT COLLAGEN
RAW MATERIAL**

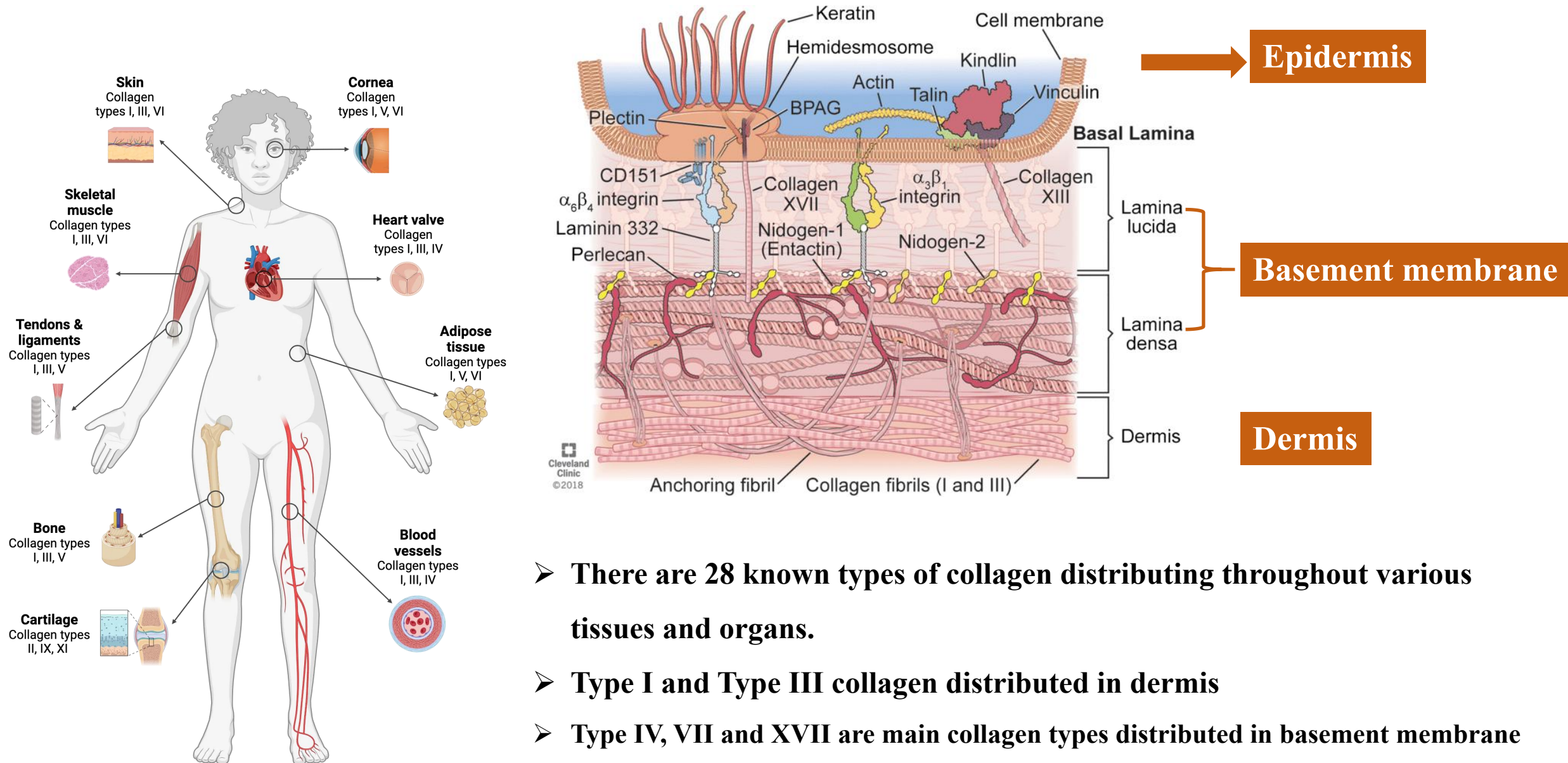
03

RECOMBINANT COLLAGEN
MEDICAL DEVICE

04

SUMMARY

Overview of human collagen

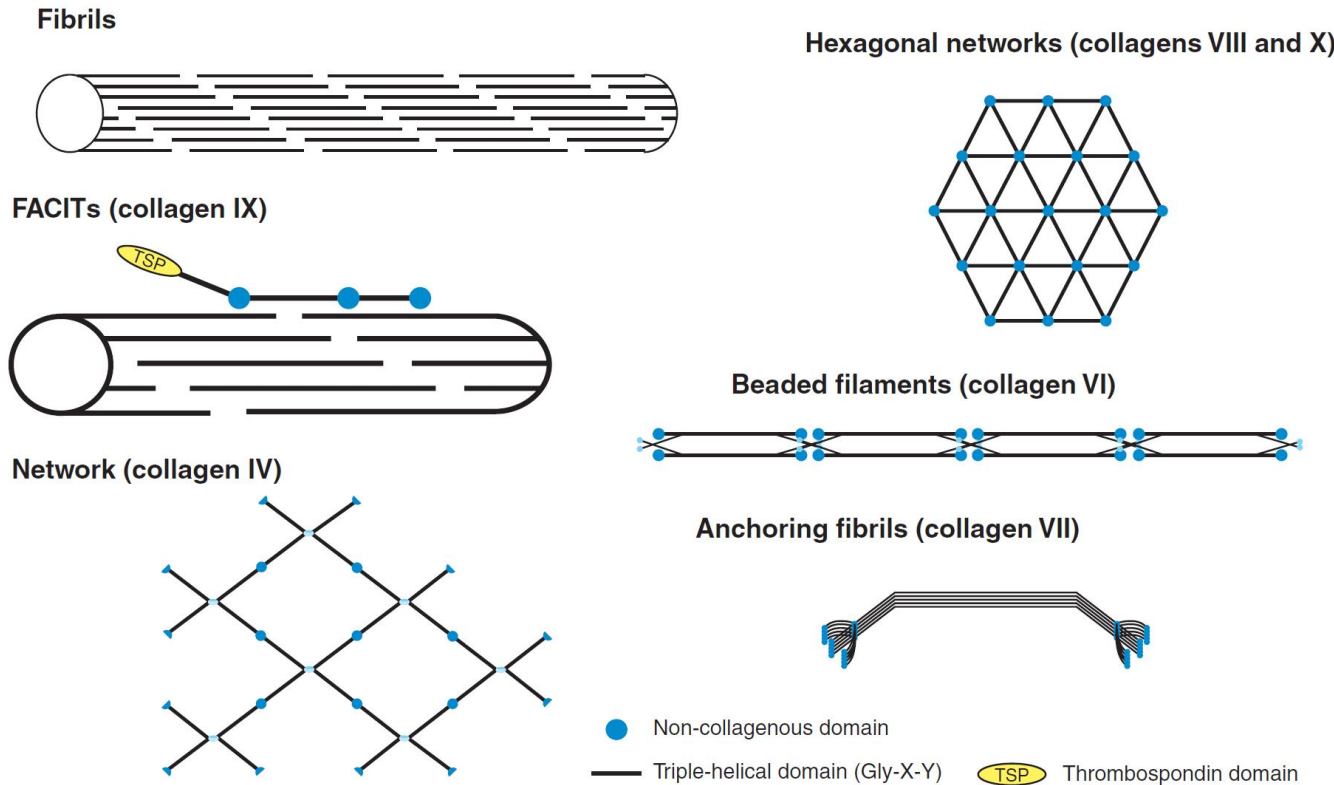


- There are 28 known types of collagen distributing throughout various tissues and organs.
- Type I and Type III collagen distributed in dermis
- Type IV, VII and XVII are main collagen types distributed in basement membrane

Provide Structural Support

Structural support

Collagen has sufficient mechanical strength to provide structural support for tissue and cell growth, the elasticity of the skin is highly related to the content of collagen.



