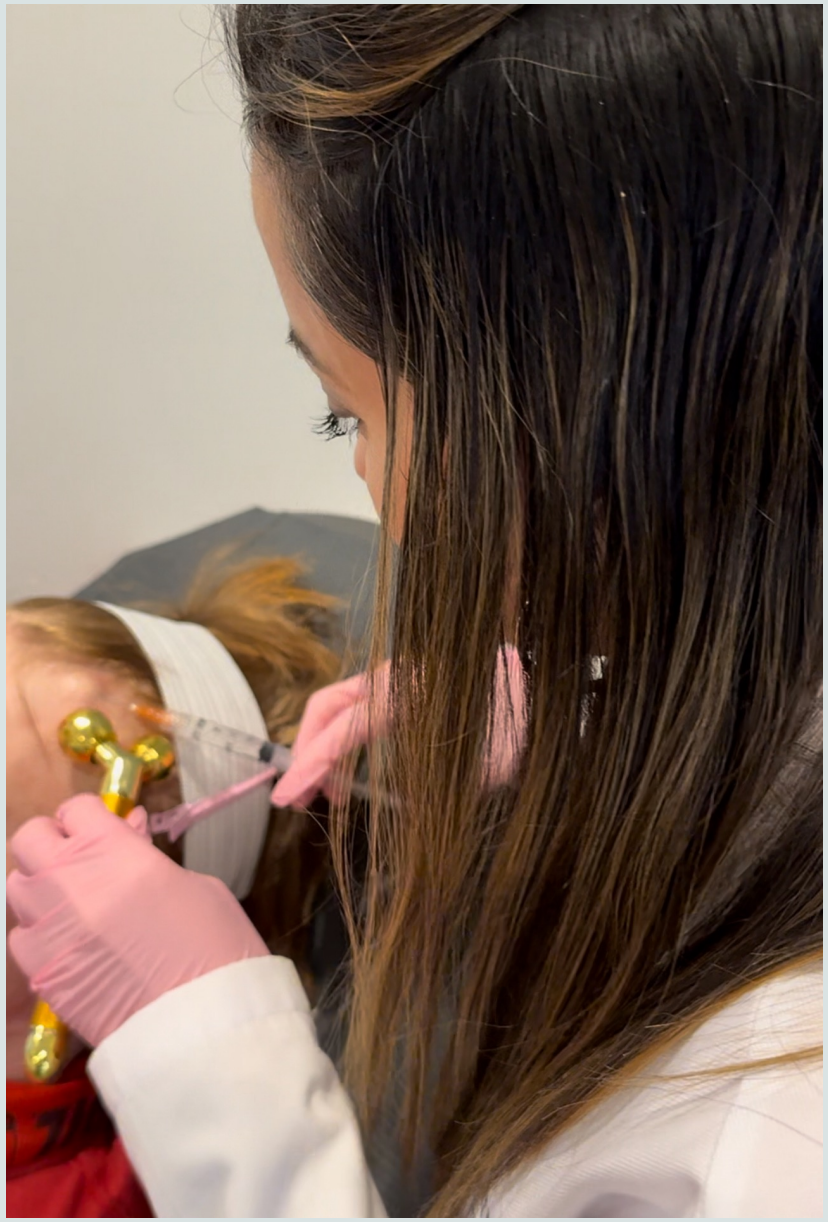


Regenerative Aesthetics: Hair Restoration and Advanced Scar Protocol

Lexi Yoo FNP-BC, CPNP, IFMCP

YDH Academy

Objectives

1. Understand Regenerative Medicine in Aesthetics: Participants will learn the principles of regenerative medicine, including cell, tissue, and organ restoration, and its application in aesthetics to enhance treatment outcomes.

2. Examine Hair Loss Cycle and Laboratory Workups: will explore the hair growth cycle, causes of hair loss, and relevant lab tests, learning how regenerative medicine assists in addressing hair loss and guides treatment decisions.

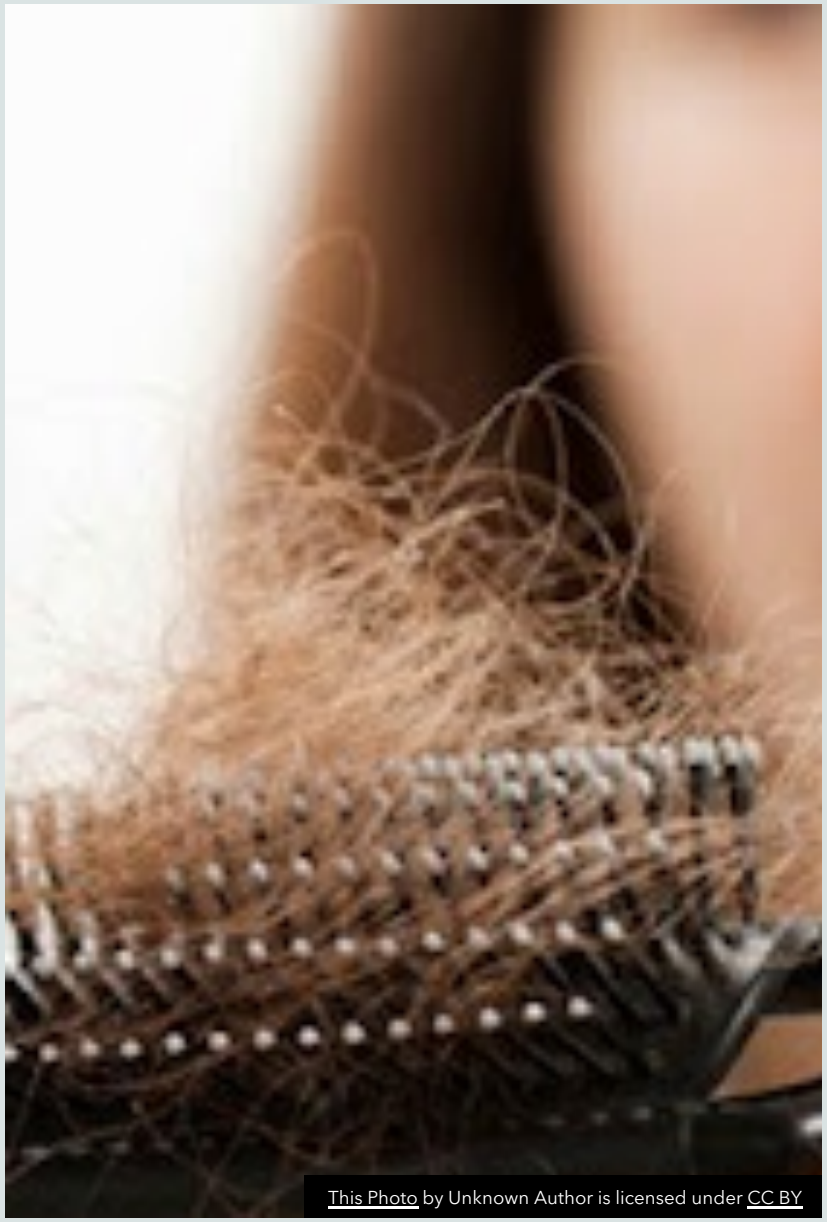
3. Explore Peptide Therapy in Aesthetics: This objective covers the role of specific peptides in tissue regeneration and healing within aesthetics, teaching participants their applications and integration into treatment plans.

4. Review Ozone and Procaine Use in Procedures: understand the therapeutic properties and applications of ozone and procaine in regenerative aesthetic procedures, including their mechanisms and benefits.

5. Compare Growth Factor Therapies: compare Platelet-Rich Plasma (PRP) therapy with advanced biologic treatments, focusing on their preparation, applications, and the evidence supporting their use in aesthetics.

Causes of Hair Loss

- Genetic factors
- Hormonal changes (e.g., pregnancy, menopause, thyroid problems)
- Medications and supplements
- Stressful events
- Hairstyles and treatments
- Nutritional deficiencies

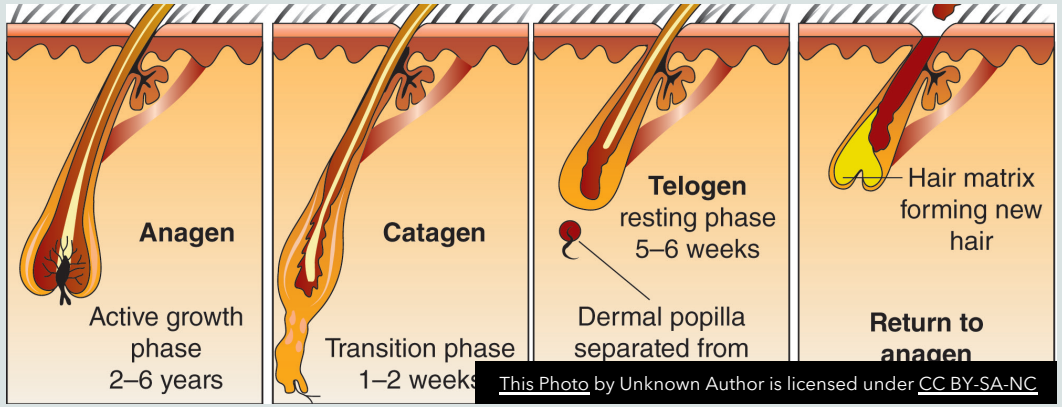


Recommended Laboratory Tests

- Complete blood count (CBC)
- Thyroid function tests
- Iron levels
- Vitamin D levels
- Hormonal profile (especially for women): Testosterone, free Testosterone, DHT
- Advanced testing: Cortisol, GI MAP, Dutch testing

Hair Follicle Cycle

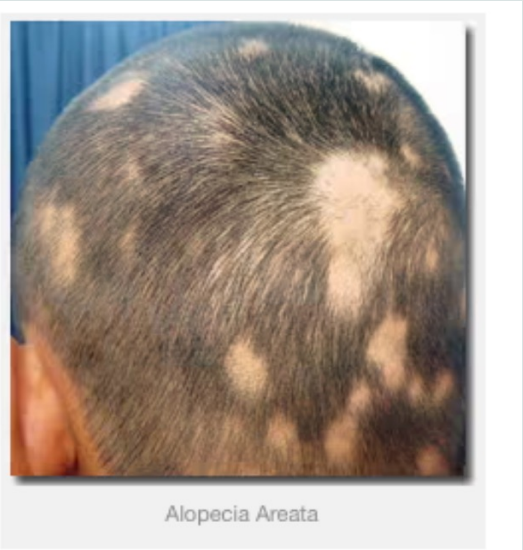
- Anagen (Growth Phase): Lasts 2-7 years; hair grows from the follicles.
- Catagen (Transition Phase): Lasts about 10 days; hair follicles shrink, and hair growth slows.
- Telogen (Resting Phase): Lasts about 3 months; old hair rests while new hair begins to grow underneath.
- Exogen (Shedding Phase): Old hair falls out and new hair continues to grow; overlaps with the Anagen phase of new hair.



