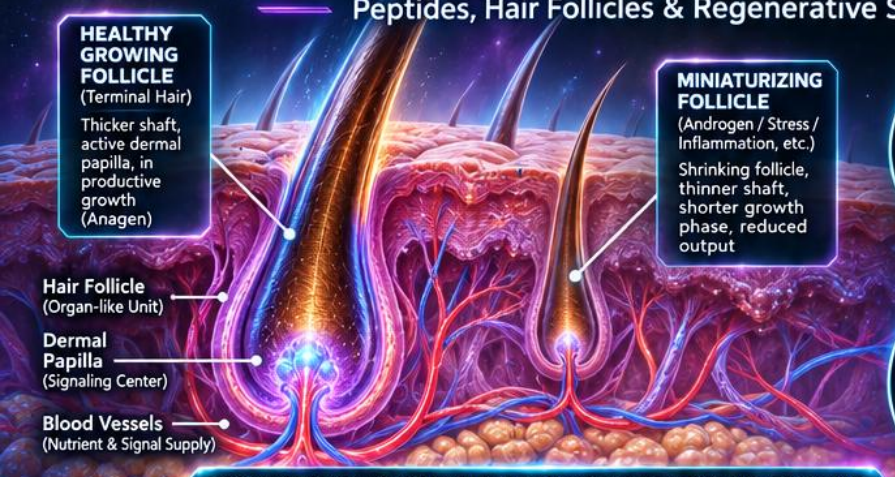
PEPTIDE PERSPECTIVES

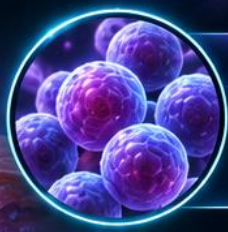
THE FUTURE OF HAIR RESTORATION

Peptides, Hair Follicles & Regenerative Science

HEALTHY GROWING FOLLICLE (Terminal Hair)
Thicker shaft, active dermal papilla, in productive growth (Anagen)

MINIATURIZING FOLLICLE (Androgen / Stress / Inflammation, etc.)
Shrinking follicle, thinner shaft, shorter growth phase, reduced output





DERMAL PAPILLA CELLS
Signaling cells that help control follicle activation, growth and hair shaft development



HAIR SHAFT STRUCTURE
A keratin-rich fiber with a protective cuticle that determines strength, thickness and hair quality

HAIR FOLLICLES ARE MINIATURE SELF-RENEWING ORGANS
Dynamic, cyclical structures that sense signals, respond to their environment, and can repeatedly regenerate new hair over time.

WHY HAIR RESTORATION IS COMPLEX

- Hair loss has multiple causes: androgen-related miniaturization, stress-related shedding, inflammation, and scarring disorders.
- Shedding is not the same as permanent follicle damage.
- Established benchmarks still matter: topical minoxidil and oral finasteride have FDA-approved uses for certain pattern-hair-loss conditions.

FOUR BIOLOGICAL PATHWAYS

HAIR CYCLE
Anagen, Catagen, Telogen, Exogen; follicles must re-enter productive growth.

DERMAL PAPILLA SIGNALING
Cell communication helps control follicle activation and shaft development.

WNT / BETA-CATENIN
Regenerative growth signaling, central to follicle development.

SCALP ENVIRONMENT
Inflammation, collagen, blood vessels, extracellular matrix, and barrier health influence follicle support.

8 RESEARCH SUBJECTS & EVIDENCE

AHK-Cu



- Most direct follicle experiment.
- Ex vivo human follicles and dermal papilla cells.
- No established controlled human scalp-regrowth benefit.

GHK-Cu



- Copper peptide / skin remodeling.
- Indirect scalp-support hypothesis.
- Hair-specific outcomes unproven.

Pal-GHK



- Lipid-modified cosmetic matrix peptide.
- Topical formulation potential.
- No demonstrated scalp regrowth.

Pal-AHK



- Lipid-modified AHK relative.
- Exploratory formulation concept.
- No direct clinical hair-regrowth evidence.

PTD-DBM



- Wnt-pathway regenerative strategy.
- Cell and animal findings.
- Human safety / effectiveness unestablished.

Matrixyl



- Collagen / extracellular matrix signaling.
- Cosmetic skin evidence.
- Not proven to increase scalp hair density.

KPV



- Anti-inflammatory signaling.
- Indirect relevance for inflammatory scalp environments.
- Not an established hair-regrowth treatment.

Rigin



- Cosmetic skin-signaling peptide.
- Scalp-comfort / skin-quality hypothesis.
- Hair-density benefit unproven.

WHAT GOOD TRIALS MUST MEASURE



- Hair count per area
- Terminal hair density
- Shaft thickness
- Shedding and durability
- Standardized photography
- Patient-reported outcomes
- Adverse events and tolerability

WHERE SCIENCE IS HEADING



- Better follicle-targeted topical formulations
- Precision treatment matched to the cause of hair loss
- Comparing peptide adjuncts against established therapy
- Better delivery, stability, and safety testing

PROMISING HAIR-FOLLICLE BIOLOGY DOES NOT EQUAL PROVEN HUMAN HAIR REGROWTH.
NO EXPERIMENTAL PEPTIDE HERE IS AN FDA-APPROVED GENERAL SCALP-HAIR REGROWTH TREATMENT.

Educational research overview | November 2026 | Not medical advice