Regulate Cellular behavior

Signaling molecules

Bind with the receptors



Structure change

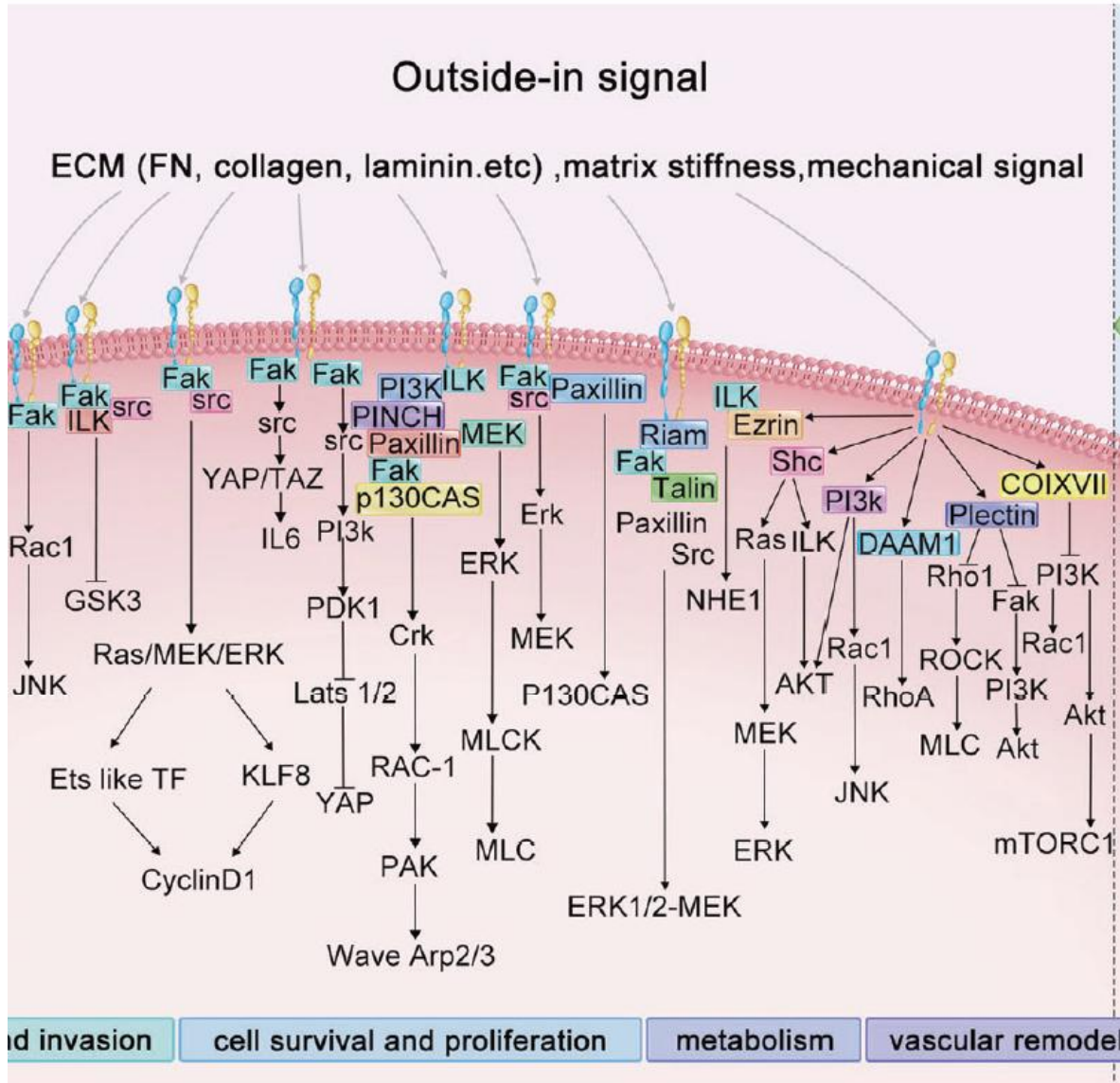


Signal transduction

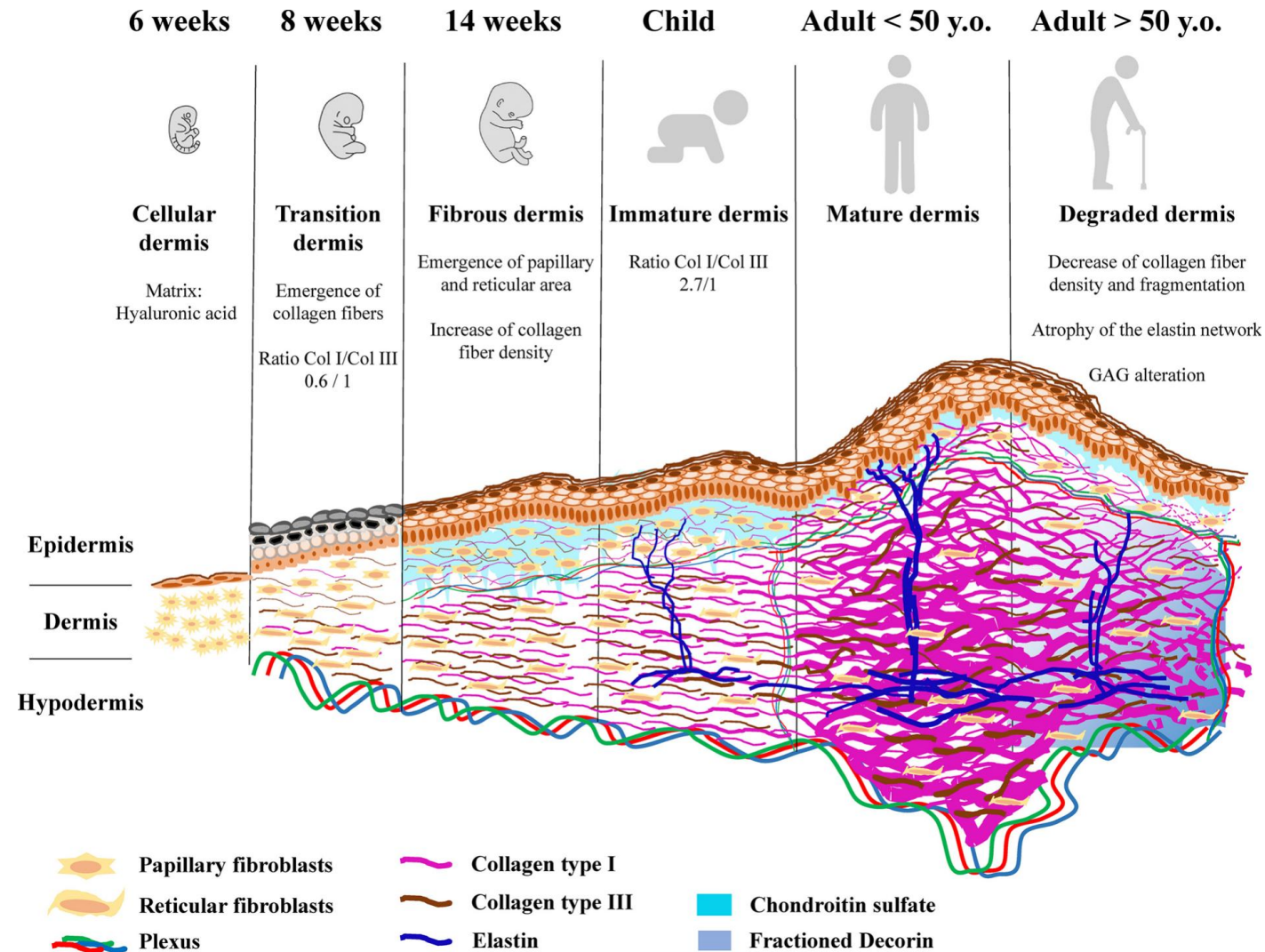


Effector proteins (modulate biological process like cell adhesion, proliferation, gene expression, etc.)

Specific amino acid sequence located in the collagen can selectively bind with membrane proteins (named receptors) and lead to the structure change of the receptors. Thus, the signal can be transmitted from outside the cell to inside of the cell (outside-in signal) and affect the gene expression of effector proteins. As a result, many biological process will be modulated.



Collagen degradation and skin aging

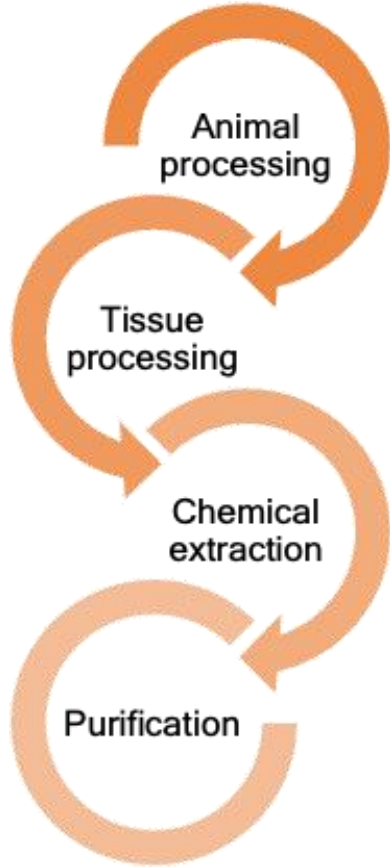


Type III collagen is known as baby collagen because it is very abundant in baby stage, just imagine the skin condition of a baby.

Age group	Specimens (n)	Type III collagen (μg/g)
Fetus	10	278.87 ± 6.18 ^a
Adolescent	10	123.27 ± 5.30 ^b
Adult	10	98.41 ± 5.58 ^c
Elderly	10	71.30 ± 7.41 ^d

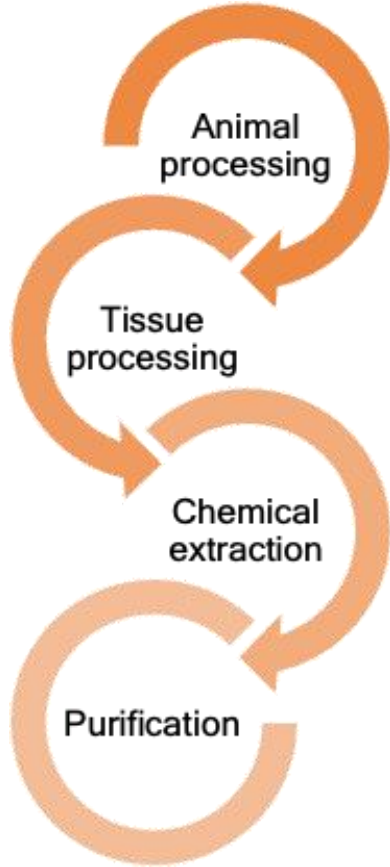
Lose 1.5% / year over 25 years old

Animal-sourced Collagen



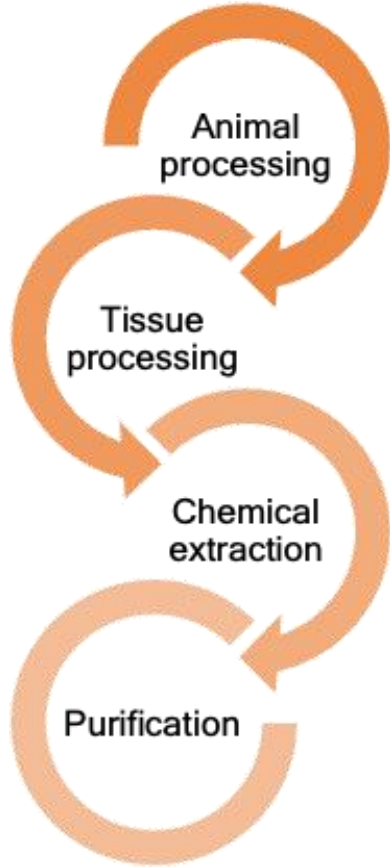
- **Mixed collagen types**
 - Animal-sourced collagen was extracted from skin, skeleton or other tissues of animals, making it a complexed mixture of different types of collagen.
 - The price of purified specific type of animal collagen is very expensive

Animal-sourced Collagen



- Batch-to-batch difference
- Many factors like the origin species, place of origin have influence on the physical & chemical properties of animal-sourced collagen.

Animal-sourced Collagen

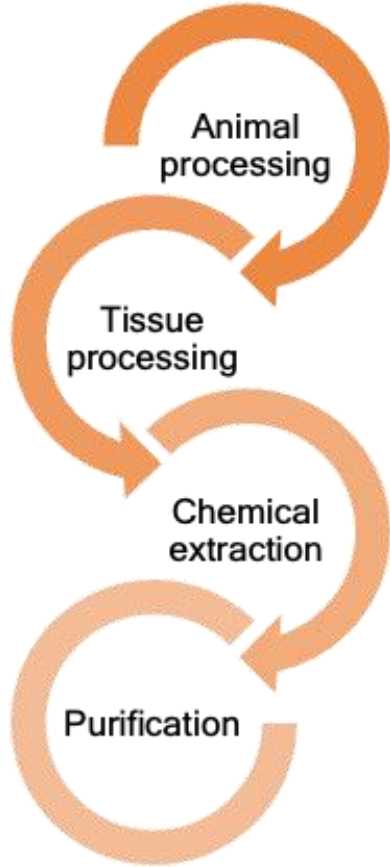


- Immunogenicity (allergy)
 - The amino acid sequence of animal-sourced is not the same as human beings, the risk of causing immune response cannot be ignored.