Types of Alopecia

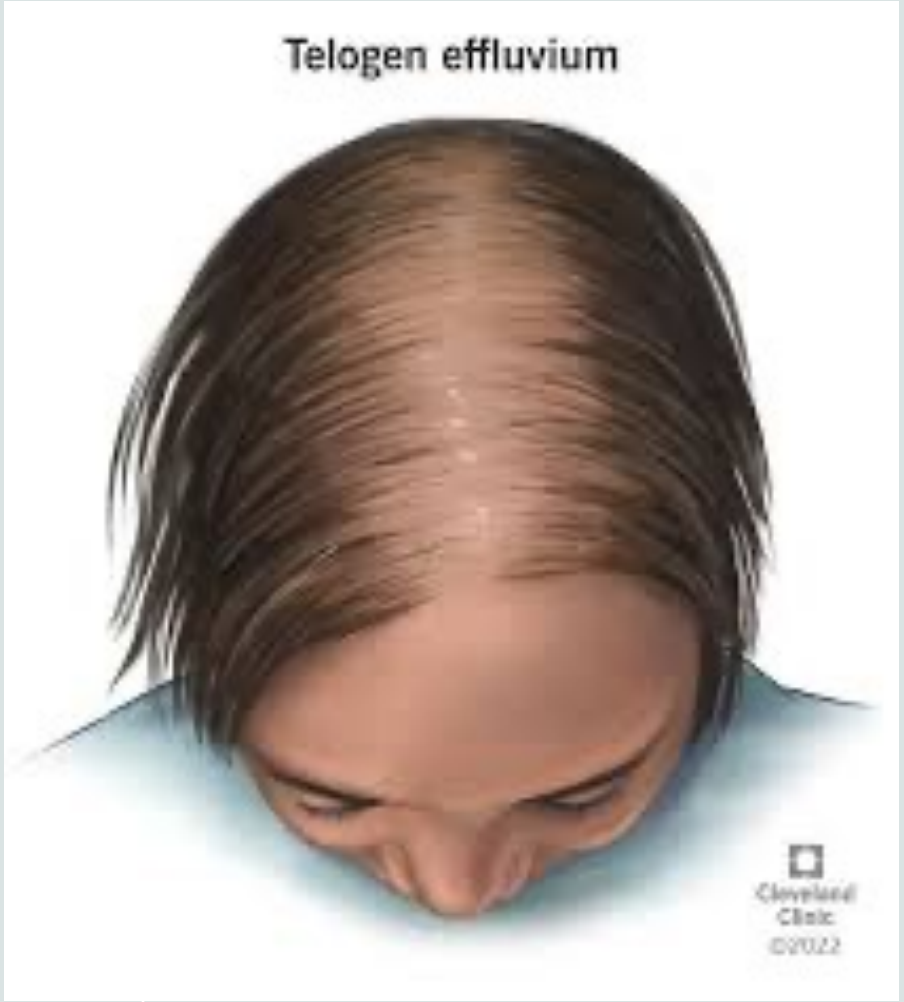
Androgenic Alopecia: Commonly known as male or female pattern baldness, this type results from a combination of genetics and hormonal changes. It's characterized by a receding hairline and thinning hair on the crown in men, and thinning hair across the scalp in women.

Alopecia Areata: An autoimmune disorder that causes sudden, patchy hair loss. The immune system mistakenly attacks hair follicles, leading to round, smooth bald patches on the scalp or other body parts. It can progress to total scalp hair loss (alopecia totalis) or complete body hair loss (alopecia universalis).


Alopecia Areata

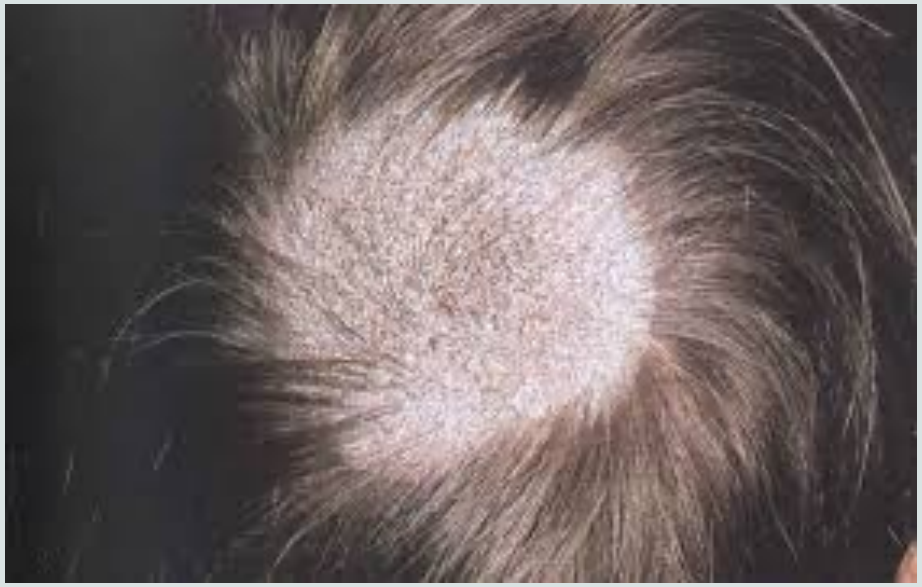
Types of Alopecia

Telogen Effluvium: A temporary condition often triggered by stress, illness, hormonal changes, or medication. It involves an increased number of hairs entering the telogen (resting) phase, leading to widespread thinning and shedding. Unlike the other types, this form of hair loss is usually reversible once the underlying cause is addressed.



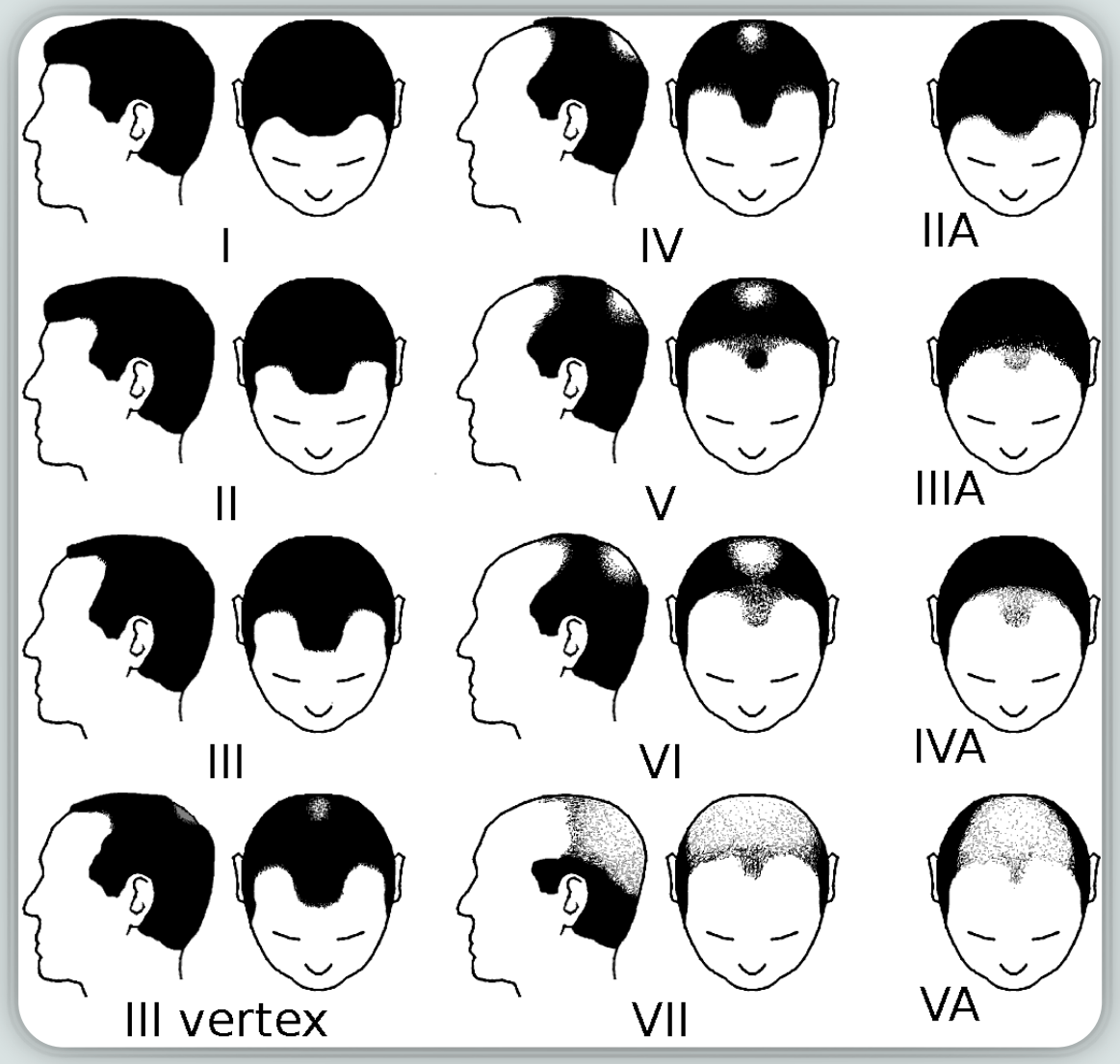
Alopecia continued:

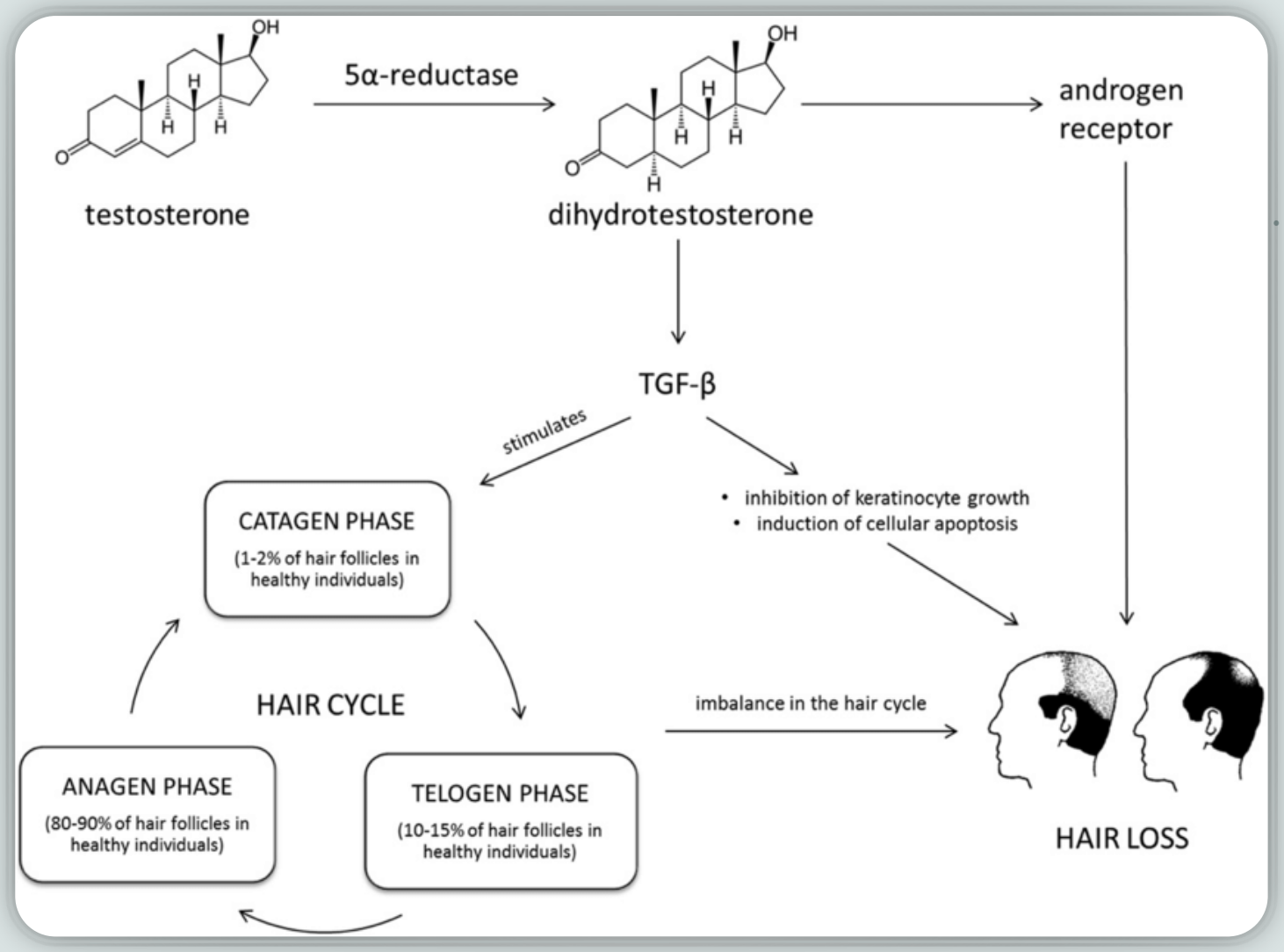
- **Traction Alopecia: Caused by prolonged tension on the hair from tight hairstyles like braids, ponytails, or dreadlocks. It can lead to gradual hair loss, primarily along the hairline.**
- **Anagen Effluvium: This type occurs during the anagen (growth) phase of the hair cycle, typically due to chemotherapy or radiation therapy. It results in rapid and extensive hair loss as these treatments can halt the mitotic activity of hair follicle cells.**
- **Fungal Infections (e.g., Tinea Capitis): Fungal infections of the scalp can lead to patchy hair loss, often with scaling and redness. It's more common in children and can be treated with antifungal medications.**



Hamilton Patterns

- The progression and various patterns of hair loss are classified by the Hamilton male baldness classification system.
- Triangular frontotemporal recession occurs normally in most young men (type I) and women after puberty.
- The first signs of balding are increased frontotemporal recession accompanied by midfrontal recession (type II).
- Hair loss in a round area on the vertex follows, and the density of hair decreases, sometimes rapidly, over the top of the scalp (types III through VII).





The Role of 5 alpha-Reductase

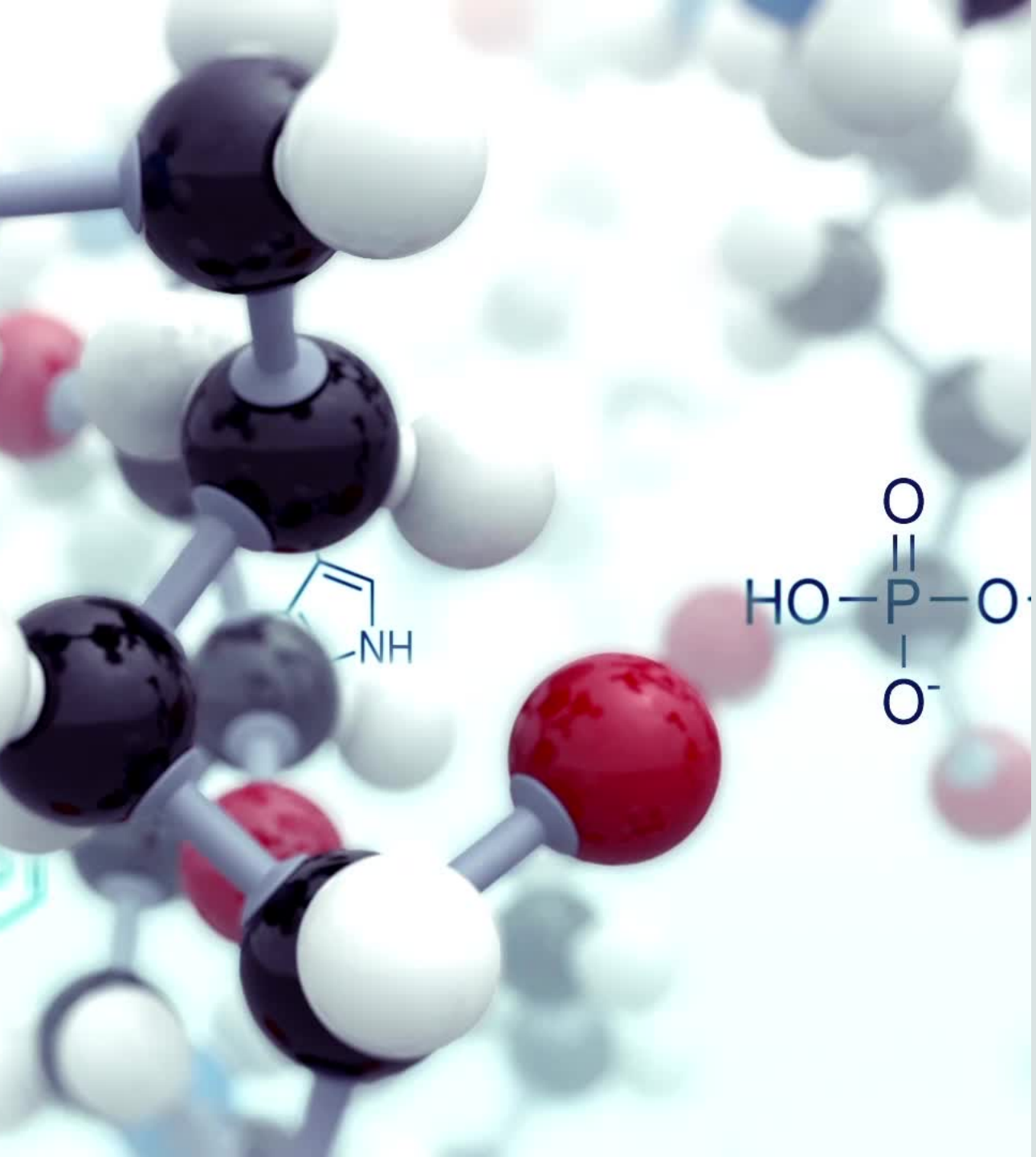
There are two major isoforms of the 5 alpha-reductase enzyme. The 5 alpha-reductase converts testosterone to DHT (dihydrotestosterone), which has a much greater affinity for the androgen receptor. Type 2 5 alpha-reductase enzyme plays a greater role in androgenetic alopecia.

Type 1 5 alpha-reductase enzymes are in sebaceous glands, keratinocytes, and sweat glands.

Type 2 5 alpha-reductase enzymes are in the outer root sheath of hair follicles, epididymis, vas deferens, seminal vesicles, and prostate

Aesthetic Peptides

- **Restores replicative vitality to fibroblasts after radiation therapy**
- **Skin regeneration -Effects in cosmetic products**
- **Hair Growth**
- **Improved Elasticity**
- **Improved skin density and firmness**
- **Reduce fine lines and wrinkles**
- **Reduce photo damage and hyperpigmentation**



Regenerative Peptides for Hair Loss

- Thymosin beta-4
- BPC-157
- GHK-cu
- PTD-DBM
- Valporate

Regenerative Treatments continued

Procaine

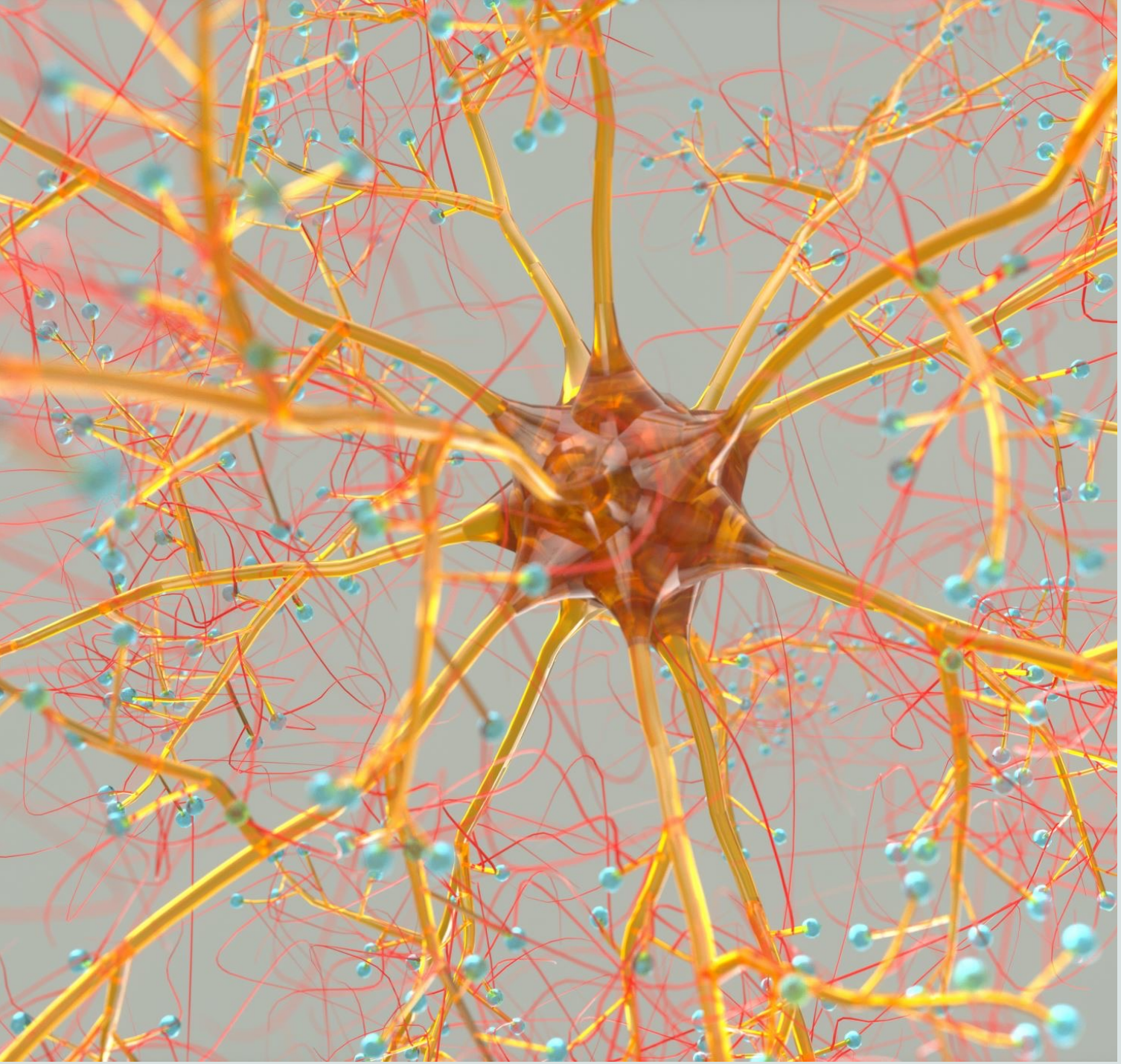
Ozone

Procaine for Scar Treatments (Neural Therapy)

Neural Therapy (NT) involves injections with a local anesthetic, mainly procaine, to address chronic pain and certain diseases. This therapy uses procaine injections in different ways:

1. Local Treatment: Directly injecting procaine into or near the painful area.
2. Segmental Techniques: Injecting procaine into areas served by the same part of the spinal cord as the affected area.
3. Interference Field Techniques: Targeting chronic, low-grade inflammation areas, often in scars or old injuries, with procaine injections.

NT is effective for its nerve-blocking and anti-inflammatory properties, helping with a range of issues from chronic pain to digestive disorders and certain heart conditions.



How it Works:

- Trauma to the tissue causes an interference in the autonomic nervous system.
- This can trigger pain, inflammation and delay in healing.
- Neural therapy breaks up that interference by scar tissue disrupts the autonomic nervous system by creating abnormal electrical signals.
- Neural therapy treats these issues by injecting local anesthetics into scars, nerves, acupuncture points, etc., to normalize cell charge and improve metabolism.
- This treatment aims to restore the body's natural energy flow and reduce pain by improving cellular health.

Ozone
How it Works!

- O3 (ozone) is a gas composed of three oxygen atoms.
- It can break down into oxygen molecules and atoms, influencing gene expression related to hypoxia.
- Ozone activates factors like HIFs, VEGF, and PDGF, improving conditions in hypoxic tissues.
- It has a high oxidation capacity leading to its pharmacological effects.
- Ozone therapy works as ozone dissolves in plasma/serum, reacting rapidly to produce ROS (e.g., H2O2) and LOPs (e.g., 4-HNE, MDA).
- These products regulate Nrf2 and NF-κB pathways, crucial for controlling redox reactions and inflammation.
- The pharmacological effects of ozone are mediated through complex interactions within these pathways across various cell and tissue types.

Why Should we Consider it Aesthetics?

- **Ozonated hydrotherapy** involves physically dissolving ozone in water (rather than chemically.

  Clinical application: Post laser, post microneedling.

  Limitations: Mixed on the spot, At 20°C, the half-life of O3 in water is only 27 min.

- **Ozonated oil:** When stored at 4°C, ozonated oil can maintain stable properties and pharmacological activities for 2 years.