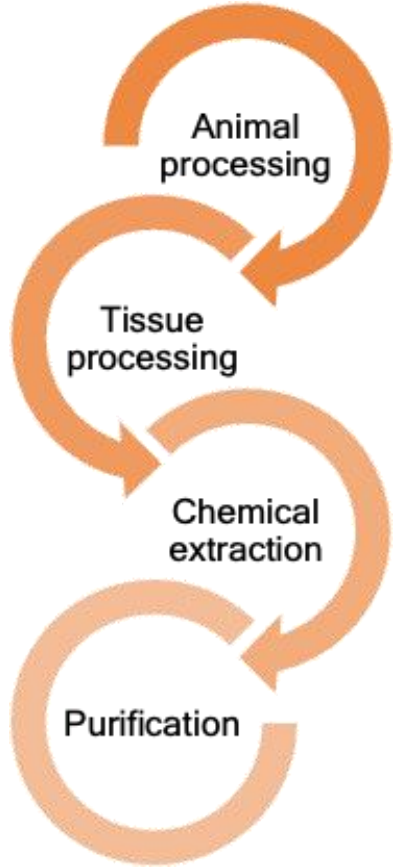
Allergy caused by bovine collagen products

Animal-sourced Collagen



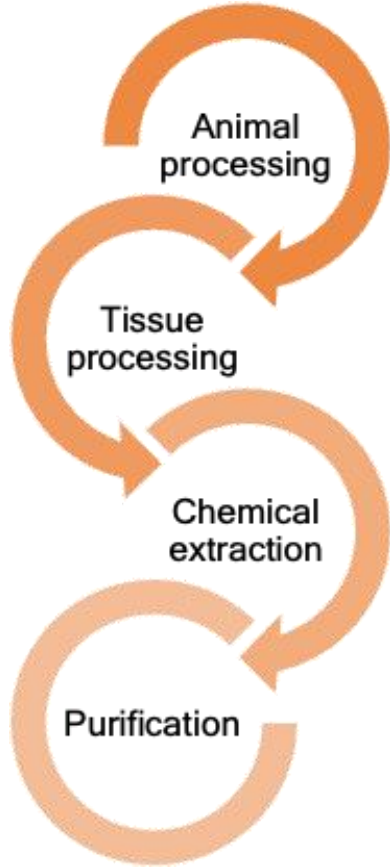
- Infectious risk (mad-cow disease, virus, nuclear radiation contamination)
- Animal itself may have the disease like mad-cow disease, so the animal-sourced collagen have the risk of transmitting disease or virus. Also, the concern about nuclear radiation contamination in marine products also prevent many customers using fish collagen.

Animal-sourced Collagen



- **Non-Halal & Non-Vegan**
- Animal sourced collagen like porcine collagen or bovine collagen will not be used by people in some specific area because of religious factors.

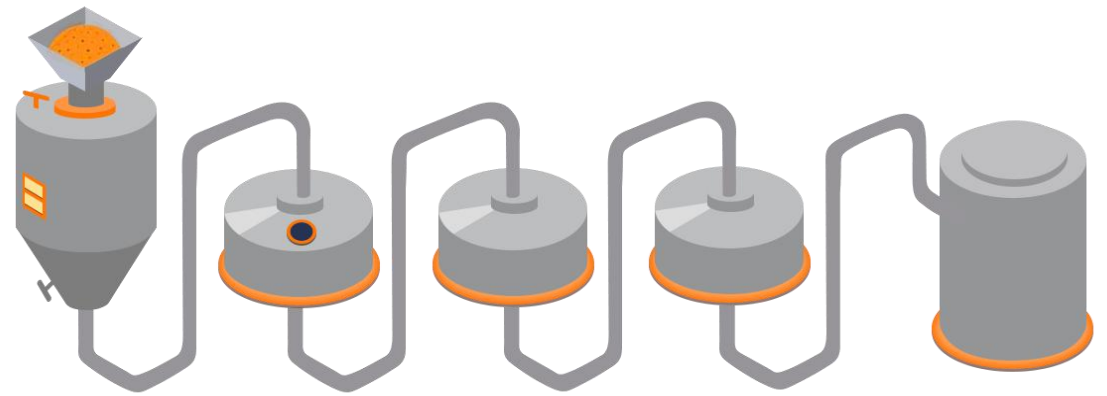
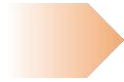
Animal-sourced Collagen



- Rare collagen types cannot be extracted from animals
- Collagen like type XVII collagen is traceable in tissues, making it almost impossible for manufacturers to obtain this raw material by extraction.

Production process of rhCol

Recombinant human collagen (rhCol) is a single-chain polypeptide or triple-helix protein that is entirely identical in amino acid sequence to human collagen (100% homologous).



Plasmid construction

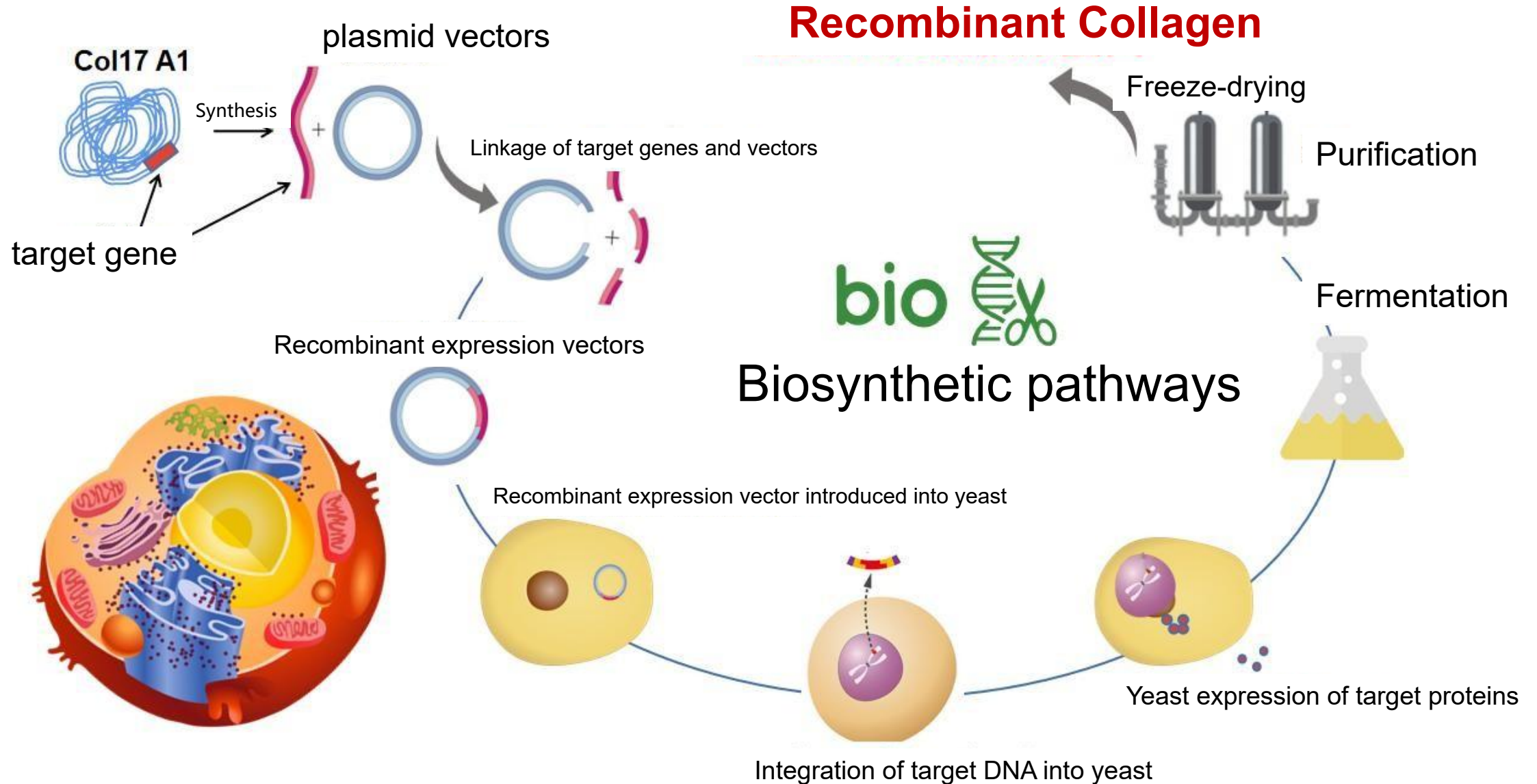
Engineered strains

Fermentation

Purification



Production process of rhCol



Comparisons of different chassis cell

Category	CHO cells	Yeast	<i>E.coli</i>	Plant
Chassis cell	Eukaryotic organism	Eukaryotic organism	Prokaryotic organism	Eukaryotic organism
Batch production	Ultra low	Ultra high	low	Ultra low
Endotoxin level	low	low	Ultra high	low
Post-translational modification	yes	yes	no	yes
Production cost	Ultra high	low	high	Ultra high

Advantages of Yeast for fermentation

- ❑ CHO cells or plants have much lower production yield of recombinant collagen and the cultivation cost of CHO cells or plants is ultra high, making the price of recombinant collagen produced by CHO cells or plants much higher than yeast. The price is unaffordable for cosmetic raw materials.

Advantages of Yeast for fermentation

- Endotoxin is the component of gram-negative bacteria (like *E.coli*, *P.aeruginosa*) cell wall. Thus, using *E.coli* for fermentation will inevitably introduce high-level of endotoxin to the system and increase the safety risk. Meanwhile, the removal of endotoxin from the system needs more purification steps and results in higher production cost.

In summary, yeast is the best option for rhCol production, both in terms of cost and endotoxin levels.