  Clinical application: Aids in healing wounds and topically treating atopic dermatitis, psoriasis, superficial bacterial, and fungal infections.

Ozone as an Injectable

- Modality: Therapeutic ozone boosts nitric oxide (NO) production, enhancing local microcirculation and benefiting chronic degenerative and vascular diseases. Despite NO's brief half-life, its protein-bound form can induce vasodilation at distant ischemic sites, offering significant therapeutic advantages.

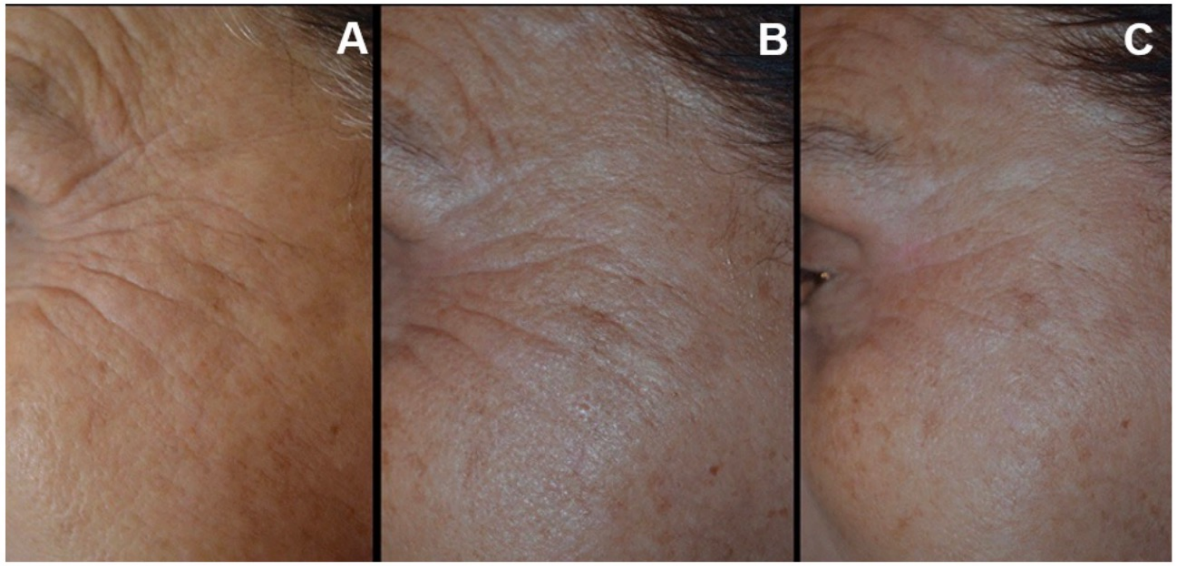
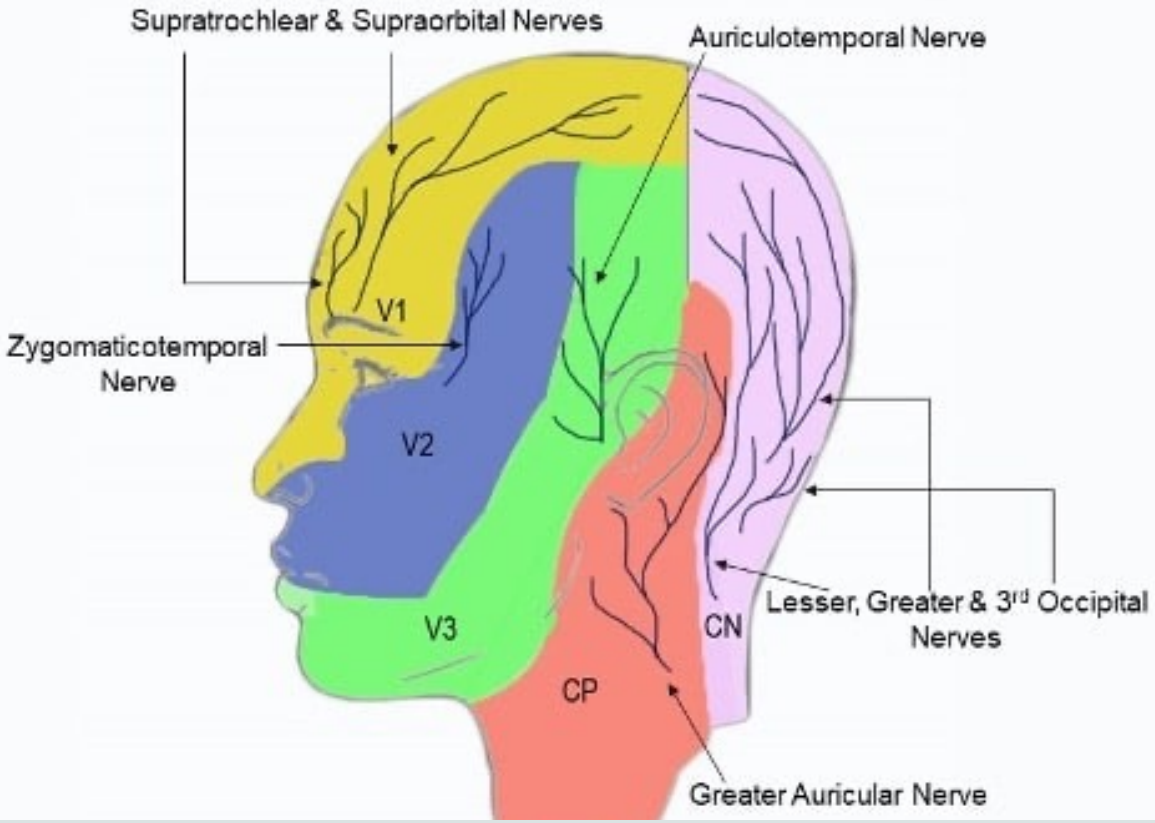


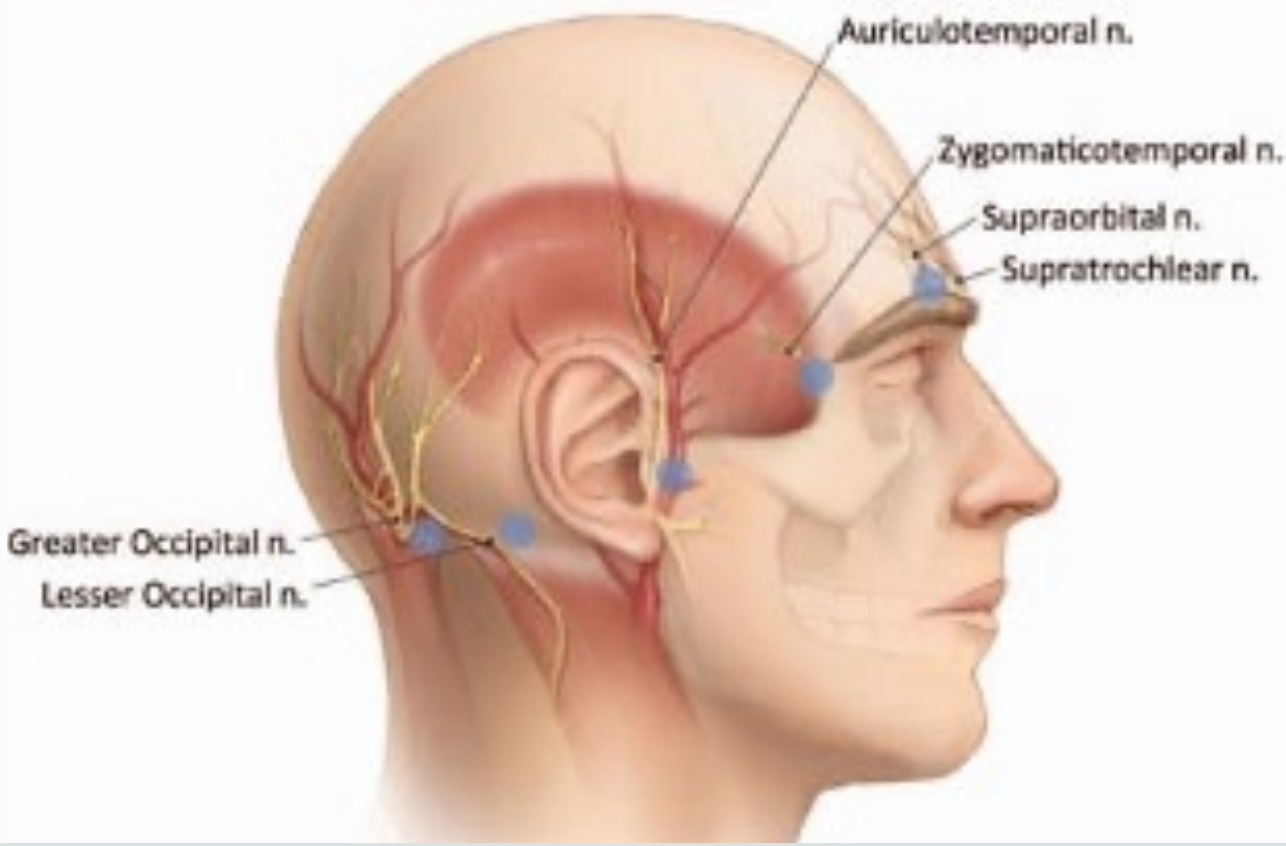
Figure 9. Rejuvenation of the peri orbicular region of the eyes: 8 sessions (1 time every 20 days, 1 ml volume at each injection point; 15 μg concentration; intradermal technique with retro injection). (A) Before treatment; (B) 4 sessions; and (C) After treatment.

Photos: Borges, F. dos S., Meyer, P. F., Jahara, R. S., Carreiro, E. de M., Antonuzzo, P. A., Picariello, F., & Palma, C. D. (2021). Fundamentals of the Use of Ozone Therapy in the Treatment of Aesthetic Disorders: A Review. Journal of Biosciences and Medicines, 9(12), Article 12. https://doi.org/10.4236/jbm.2021.912005

Ozone for hair

- When injected into the scalp, the ozone is oxidized and peptones are developed on the hair shafts. A further protective layer is then formed over each strand of hair by the peptones. This protects the hair from breakage and keeps it from falling.





Block with Procaine for Hair loss

Performing the block

Scalp Block: Technique and Applications. (n.d.). WFSA Resource Library. Retrieved April 17, 2024, from https://resources.wfsahq.org/atotw/scalp-block-technique-and-applications/

Blocking landmarks

Supraorbital Nerve

- This block is performed with the patient's head facing forward and eyes closed. The supraorbital nerve can be blocked as it exits through the orbit. The supraorbital notch is located by palpation, and the needle is introduced perpendicularly 1 cm medial to the notch. About 2 to 3 mL of LA is injected just superficial to the periosteum

Supratrochlear Nerve

The position for this block is similar to the supraorbital block. The supratrochlear nerve runs parallel to the supraorbital nerve about 1 fingerbreadth medial to it above the eyebrow. Once the supraorbital nerve is blocked, the needle is directed medially through the same insertion point and a subcutaneous injection of 2 to 3 mL here will block the supratrochlear nerve

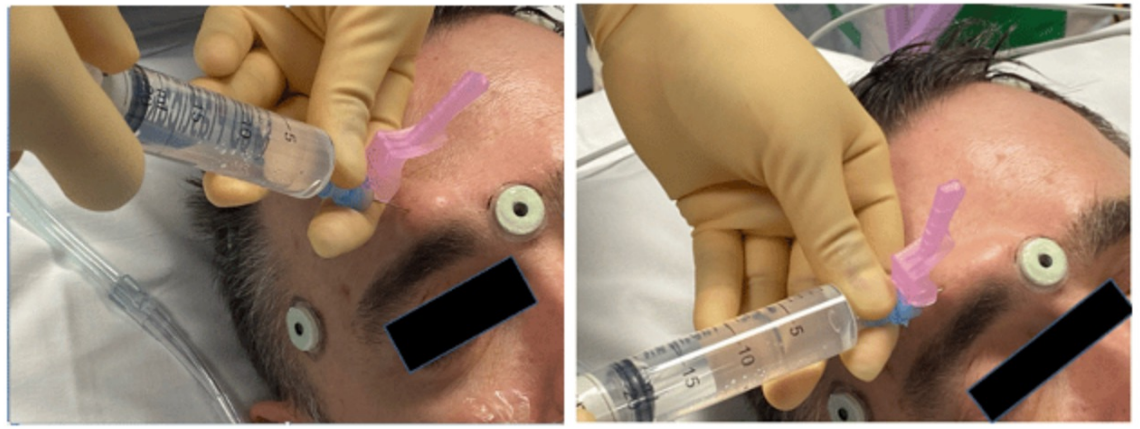


Figure 3 – Conduct of the suprorbital (left) and the supratrochlear (right) nerve block. The supratrochlear block is a medial extension of the supraorbital block

Scalp Block: Technique and Applications. (n.d.). WFSA Resource Library. Retrieved April 17, 2024, from https://resources.wfsahq.org/atotw/scalp-block-technique-and-applications/

Anesthetic options

- Lidocaine 1%
- Procaine 1% (10mg/ml) or 2% (20mg/ml)
- Long-acting LA agents (0.25% bupivacaine, 0.75% ropivacaine, or 0.25% levobupivacaine)

Maximum Doses of Anesthetic Agents

Agent	Without Epinephrine	With Epinephrine	Duration	Notes
Lidocaine	5 mg/kg (max 300mg)	7 mg/kg (max 500mg)	30-90 min	▪ 1% soln contains 10 mg/ml ▪ 2% soln contains 20 mg/ml
Mepivicaine	7 mg/kg	8 mg/kg		
Bupivicaine	2.5 mg/kg (max 175mg)	3 mg/kg (max 225mg)	6-8 hr	▪ 0.5% soln contains 5 mg/ml ▪ May cause cardiac arrest if injected intravascularly ▪ Do not buffer with bicarbonate
Ropivacaine	3 mg/kg			
Prilocaine	6 mg/kg			
Tetracaine	1 mg/kg	1.5 mg/kg	3hrs (10hrs with epi)	
Procaine	7 mg/kg	10 mg/kg	30min (90min with epi)	

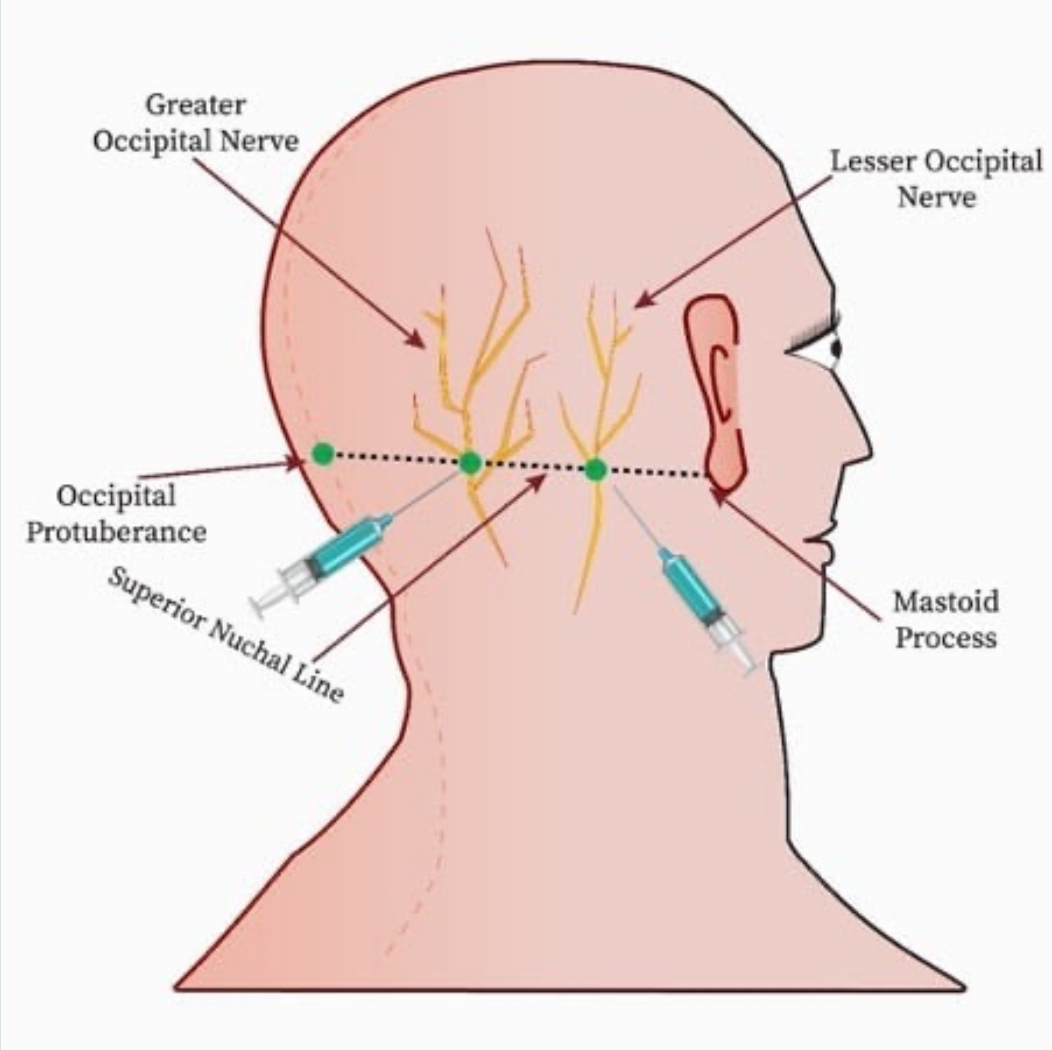
IV Procaine Reference

Procaine dosage 2 %	sodiumhydrogencarbonate dosage 8.4 %	Sodium chloride 0.9 %	Total volume
100 mg = 5 ml	20 ml	500 ml	525 ml
200 mg = 10 ml	40 ml	500 ml	550 ml
300 mg = 15 ml	60 ml	500 ml	575 ml
400 mg = 20 ml	80 ml	500 ml	600 ml
500 mg = 25 ml	100 ml	500 ml	625 ml

Table 1b: Table of dosage in case of using Procaine 2 %.

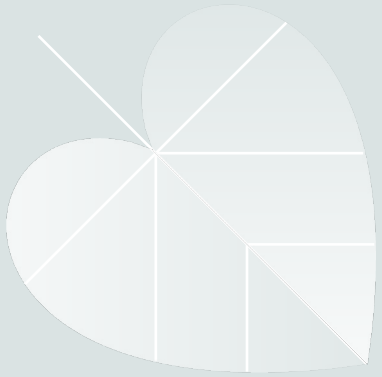
Blocking landmarks

- Greater Occipital Nerve: This block can be performed by turning the head to the side or with the patient sitting up. The greater occipital nerve can be blocked by infiltrating LA subcutaneously halfway between the occipital protuberance and the mastoid process, 2.5 cm lateral to the nuchal median line
- The best landmark is to palpate the occipital artery (found about 3 to 4 cm lateral to the external occipital protuberance along the superior nuchal line), and inject medial to the artery after careful aspiration. This should avoid potential intra-arterial injection. The needle is inserted at a 90 degree angle towards the occiput until bony contact is obtained, then withdrawn to make a subcutaneous injection here with 5 mL of LA to block the greater occipital nerve.



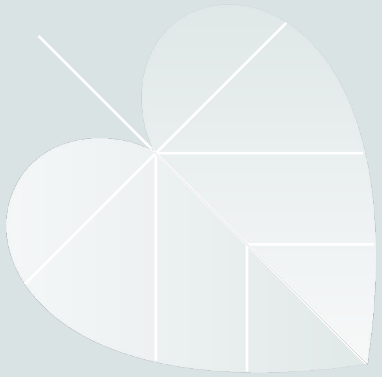
Scalp Block: Technique and Applications. (n.d.). WFSA Resource Library. Retrieved April 17, 2024, from https://resources.wfsahq.org/atotw/scalp-block-technique-and-applications/

Complications of block



- Anaphylaxis in response to LA
- Toxicity of LA. Epinephrine as an additive can lessen systemic absorption of LA and hence limit the acute rises in its plasma level. The anaesthetist must adhere to the maximum recommended LA dose and be vigilant in the first 15 minutes after the block to detect signs of toxicity.
- Haemodynamic changes and arrhythmias due to systemic absorption of epinephrine. Caution is advised in patients with coronary heart disease and negative aspiration recommended to avoid inadvertent intravascular injection.
- Vascular injury and hematoma formation due to proximity of nerves to blood vessels. (Note that the auriculotemporal nerve and the greater occipital nerve are adjacent to the superficial temporal and occipital arteries, respectively.)
- Pain. Intraneural injection may cause immediate severe pain. This risk is especially significant in the case of the supraorbital nerve block due to its anatomical position. A major advantage of the scalp block is that most of the nerves that innervate the scalp are superficial terminal sensory branches, and the risk of nerve damage is less than that for the deeper motor nerves.10
- Facial nerve palsy. This is a relatively rare complication and can occur during the auriculotemporal or zygomaticotemporal injections due to their proximity to the facial nerve. This is usually transient, due to blockade of the facial nerve by the LA rather than a permanent injury to the nerve. Causes range from deep injections, compression from a haematoma, oedema, or the pressure of an LA injection and vasoconstriction-induced neural ischaemia due to epinephrine.

Complications of block



- Facial nerve palsy. This is a relatively rare complication and can occur during the auriculotemporal or zygomaticotemporal injections due to their proximity to the facial nerve. This is usually transient, due to blockade of the facial nerve by the LA rather than a permanent injury to the nerve. Causes range from deep injections, compression from a haematoma, oedema, or the pressure of an LA injection and vasoconstriction-induced neural ischaemia due to epinephrine. Facial palsy occurs at a rate of 8.6% after an auriculotemporal block.11
- Intracerebral or subarachnoid injection. This has been reported in patients with bony defects or previous craniectomies.12
- Bradycardia and hypotension. A trigeminocardiac reflex during the scalp block can present as severe bradycardia and hypotension. It can be provoked by mechanical, electrical, or chemical stimulation of any sensory branch of cranial nerve V. This has been described with peripheral branches involved in the scalp block as well. Caution is advised while anaesthetizing the trigeminalnerve as rapid LA infiltration can compress or stretch the nerve, thus triggering this reflex.13
- Unilateral ptosis. This may occur due to excessive LA infiltration, leading to injury or oedema in the muscles responsible for eyelid retraction.
- Infection. This is possible, though rare.

Ozone and hair loss

> Panminerva Med. 1995 Sep;37(3):129-32.