Overview of rhCol products

➤ Compared to animal derived collagen, Trautec recombinant collagen offers:

- ✓ **Animal-free**
- ✓ **Low immunogenicity**
- ✓ **Low endotoxin**
- ✓ **Identical with human collagen sequence**
- ✓ **No infectious risk**
- ✓ **Small batch-to-batch differences**

Medical device grade

Product Name	Appearance	Content	Endotoxin	Application
SRHC® Type I	Sponge	90%~110%	<0.5EU/mg <0.05EU/mg	Topical use Injectable use
SRHC® Type III	Sponge	90%~110%	<0.5EU/mg <0.05EU/mg	Topical use Injectable use
SRHC® Type XVII	Sponge	90%~110%	<0.5EU/mg <0.05EU/mg	Topical use Injectable use



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**RECOMBINANT COLLAGEN
MEDICAL DEVICE**

04

SUMMARY

■ Advanced products —reCol dermal scaffold

Recombinant collagen absorbable repair dressing

High-quality full-thickness skin defect repair:

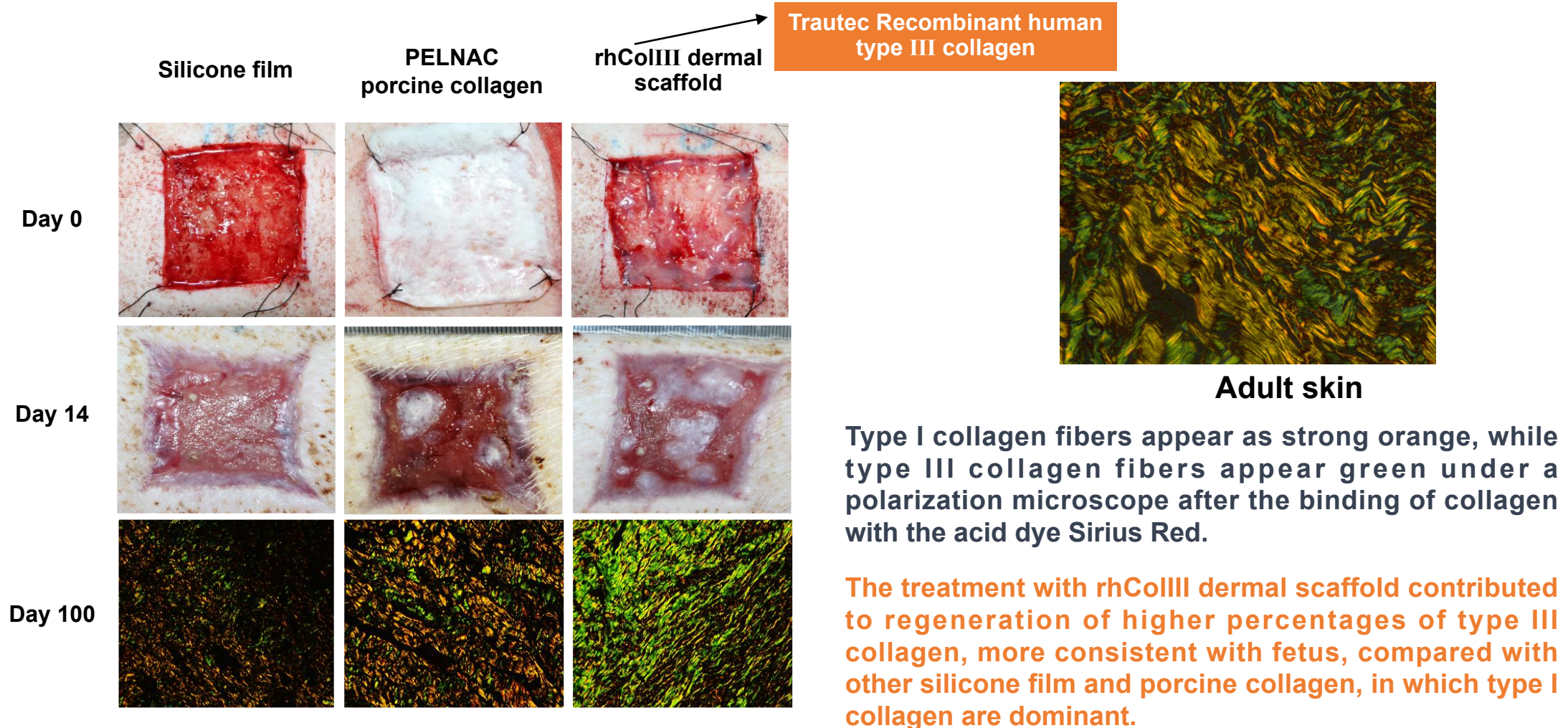
**1.Third-degree burns; 2.Traumatic skin defects;
3.Skin defects after excision of tumors, ulcers, or
birthmarks; 4.Donor sites after flap removal**

No.	Clinical Trial Institution
01	The First Affiliated Hospital of Naval Medical University
02	Shenzhen Second People's Hospital
03	Guangdong Provincial People's Hospital
04	Affiliated Hospital of Nantong University
05	Yijishan Hospital of Wannan Medical College
06	Hangzhou First People's Hospital
07	Union Hospital, Affiliated to Fujian Medical University
08	The First Affiliated Hospital of Anhui Medical University
09	Taizhou People's Hospital
10	The Second Affiliated Hospital of Wannan Medical College
11	Zhengzhou First People's Hospital



Collagen and regenerative repair

Liquid Dermal Scaffold in Burn Wound Treatment of Bama Mini Pigs



■ Advanced products —reCol scalp booster

Recombinant type XVII collagen lyophilized fiber

Injected into the dermis and subcutaneous layer of the scalp, it exerts an adjuvant therapeutic effect in alleviating hair loss symptoms through the strong cell adhesion properties of recombinant type XVII collagen.

No.	Clinical Trial Institution
01	West China Hospital of Stomatology
02	The Second Affiliated Hospital of Wannan Medical College
05	General Hospital of Tianjin Medical University
06	Binzhou People's Hospital



Model: male 62 years old, sparse hair, gray hair

Treatment Duration: 120 days

Results: increased hair density and fiber diameter, new dark hair growth.

■ Advanced products —Eye drops

Recombinant collagen contact lens lubricant drops

Moisturizing contact lenses; applying into the eye during contact lens wear to provide lubrication.

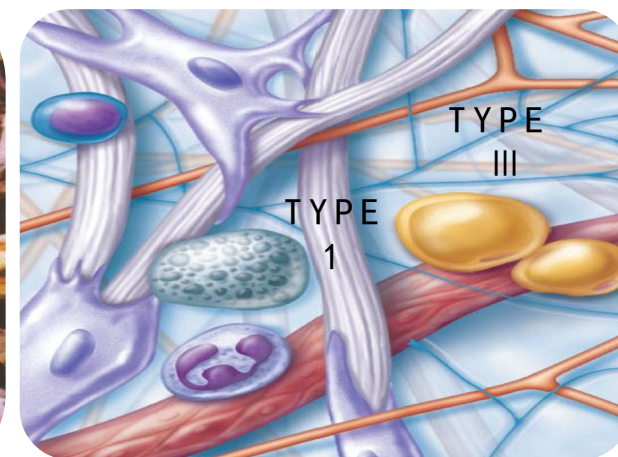
No.	Clinical Trial Institution
01	Wenzhou Medical University Eye Hospital
02	The Second Affiliated Hospital of Nanjing Medical University
03	Xi'an People's Hospital

- **Biomimetic** lubrication and ocular surface protection
- Maintenance of the ocular **surface microenvironment**
- Potential to promote **corneal epithelial repair** function