Effects of ozonized autohaemotherapy on human hair cycle

E Riva Sanseverino [1], P Castellacci, C Misciali, P Borrello, N Venturo

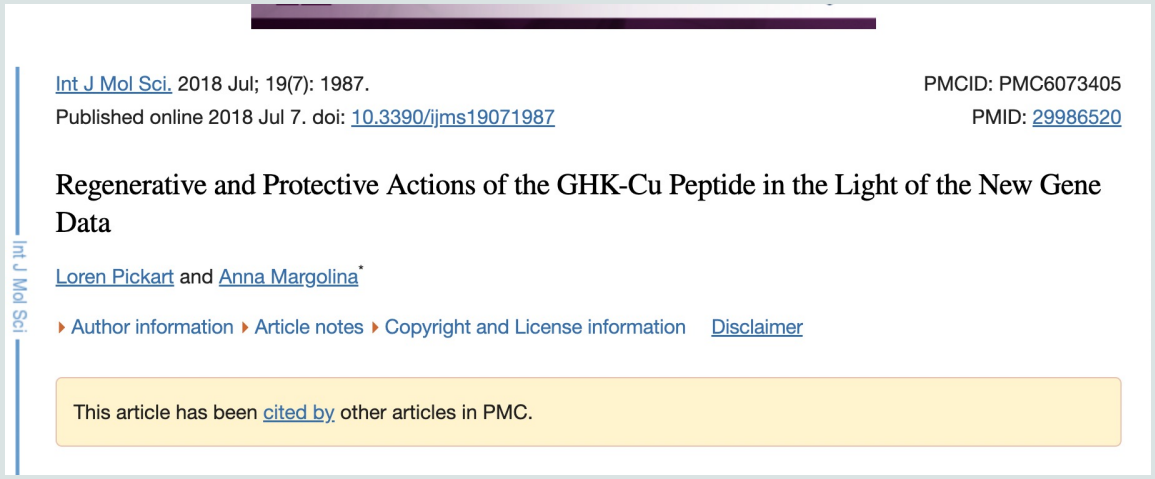
Affiliations + expand

PMID: 8869367

- Dosing: 20 gamma per injection 0.5 ml SQ
- Improved Blood Circulation: Ozone therapy improves blood flow to the scalp, ensuring that the hair follicles receive a better supply of nutrients and oxygen. The health and growth of hair may be supported by this.
- Strengthening Hair Follicles: Ozone therapy's improved oxygen delivery may aid in strengthening hair follicles and keeping them from becoming frail and fragile.
- Ozone has strong antibacterial characteristics that can help eradicate scalp infections and lessen inflammation, both of which may be factors in hair loss.
- Regulation of Sebum Production: Ozone therapy has the potential to balance sebum production on the scalp, thereby lowering too oily or dry conditions that may have an adverse effect on hair health.
- Reduced Inflammation: People with inflammatory scalp disorders such as scalp psoriasis or dermatitis, which can cause hair loss, may benefit from ozone therapy's anti-inflammatory benefits.
- Ozone therapy can stimulate hair development and lessen hair loss by enhancing the general health of the scalp and hair follicles.

GHK-CU FOR Hair loss

- Restores replicative vitality to fibroblasts after radiation therapy
- Skin regeneration -Effects in cosmetic products
- Hair Growth
- Reduce fine lines and wrinkles
- Reduce photo damage and hyperpigmentation
- Reduce inflammation and free radical damage
- Increase hair growth and thickness, enlarge hair follicle size
- Superior to minoxidil
- No rebound loss



Int J Mol Sci. 2018 Jul; 19(7): 1987.
Published online 2018 Jul 7. doi: 10.3390/ijms19071987
PMCID: PMC6073405
PMID: 29986520

Regenerative and Protective Actions of the GHK-Cu Peptide in the Light of the New Gene Data

Loren Pickart and Anna Margolina*

Author information · Article notes · Copyright and License information Disclaimer

This article has been cited by other articles in PMC.

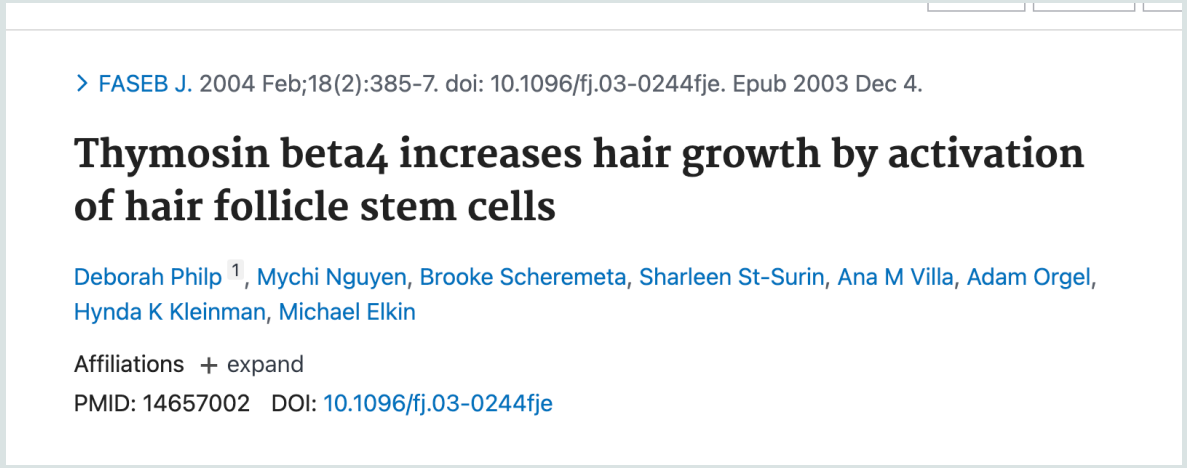
Int J Mol Sci

Pickart, L., & Margolina, A. (2018). Regenerative and Protective Actions of the GHK-Cu Peptide in the Light of the New Gene Data. *International journal of molecular sciences*, *19*(7), 1987. https://doi.org/10.3390/ijms19071987

Thymosin Beta-4

Thymosin beta-4 accelerates hair growth, in part, due to its effect on critical events in the active phase of the hair follicle cycle, including promoting the migration of stem cells and their immediate progeny to the base of the follicle, differentiation, and extracellular matrix remodeling.

Philp D, Nguyen M, Scheremeta B, St-Surin S, Villa AM, Orgel A, Kleinman HK, Elkin M. Thymosin beta4 increases hair growth by activation of hair follicle stem cells. FASEB J. 2004 Feb;18(2):385-7. doi: 10.1096/fj.03-0244fje. Epub 2003 Dec 4. PMID: 14657002.



> FASEB J. 2004 Feb;18(2):385-7. doi: 10.1096/fj.03-0244fje. Epub 2003 Dec 4.

Thymosin beta4 increases hair growth by activation of hair follicle stem cells

Deborah Philp [1], Mychi Nguyen, Brooke Scheremeta, Sharleen St-Surin, Ana M Villa, Adam Orgel, Hynda K Kleinman, Michael Elkin

Affiliations + expand

PMID: 14657002 DOI: 10.1096/fj.03-0244fje

Thymosin Beta-4: Clinical Effects (cont.)

- Potent anti-inflammatory for wounds, muscles, joints
- Reduces acute/chronic pain
- Prevents adhesion and fibrous band formation in injured tissue- muscles, tendons, ligaments
- Protects and restores neurons post TBI
- Promotes hair growth

BPC-157 Mechanism of Action

Increase nitric oxide

Stimulate expression of early growth response 1 gene – responsible for cytokine and growth factor generation and early extracellular matrix (collagen) formation

Can protect organs and to prevent ulcers of the stomach.

Promotes healing and cell repair

Hair Peptide Trio

- **GHK-CU- Naturally occurring copper complex that can activate healing, decreases inflammation, and has antioxidant and immune boosting effects.** Can initiate growth and repair of hair follicles.

- **TB4- Natural peptide produced by the thymus gland that is naturally released that is released in body in response to injury to stimulate healing, decrease inflammation, and increase follicle repair.** Can regulate actin levels to stimulate tissue cell growth and promote blood vessel formation.

- **BPC 157- Natural peptide found in the gastric juices in our gut that can help with tissue repair.** Can accelerate healing, increases growth hormone receptors, anti-inflammatory, promotes angiogenesis (blood vessel formation). Can promote tissue healing through signaling pathways.

Platelet Rich Plasma and Platelet Rich PRF

- PRP and PRF are both derived from your own blood – just a small sample taken at the start of your treatment. Special processing techniques are used to separate the components of your blood – things like platelets, fibrin, plasma (the liquid part of blood), and red and white blood cells.

PRP VS PRF

Key differences between PRP and PRF:

- Both platelets and fibrin are involved in your body's natural healing processes, and PRP and PRF both contain higher-than-normal numbers of platelets for enhanced healing action. But there are some important differences between the two products, beginning with how they're processed
- PRP is processed at a higher speed: In order to make both PRP and PRF, your blood sample is spun at a high speed, allowing heavier components of your blood to sink to the bottom of the container, while lighter platelets and plasma stay at the top. This process makes it easier to extract only the platelets and plasma – or PRP.
- PRF is processed at a slower speed. As a result, the finished product still retains some white blood cells, stem cells, and of course, fibrin. That means there are more carrying healing factors in PRF – specifically, factors associated with platelets, fibrin, and stem cells. The slower speed also has the potential to cause less damage to individual cells, which is especially important when harvesting stem cells for healing.
- PRF typically has a higher platelet count: This might surprise you, given the two products' names. But because PRP is spun more quickly, many of the platelets can wind up being left out of the final product. The number of platelets will still be higher than what's normally found in your blood – generally from 3-5 times higher.

Key Difference!

PRP production uses an anticoagulant to prevent your blood sample from clotting while it's processed. In PRF production, fibrin (a component of clots) is allowed to form. The final PRF product forms a sort of scaffold or matrix that enables platelets to be released more slowly once they're injected.

In fact, this is one of the biggest differences in terms of how each product is used: PRP releases more platelets and growth factors more quickly, while PRF releases platelets and growth factors more slowly after injection.

Comparative Study

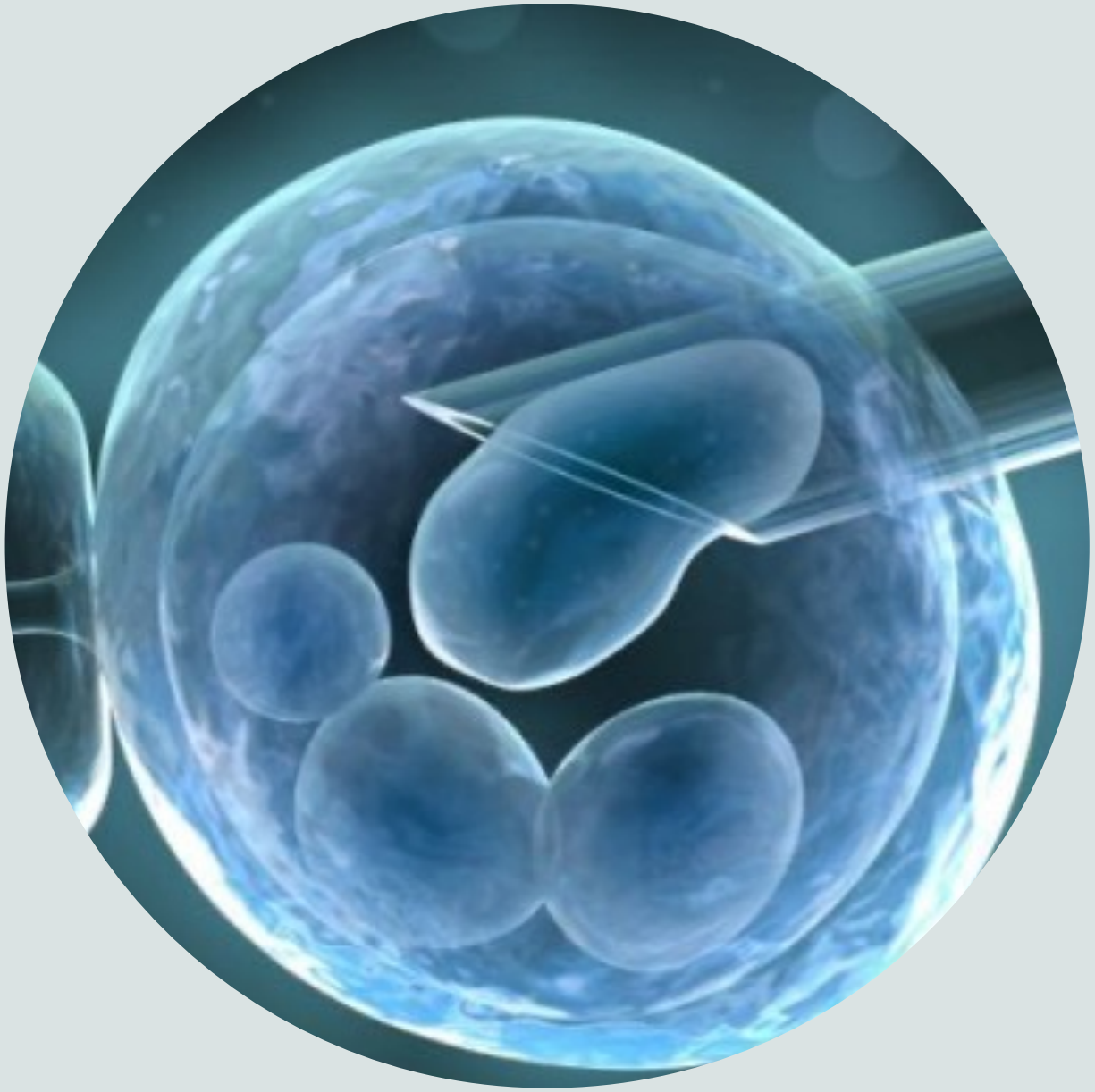
> Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009 Nov;108(5):707-13.
doi: 10.1016/j.tripleo.2009.06.044.

A comparative study of platelet-rich fibrin (PRF) and platelet-rich plasma (PRP) on the effect of proliferation and differentiation of rat osteoblasts in vitro

Variables to consider with PRP/PRF

MANY VARIABLES THAT CAN AFFECT PRP's SUCCESS:

- Age of Patient
- Type of Centrifuge
- Type of PRP Kit
- Activated/Not-Activated
- How Many Spins
- Patient's Overall Health
- Temperature of PRP
- Patient's Medications
- Person Preparing PRP
- If Patient Exercises Before Draw



Other Options?

- Tissue allograft:
- No Stick to the patient
- No extra time to spin
- Over time, the body naturally produces fewer growth factors for repair and rebuilding as represented in the chart (above). This indicates the slowing bio-availability of growth factors as we age which PRP therapy relies on.

Hair Restoration Peptide Dosing

DOSING:

- 5MG GHKC-CU (0.5ML) injection,
  1500MCG TB4 (0.5ML)
- 1000MCG BPC-157 (0.5ml)

In combo with PRF or Autologous Growth Factors

At home:

- PTD-DM +VP acid spray qhs

GHK-CU Spray Options

GHK-Cu 2mg/mL Cream

Apply topically to scalp QD for hair growth

GHK-Cu 5mg/mL Spray

Apply topically to scalp QD for hair growth

GHK-Cu 5mg/mL Dropper

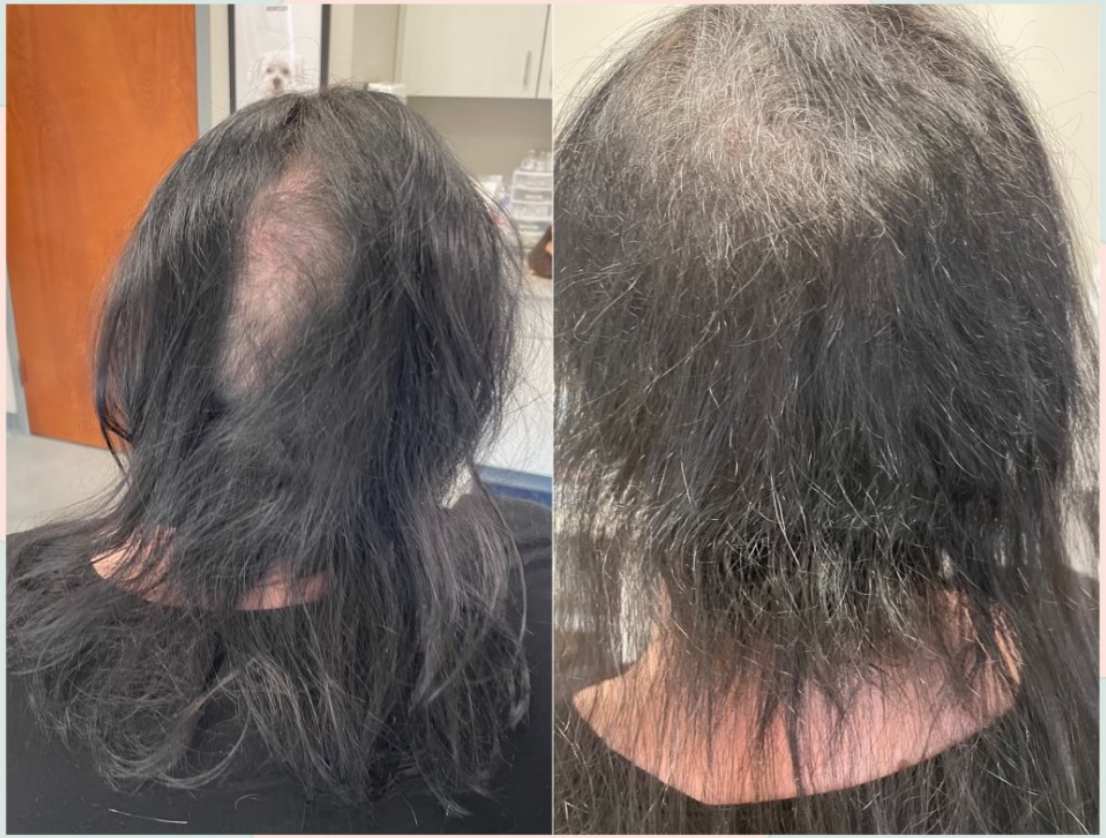
Apply topically to scalp QD for hair growth

Autologous growth factor 1 treatment + GHK-CU
6 months later

Autologous growth factor 1 treatment + GHKCU+TB4+ BPC157 injections

- 40-year-old female post viral hair loss
- 2 treatments of growth factors + TB4 + GHKCU + BPC157