III

Type 1 & Type 3: Collagen in Dermis

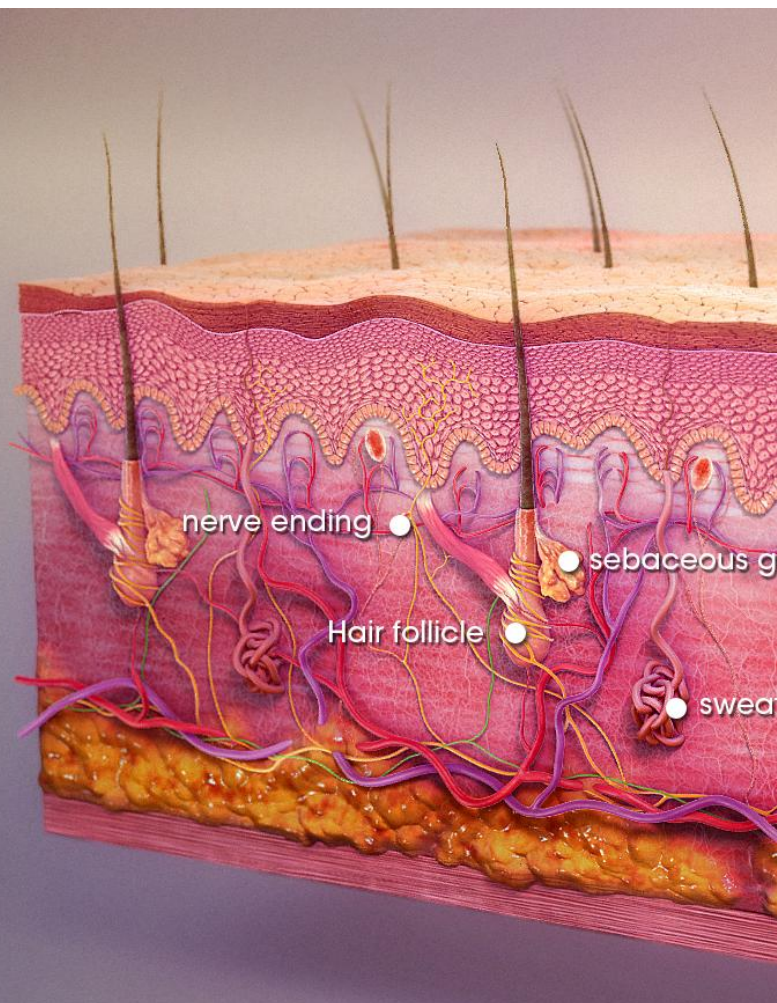


Type I

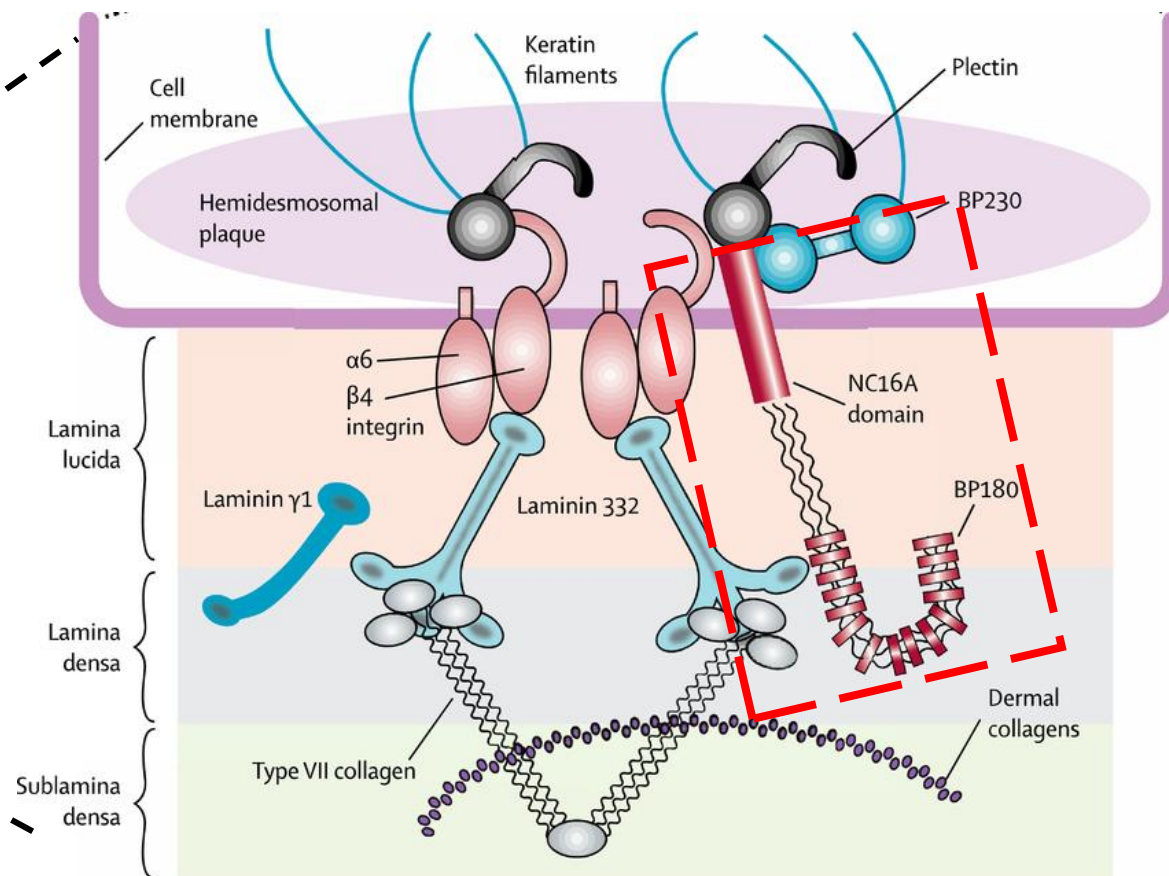
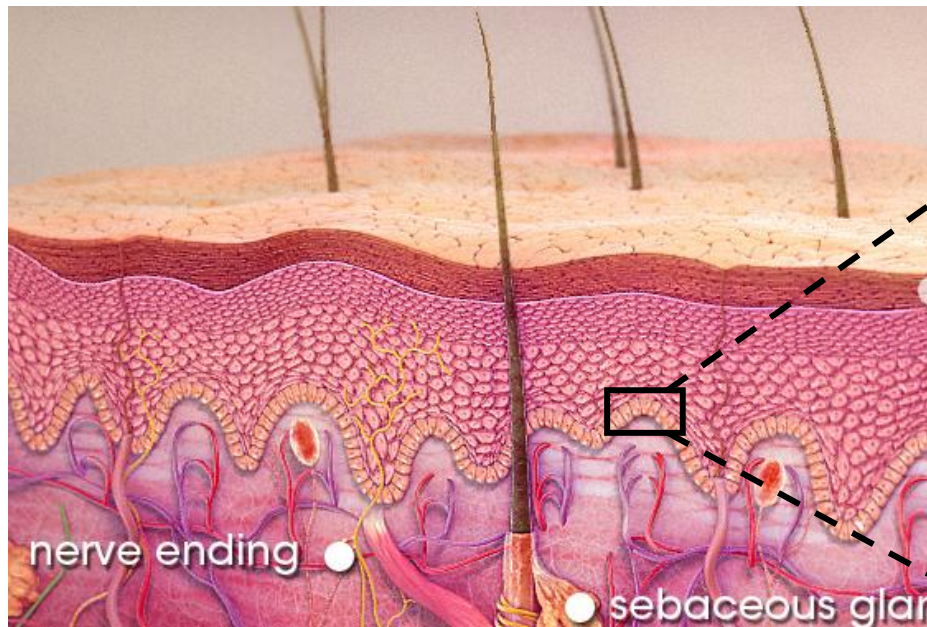
- Located in the reticular layer in dermis
- Arranged in bundles
- Determining skin – toughness

Type III

- Located in the papillary layer in the dermis.
- Arranged in a loose mesh,
- Determining skin elasticity



Type 17: Key Collagen in BMZ

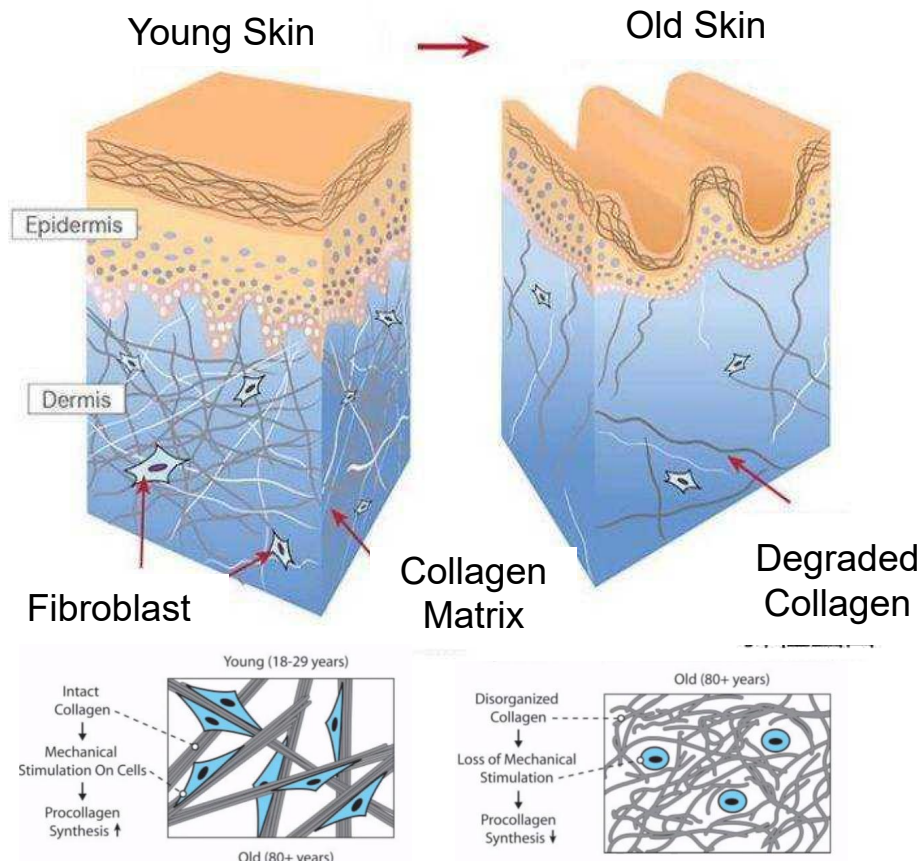


1 皮肤中基底膜的结构与功能,张丽丽、李贤玉、资生堂(中国)研究开发中心有限公司,中国美容医学2016年10月第25卷第10期, DOI: CNKI:SUN:MRYX.0.2016-10-049,2016

2, Oral autoimmune vesicobullous diseases: Classification, clinical presentations, molecular mechanisms, diagnostic algorithms, and management,May 2019Periodontology 2000 80(1):77-88,DOI:10.1111/prd.12263, Stefania Leucid.

Multiple Changes When Aging

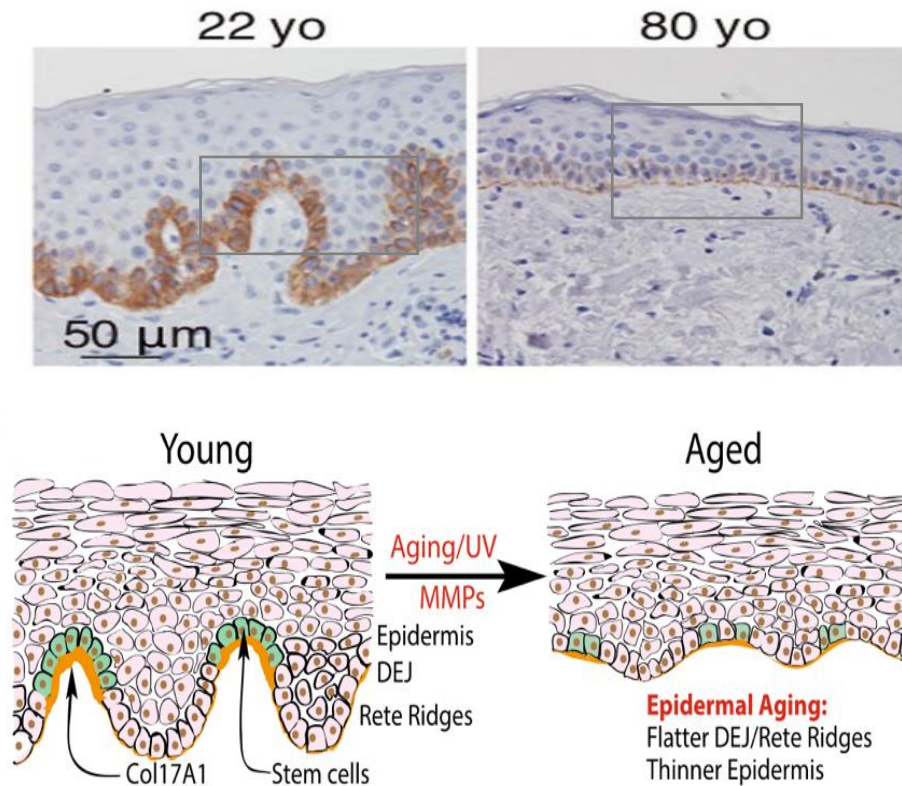
The aging problem is caused by comprehensive changes across all layers, and single layer treatment will not be sufficient for effective treatment



AGING IN 3 LAYERS: Epidermis-BMZ-Dermis

- Epidermis: Thinning, barrier function decline (Type 17 decline).
- Basement membrane zone (BMZ): , Flattened, dermal contact area decreases (decreases in type 17)
- Dermis: Collagen fiber breakage, fibroblast aging, elasticity decrease (Type III decrease).