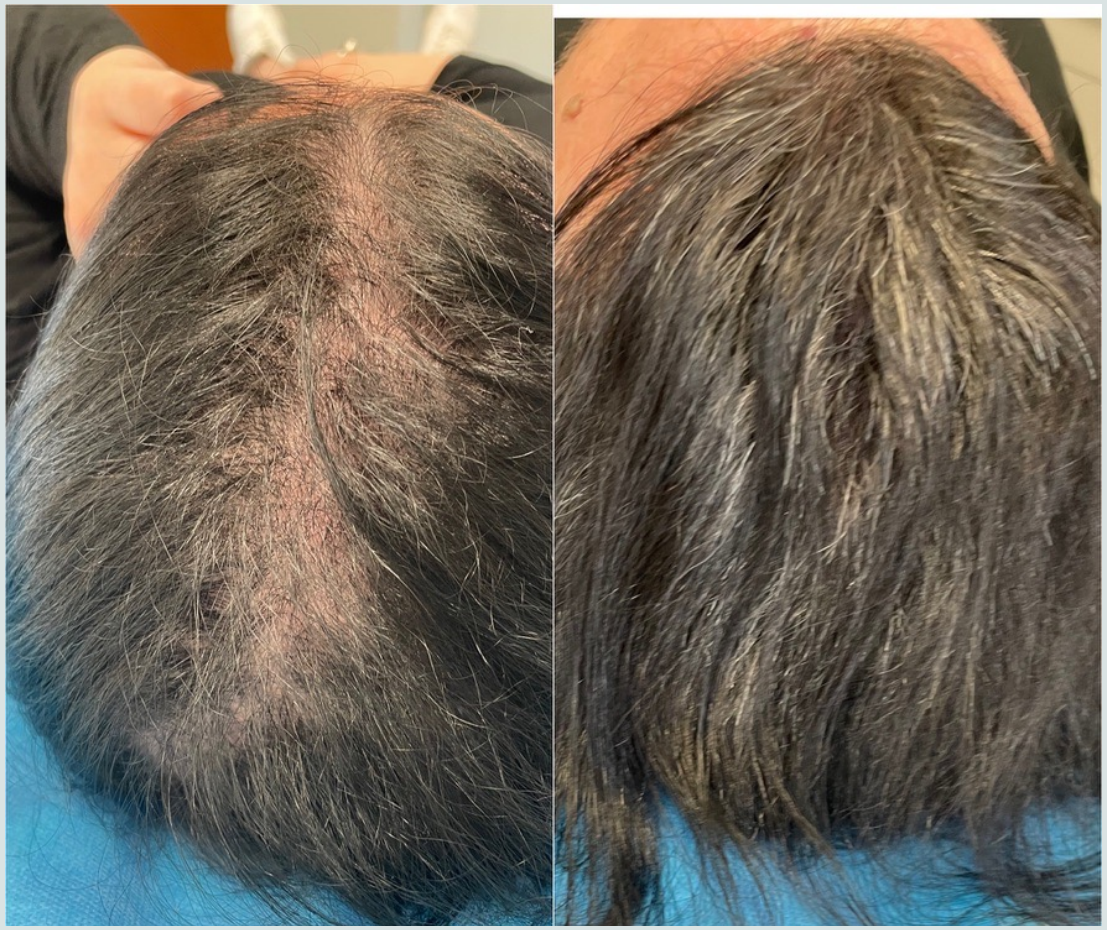
Advanced Hair Protocol

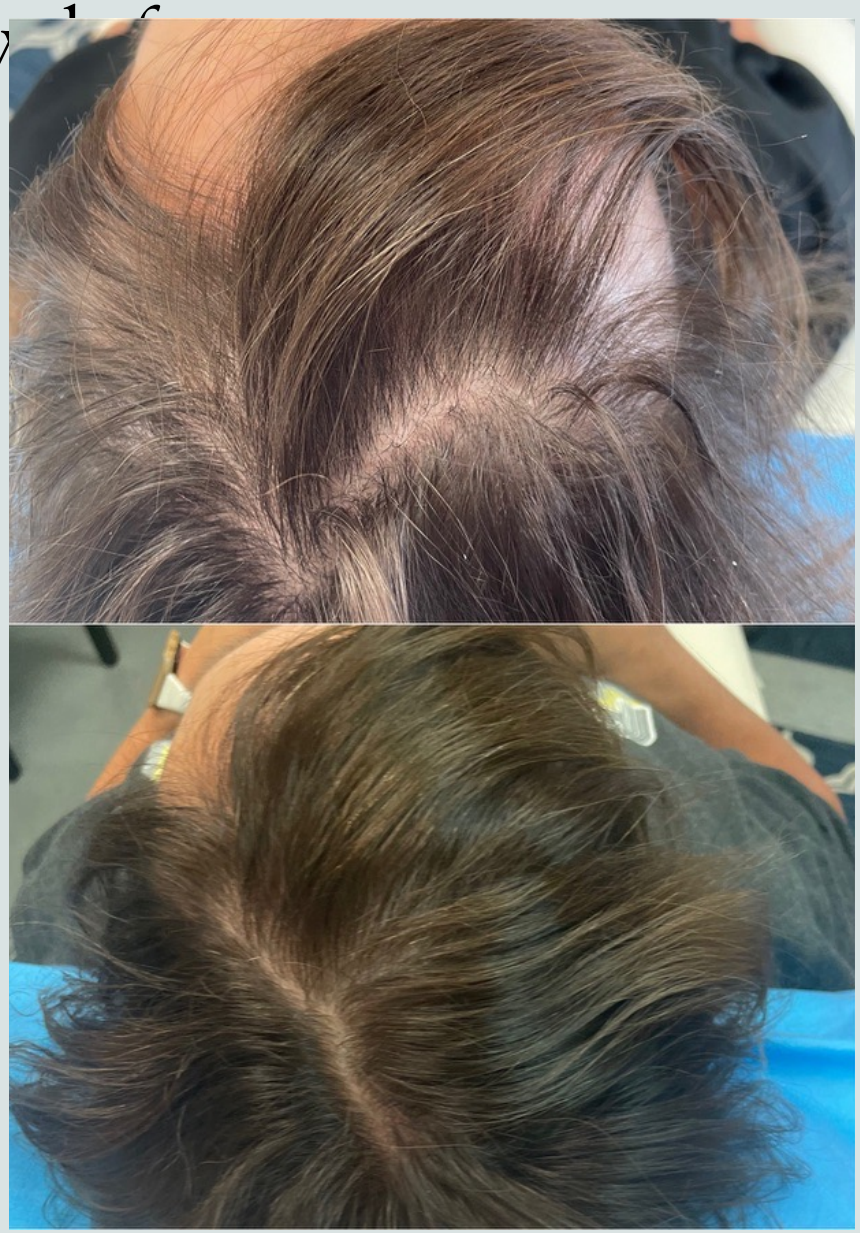


BEFORE AFTER

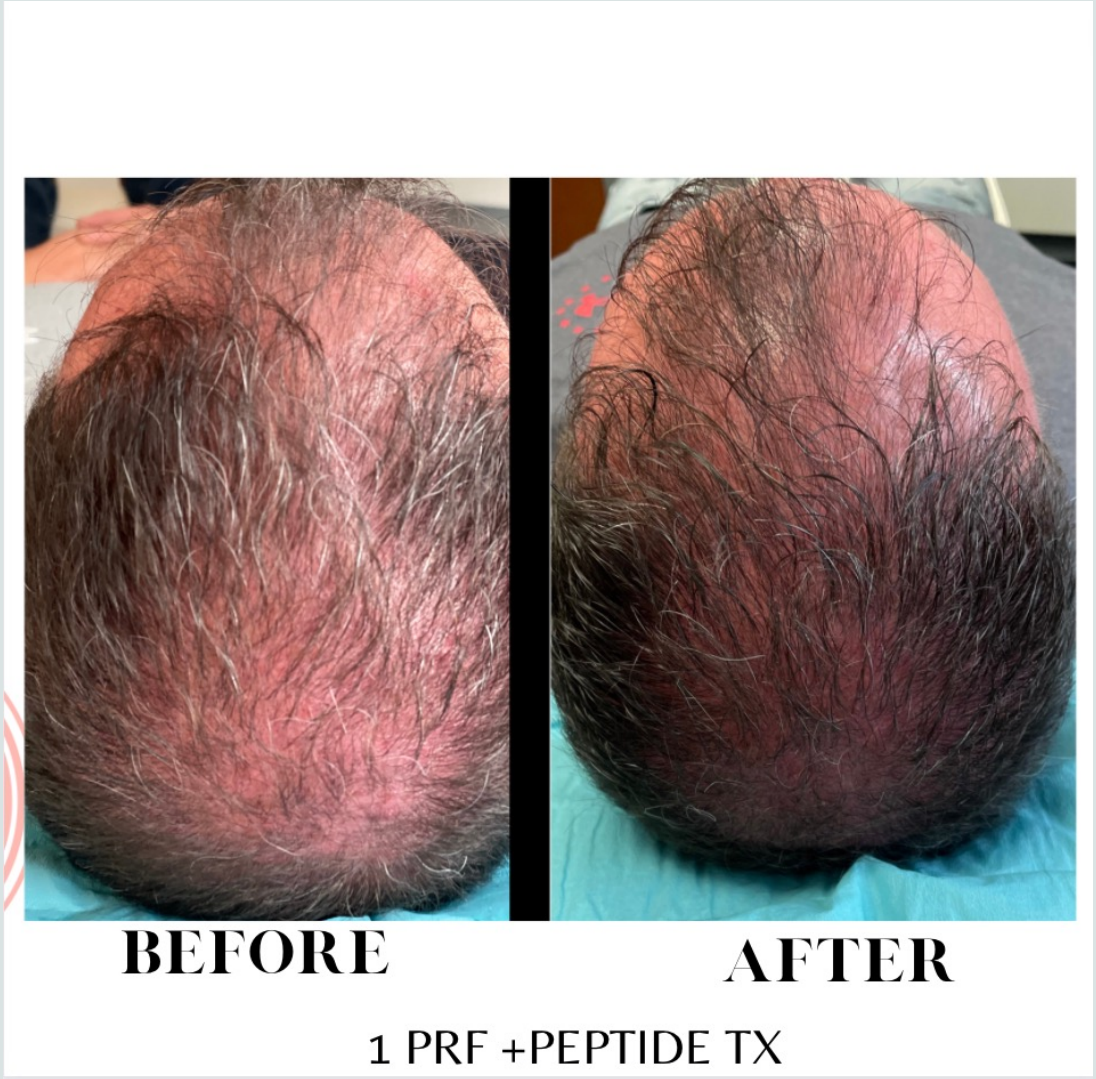
@YooDirectHealth_Aesthetics

3 treatments peptides + Advance grow





Clinical cases- 1 tx PRF + GHKCU +TB4+ BPC157



Advanced hair protocol

Advanced hair protocol

Sources

- Alster, T. S., & Graham, P. M. (2018). Microneedling: A Review and Practical Guide. Dermatologic Surgery: Official Publication for American Society for Dermatologic Surgery [et Al.], 44(3), 397–404. https://doi.org/10.1097/DSS.0000000000001248
- Alster, T. S., & Li, M. K. Y. (2020). Microneedling of Scars: A Large Prospective Study with Long-Term Follow-Up. Plastic and Reconstructive Surgery, 145(2), 358. https://doi.org/10.1097/PRS.0000000000006462
- Christen, M.-O. (2022). Collagen Stimulators in Body Applications: A Review Focused on Poly-L-Lactic Acid (PLLA). Clinical, Cosmetic and Investigational Dermatology, 15, 997–1019. https://doi.org/10.2147/CCID.S359813
- Convery, C., Davies, E., Murray, G., & Walker, L. (2021). Delayed-onset Nodules (DONs) and Considering their Treatment following use of Hyaluronic Acid (HA) Fillers. The Journal of Clinical and Aesthetic Dermatology, 14(7), E59–E67.
- Dou, Y., Lee, A., Zhu, L., Morton, J., & Ladiges, W. (2020). The potential of GHK as an anti-aging peptide. Aging Pathobiology and Therapeutics, 2(1), 58–61. https://doi.org/10.31491/apt.2020.03.014
- Effects of ozonized autohaemotherapy on human hair cycle—PubMed. (n.d.). Retrieved April 17, 2024, from https://pubmed.ncbi.nlm.nih.gov/8869367/
- FAAO, D. B. C. N. (2023, April 20). Reviving Your Hair with Platelet-Rich Plasma and Ozone (A Promising Frontier of Regenerative Medicine). Interactive Health Clinic. https://interactivehealthclinic.com/reviving-your-hair-with-platelet-rich-plasma-and-ozone/
- Fundamentals of the Use of Ozone Therapy in the Treatment of Aesthetic Disorders: A Review. (n.d.). Retrieved March 17, 2024, from https://www.scirp.org/journal/paperinformation?paperid=113644
- Haddad, S., Galadari, H., Patil, A., Goldust, M., Al Salam, S., & Guida, S. (2022). Evaluation of the biostimulatory effects and the level of neocollagenesis of dermal fillers: A review. International Journal of Dermatology, 61(10), 1284–1288. https://doi.org/10.1111/ijd.16229
- Ionization Therapy—Hair Regrowth With Ozone Therapy! - By Looks Forever Hair And Skin Aesthetic Clinic. (n.d.). Lybrate. Retrieved April 17, 2024, from https://www.lybrate.com/topic/ionization-therapy-hair-regrowth-with-ozone-therapy/1f7a64103f48bbfa78cb91d830fcbd13
- Juhasz, M. L. W., & Cohen, J. L. (2020). Microneedling for the Treatment of Scars: An Update for Clinicians. Clinical, Cosmetic and Investigational Dermatology, 13, 997–1003. https://doi.org/10.2147/CCID.S267192
- King, M., Walker, L., Convery, C., & Davies, E. (2020). Management of a Vascular Occlusion Associated with Cosmetic Injections. The Journal of Clinical and Aesthetic Dermatology, 13(1), E53–E58.
- Leonie, S., Tom, D., Hughes, C., Sebastian, C., & Peter, V. (n.d.). Investigating the Anatomic Location of Soft Tissue Fillers in Noninflammatory Nodule Formation: An Ultrasound-Imaging–Based Analysis.
- Machado, A. U., & Contri, R. V. (2022). Effectiveness and Safety of Ozone Therapy for Dermatological Disorders: A Literature Review of Clinical Trials. Indian Journal of Dermatology, 67(4), 479. https://doi.org/10.4103/ijd.ijd_152_22
- Malinda, K. M., Kleinman, H. K., Sidhu, G. S., Mani, H., Banaudha, K., Maheshwari, R. K., & Goldstein, A. L. (1999). Thymosin β4 Accelerates Wound Healing. Journal of Investigative Dermatology, 113(3), 364–368. https://doi.org/10.1046/j.1523-1747.1999.00708.x
- Mujahid, N., Shareef, F., Maymone, M. B. C., & Vashi, N. A. (2020). Microneedling as a Treatment for Acne Scarring: A Systematic Review. Dermatologic Surgery, 46(1), 86. https://doi.org/10.1097/DSS.0000000000002020
- Mysore, V. (2010). Mesotherapy in Management of Hairloss—Is it of Any Use? International Journal of Trichology, 2(1), 45–46. https://doi.org/10.4103/0974-7753.66914
- Nie, F., Wu, J., & Qin, Z. (2005). [Expression of thymosin beta 4 mRNA expression in keloid tissues and fibroblasts cultured from keloid and its significance]. Zhongguo Wei Zhong Bing Ji Jiu Yi Xue = Chinese Critical Care Medicine = Zhongguo Weizhongbing Jijiuyixue, 17(2), 80–83.
- Perls, T. (2013). The Reappearance of Procaine Hydrochloride (Gerovital H3) for Antiaging. Journal of the American Geriatrics Society, 61(6), 1024–1025. https://doi.org/10.1111/jgs.12278
- Pickart, L. (2008). The human tri-peptide GHK and tissue remodeling. Journal of Biomaterials Science. Polymer Edition, 19(8), 969–988. https://doi.org/10.1163/156856208784909435
- Pickart, L., & Margolina, A. (2018a). Regenerative and Protective Actions of the GHK-Cu Peptide in the Light of the New Gene Data. International Journal of Molecular Sciences, 19(7), 1987. https://doi.org/10.3390/ijms19071987
- Pickart, L., & Margolina, A. (2018b). Regenerative and Protective Actions of the GHK-Cu Peptide in the Light of the New Gene Data. International Journal of Molecular Sciences, 19(7), 1987. https://doi.org/10.3390/ijms19071987
- R, K., Kumar, A., Vinod Kumar, K., Sengupta, A., Kundal, K., Sharma, S., Pawar, A., Krishna, P. S., Alfatah, M., Ray, S., Tiwari, B., & Kumar, R. (2024). AagingBase: A comprehensive database of anti-aging peptides. Database: The Journal of Biological Databases and Curation, 2024, baae016. https://doi.org/10.1093/database/baae016
- Scalp Block: Technique and Applications. (n.d.). WFSA Resource Library. Retrieved April 17, 2024, from https://resources.wfsahq.org/atotw/scalp-block-technique-and-applications/
- Seiwerth, S., Milavic, M., Vukojevic, J., Gojkovic, S., Krezic, I., Vuletic, L. B., Pavlov, K. H., Petrovic, A., Sikiric, S., Vranes, H., Prtoric, A., Zizek, H., Durasin, T., Dobric, I., Staresinic, M., Strbe, S., Knezevic, M., Sola, M., Kokot, A., … Sikiric, P. (2021). Stable Gastric Pentadecapeptide BPC 157 and Wound Healing. Frontiers in Pharmacology, 12, 627533. https://doi.org/10.3389/fphar.2021.627533
- Seiwerth, S., Sikiric, P., Grabarevic, Z., Zoricic, I., Hanzevacki, M., Ljubanovic, D., Coric, V., Konjevoda, P., Petek, M., Rucman, R., Turkovic, B., Perovic, D., Mikus, D., Jandrijevic, S., Medvidovic, M., Tadic, T., Romac, B., Kos, J., Peric, J., & Kolega, Z. (1997). BPC 157's effect on healing. Journal of Physiology, Paris, 91(3–5), 173–178. https://doi.org/10.1016/s0928-4257(97)89480-6