Deficiency in Type 17 and Epidermis Aging



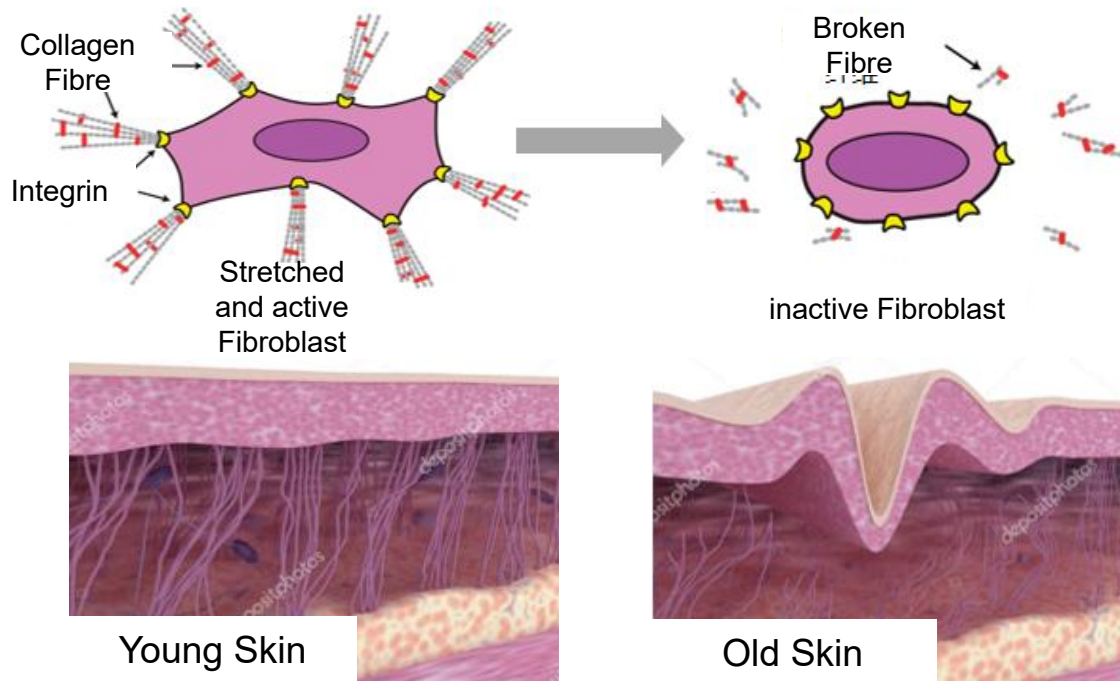
The basement
membrane band ages,
flattening



1. Inability to support the epidermis - **sunken wrinkles**
2. Inability to protect the dermis, vascular nerve-barrier, compromised **sensitive flushing**
3. Melanin falls on the dermis – **dermal spots**
4. Poor transport of nutrients - **metabolism slows down, dull and rough**

Loss of Type 3 & Dermis Aging

Type 3 collagen is distributed in the superficial layer of the dermis in the form of a net, maintaining skin elasticity and tenderness



From the age of 20, the type 3 collagen has been losing at the rate of 1% per year



Breakdown of collagen fibers also caused the age of fiberblast, making it less active



1. Collapse of the dermal structure, loss of support - **wrinkles, aging pores**
2. Fibroblasts atrophy and are unable to effectively synthesize type 1,3 collagen and hyaluronic acid - **dry, rough skin**
3. Tyrosinase activity is activated, accelerating melanin production - **pigmentation**

Skin Problems

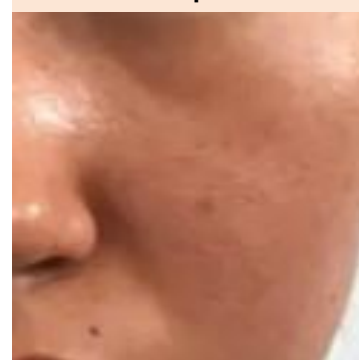
Sagging
Reduced elasticity



Wrinkles:
fine dry lines



Dark:
Dull complexion



Dry skin



Pigmented spots



Rough skin



Large pores



Type 3 & Type 17 Mechanism

	INDICATIONS	TYPE 3	TYPE 17
MECHANISIM	Anti-aging	Efficiently construct dermal collagen network, restore dermal matrix skeleton, improve dermal collapse, and activate fibroblasts to secrete type 1,3 collagen, elastin, and hyaluronic acid	Promote the adhesion and firmness of dermis and epidermis, accelerate the transport of nutrients into the dermis, and the effect will appear faster
	Repair	Relieve vasodilation, alleviate skin redness symptoms, thereby reducing the inflammatory response, promote the neovascularization of the wound surface, and thus accelerate wound healing.	Activates the differentiation of basal cells into keratinocytes, promotes epidermal renewal, and rebuilds the barrier
	Melasma	Peptides containing amino acids such as arginine, alanine, and alanine can inhibit the activity of tyrosinase, inhibit the formation of melanin, and improve pigmentation problems	Intercept melanin falling in the dermis, improve dermal pigmentation, accelerate the metabolism of melanin in the epidermis, and lighten pigmentation

Case Study- Anti-aging

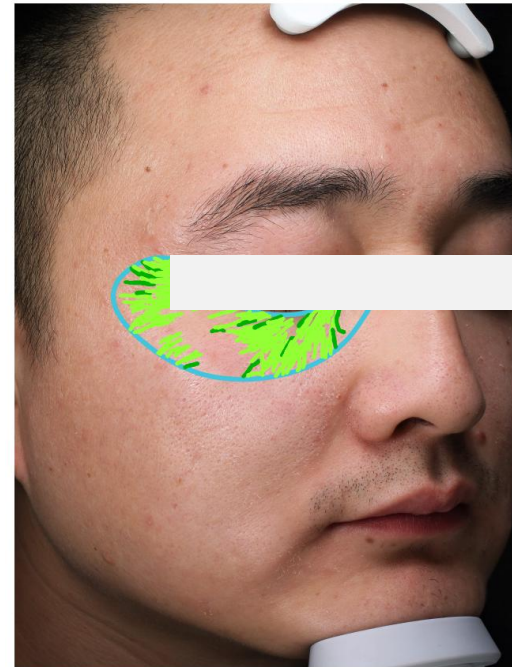
- **Indication:** 40+ Asian Male, Forehead wrinkle, evident periorbital fine lines, Rough skin, enlarged pores
- **VISIA:** wrinkles and fine lines
- **Solution:** 1 time, full face, 2 vials of Type 3 + 2 vials of Type 17
- **Method:** 1.0mm microneedle -0.5mm microneedle
- **Intern:** 15 days
- **Efficacy:** fine lines improves greatly, pore visibly shrunk; Even and delicate skin texture



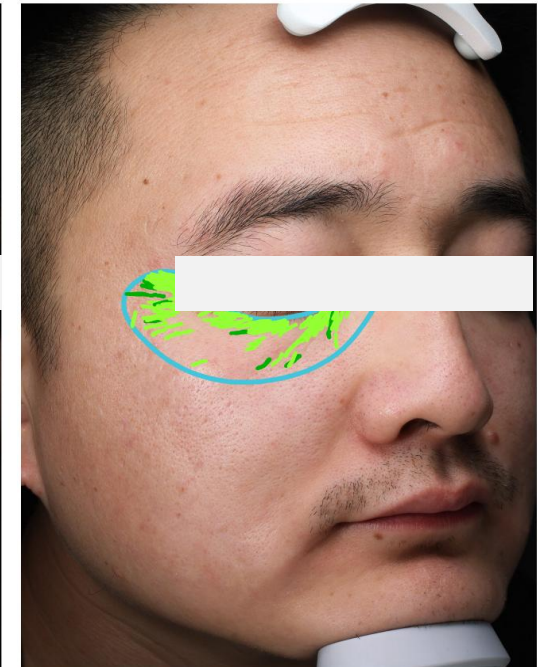
Before



after



Before



after

Case Study- Chloasma

- **Modle:** female, 40+, Yellow-brown patches symmetrically distributed on both zygomatic regions with poorly defined borders. Previously treated multiple times at external hospitals with poor outcomes
- **VISIA:** Red Areas, Spot
- **Solution:** Type 17, 2 vials
- **Method:** 0.5mm microneedle for Type 17, interval 20 days, 2 times
- **Duration:** 90 days
- **Efficacy:** Full-face skin tone brightening, pigmentation spots lightened, with visible reduction of brown areas and significant decrease in pheomelanin under skin testing, along with marked improvement in red areas. Strengthened customers' confidence in treatment.



before



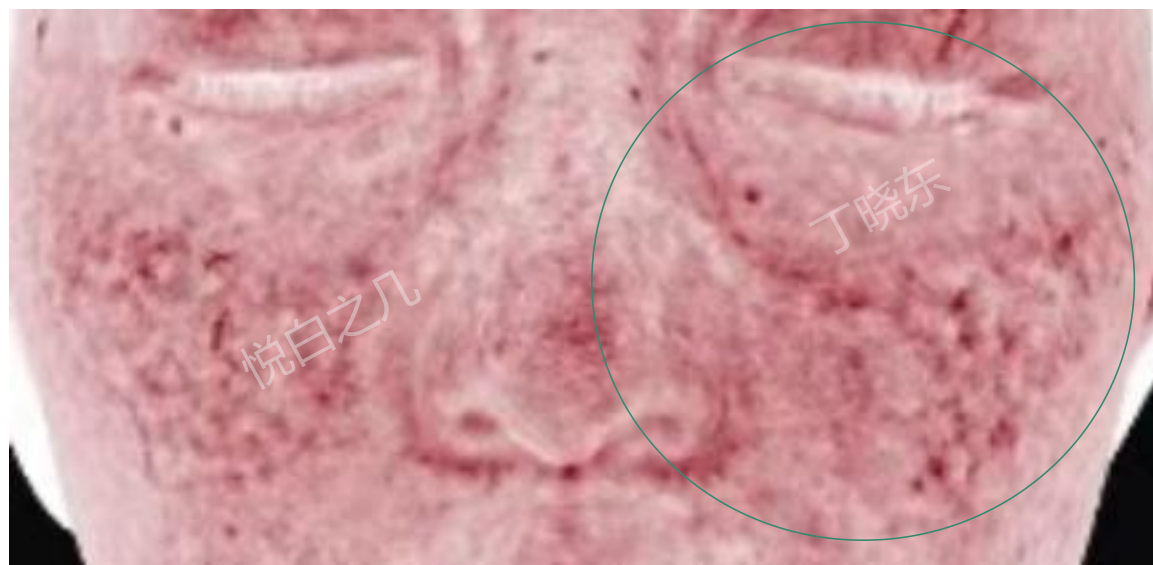
90 days after



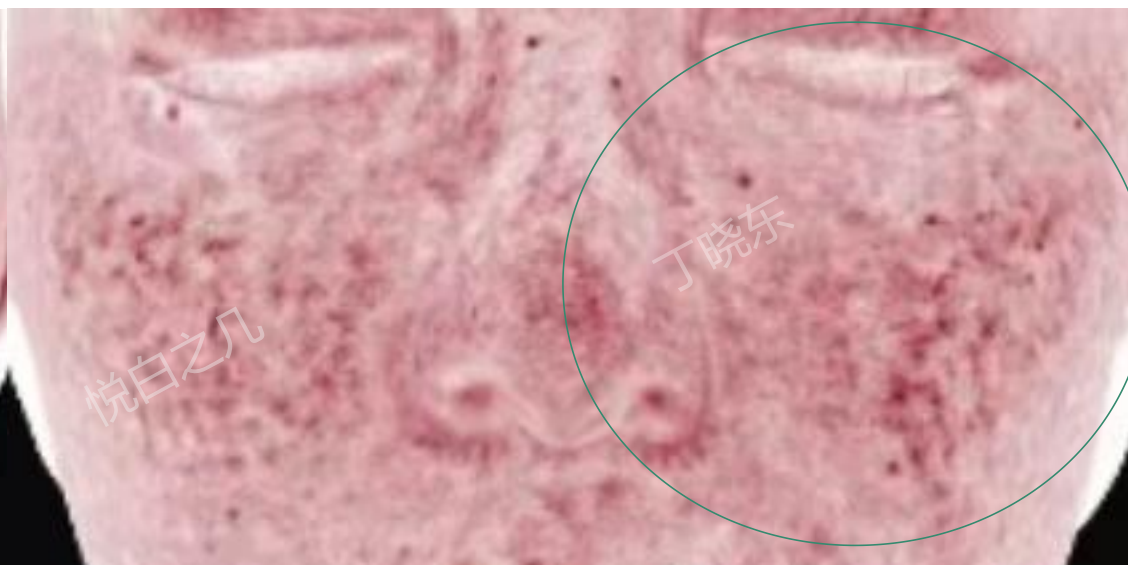
before



90 days after



before



90 days after

Case Study- Sensitive Skin

- **Model:** female, 30+, Facial diffuse flushing for 4+ years, Excessive skincare caused barrier disfunction.
- **VISIA:** Red Areas, Spots
- **Treatment:** 3 vials type 17, 1 month interval , 3 times/course
- **Method:** 0.5mm microneedle roller, 3 times
- **Duration:** 90 days
- **Efficacy:** Repairing redness, significantly reducing inflammation, brightening skin tone, and lightening melasma



Before



3 treatments after

Case Study - Sensitive Skin

- **Model:** female, Sensitive skin accompanied by oily skin and enlarged pores
- **VISIA:** Red Areas, Spots
- **Solution:** full face, M22+ Type 17, 2 vials/time
- **Method:** M22+0.3mm microneedling-Type17
- **Duration:** 16 days
- **Efficacy:** Repair redness, improve enlarged pores, and balance skin oil-water levels



术前



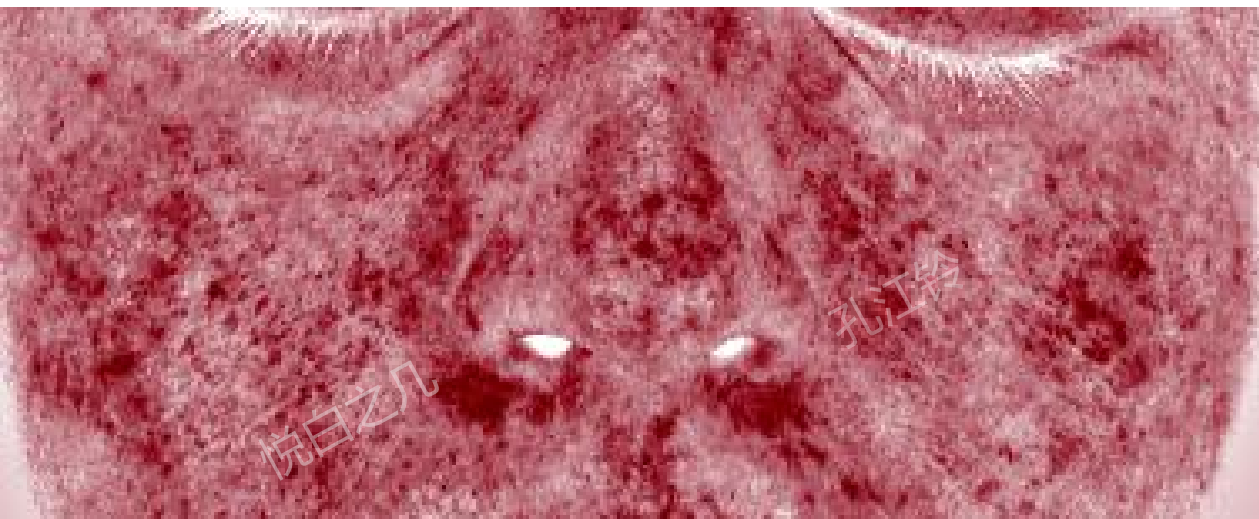
术后16天



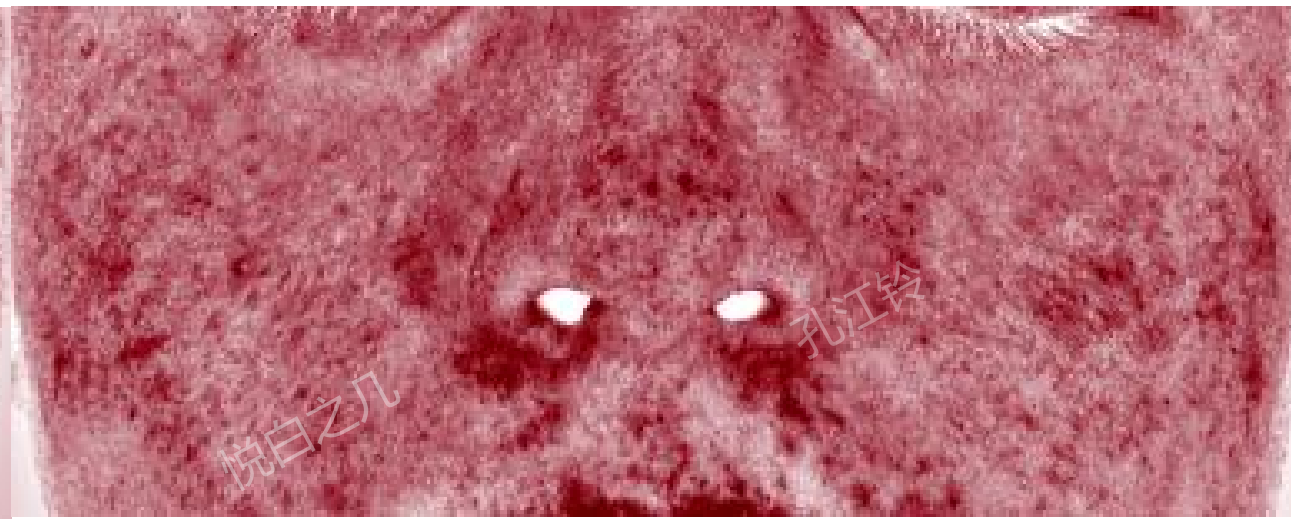
before



16 days after



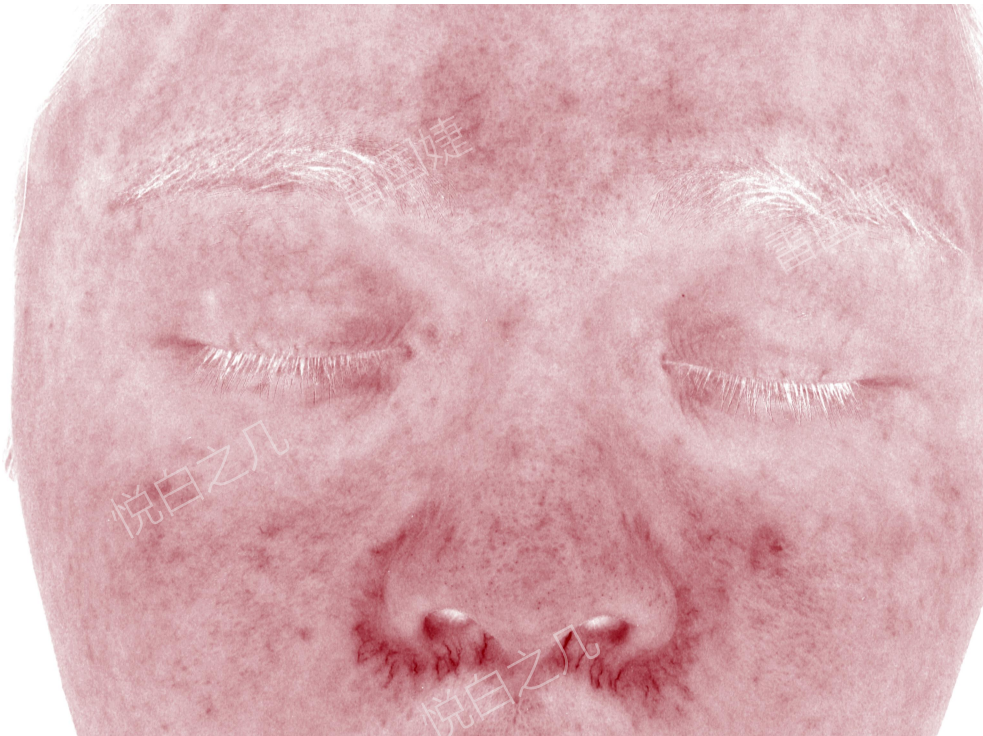
before



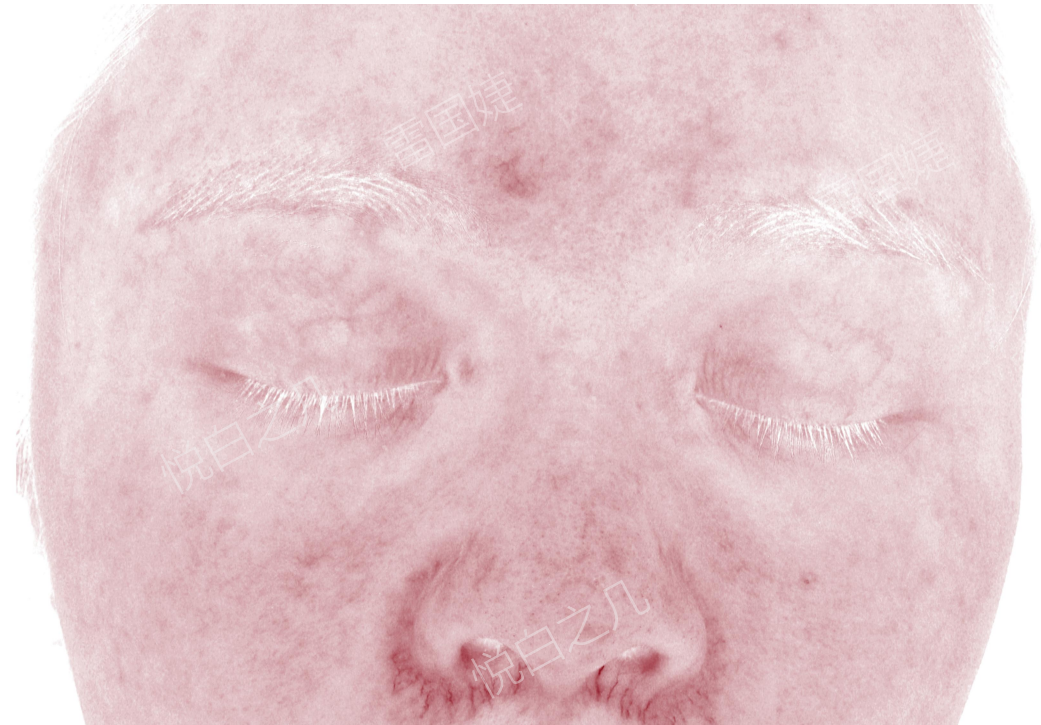
16 days after

Case Study -Sensitive & Sagging face

- **Model:** female, 32+, descending of the cheek fat pad , fine line around the orbital area.
- **VISIA:** spot, red area
- **protocol:** HIFU+Type 3+ Type1, HIFU 1 time/ 6 month, RHC 1 month after HIFU
- **Method:** HIFU, 1.0 mm for Type 3, 0.5 mm for type 17
- **Period:** 16 days
- **Efficacy:** Red areas are visibly reduced, periorbital fine lines are weakened, pores are smaller, Midcheek is plumped



Before



16 days after



Before



16 days after

Therapeutic Medical Devices

Scar Repairing Kit

Repair Dressing
Silicone Gel Dressing
Dressing, Gel, Spray Dressing

Mucosal Repair

Gynecological gel dressing
Hemorrhoid gel dressing
Nasal mucosal repair dressing
Oral mucosal repair solution

Process of Skin Wound Healing

	Inflammatory phase	Proliferative phase	Maturation phase
Start time	Immediately or within minutes	Several hours to several days	About one week later
Duration	Several hours to several days	1-3 weeks	Several months to several years
Key cells	Platelets, Neutrophils, Macrophages	Fibroblasts, Keratinocytes	Macrophages, Fibroblasts
Main manifestations	Hemostasis; Inflammatory response to clear damaged tissue and bacteria	Formation of granulation tissue, production of large amounts of collagen; Re-epithelialization, reconstruction of the epidermal barrier	ECM remodeling, changes in collagen fiber deposition ratio, increase in Type I, decrease in Type III; Scar maturation
Applicable products	Recombinant Collagen Gel		Recombinant Collagen Silicone Gel Dressing

The formation of scars is a complex biological process involving the interaction of various cell types and molecules. When the skin is injured, fibroblasts migrate to the injured area and start to synthesize **collagen**. The synthesis and secretion of **type I** collagen increase significantly to support tissue repair and reconstruction.

Due to the characteristics of **type I** collagen, which features **high tensile strength and stability**, the **fibers it forms** are **relatively thick** and closely arranged, **endowing scar tissue** with **higher mechanical strength**. As a result, the appearance and texture of scars differ from those of normal skin, typically presenting as harder, thicker and darker in color.

The Relationship Between Scar Formation and Collagen

- The formation of scars is a complex biological process involving the interaction of various cell types and molecules. When the skin is injured, fibroblasts migrate to the injured area and start to synthesize **collagen**. The synthesis and secretion of **type I** collagen increase significantly to support tissue repair and reconstruction.
- Due to the characteristics of **type I** collagen, which features **high tensile strength and stability**, the **fibers it forms** are **relatively thick and closely arranged**, **endowing scar tissue** with **higher mechanical** strength. As a result, the appearance and texture of scars differ from those of normal skin, typically presenting as harder, thicker and darker in color.



After cosmetic injection



Burn
Scald
Frostbite



abrasions and falls



Stretch marks
Post-cesarean section

SCAR Repairing Case

Case: Firewood splinter injury.

Application: Topical use only, apply on the wound after removal of stitches.

Protocol: 1 time/ day, Apply gel for 1 month.

Efficacy: No hypertrophic scarring occurred, and the skin tone at the healing site was close to normal skin tone, and there was no significant color difference.



Day 0

Day 3

Day 10

Day 28

SCAR Repairing Case

Case: Facial trauma surgery sutures

Application: Topical use only, apply on the wound after removal of stitches.

Protocol: 1 time/ day, Apply gel for 2month.

Efficacy: After 2 months of applying gel, the skin of the healing area is flat, no scar hyperplasia, and close to the skin color.



Day 0



Day 7



Day 55

SCAR Repairing Case

Case: cesarean section incision

Application: Topical use only, apply on the wound after removal of stitches.

Protocol: 1 time/ day, Apply gel for 2month.

Efficacy: After 2 months of applying gel after healing, no scar hyperplasia, new skin on the wound is close to the normal skin color.



Day 0
1 month after cesarean section



Day 30



Day 60

MUCOSAL REPAIR

**Gynecological
Use**

**Hemorrhoid
Use**

Nasal Use

Oral Use

Collagen in Mucosa

Collagen is a key part of the extracellular matrix (ECM), making up over 30% of the body's total protein. It is found in the **skin, mucosa, connective tissues, bones, and blood vessel walls**. The skin and mucosa mainly have Type I and Type III collagen. Type I collagen gives firmness, while Type III collagen **provides elasticity and smoothness**.

Mucosa in the vagina, anus, mouth, and nose, like skin, is mostly collagen, with levels between 64.3% and 72.4%. This high collagen content helps **maintain thickness, elasticity, and moisture in the mucosa**.

more than 30% of the total protein in the body

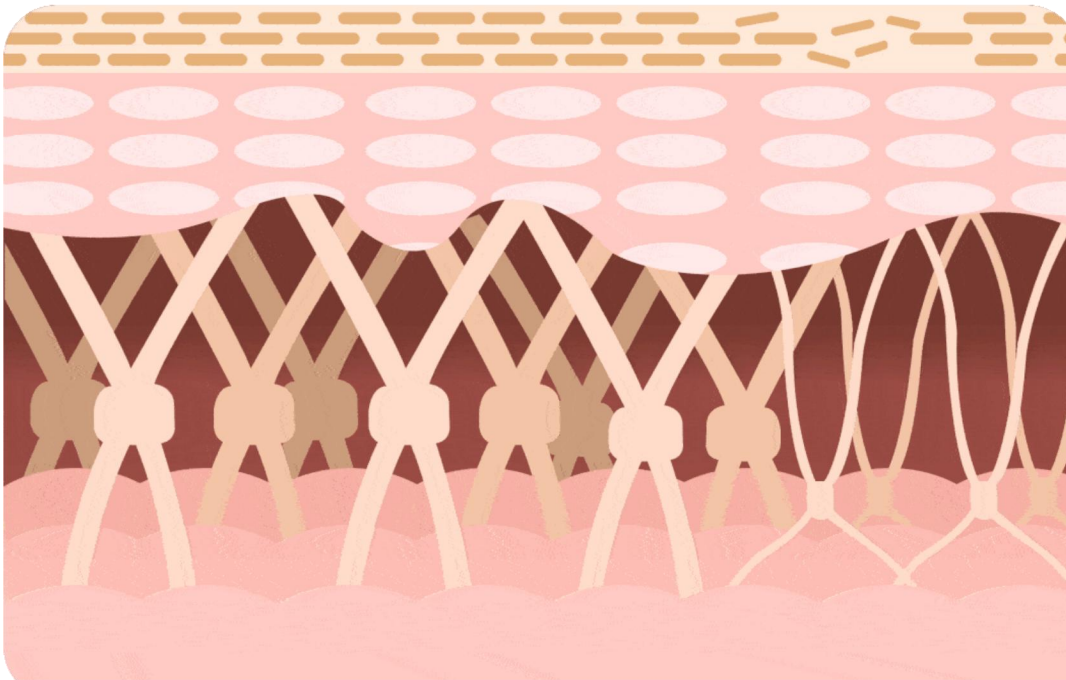
30%

6%

70%

approximately 6% of
the human body weight

Collagen makes up more than
70% of the skin and mucosa



Forms a Protective Film

Collagen Regeneration

Promotes Blood Clotting

Reduces Inflammation

- **Forms a Protective Film**

1. Blocks external bacteria to prevent secondary contamination
2. Reduces mechanical irritation from stool movement and friction, effectively minimizing bleeding, prolapse, and pain

- **Collagen Regeneration**

1. Improves anal sphincter relaxation and Treitz muscle degeneration, maintaining connective tissue softness and support, ensuring effective anal cushion retraction
2. Promotes blood vessel regeneration, reduces vein wall fragility, and decreases vein dilation, lowering bleeding risk

- **Promotes Blood Clotting**

Binds with platelets to enhance clotting, alleviating bleeding symptoms from various anorectal conditions

- **Reduces Inflammation**

Lessens inflammatory responses caused by stool and secretions, reducing itching and potential perianal skin conditions like eczema

Recombinant Collagen Gynecological Gel Dressing

Case: Perimenopause female, regular Period, but vaginal burning sensation, large amount of leucorrhoea, accompanied by odor; Initial diagnose of vaginitis

Application: Apply intravaginally every day

Protocol: 1 time/ day, Apply gel for 9 weeks

Efficacy: The odor is reduced and the burning sensation in the vagina is healed



Day 0



Day 63

Trautec Recombinant Humanized Collagen

TRAUTEC Recombinant Humanized Collagen	ADVANTAGES	BENEFITS
	100% Homologous	Higher Biocompatibility
	Lowest Risk of Virus affection or Immunogenicity	Higher Saftety
	Lowest Endotoxin	Lowest Risk of AE
	Highest Purity	Highest safty and bioactivity
	Highest Stability of fermentation	Highest Standard of Quality



01

COMPANY INTRO

02

RECOMBINANT COLLAGEN
RAW MATERIAL

03

RECOMBINANT COLLAGEN
MEDICAL DEVICE

04

SUMMARY

TRAUTEX

THANK YOU!



STAND 52



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