PEPTIDE PERSPECTIVES®

THE FUTURE OF HEALING

Peptides Being Studied for Tissue Repair & Regeneration



THE BIG PICTURE

- Healing is not one switch — it's a coordinated process that:
  1. **Contains damage** (stabilizes the area and limits further injury).
  2. **Recruits cells** (brings the right repair cells to the site).
  3. **Builds new tissue** (lays down collagen and a new structural matrix).
  4. **Strengthens tissue over time** (organizes and matures the new tissue).
- The real goal is **restored function** — not just less pain.

FOUR JOBS THE BODY MUST GET RIGHT

INFLAMMATION

- Productive early repair (helps clear debris, signals for repair, and sets the stage for healing).
- Excessive or prolonged inflammation can impair healing and lead to poorer tissue quality.

CELL MIGRATION

- Cells need to move into the injured area (e.g., fibroblasts, immune cells, and stem-like cells).
- Involves **actin** (the cell's internal "motor" system) that drives movement and wound closure.
- **Adequate circulation** helps deliver the cells, oxygen, and nutrients needed for repair.

COLLAGEN & EXTRACELLULAR MATRIX (ECM)

- Provides the structural framework for new tissue.
- **Fibroblasts** are key repair cells that produce collagen and other ECM components.
- **Collagen organization** (alignment and quality) is critical for tissue resilience and strength.

TISSUE REMODELING

- Matures and refines the new tissue (e.g., scar maturation and improved structure).
- **Blood vessels** adapt (angiogenesis and vascular remodeling) to support long-term tissue health.
- Muscle regains strength and coordination, helping to restore normal function and performance.

8 RESEARCH SUBJECTS & EVIDENCE

BPC-157

- **Mechanism:** Broad preclinical repair signal (multiple repair pathways).
- **Repair interest:** Tendon, ligament, muscle, gut.
- **Evidence:** Extensive animal data; very limited human evidence.

EVIDENCE: PRECLINICAL

THYMOSIN BETA-4

- **Mechanism:** Actin regulation and cell migration.
- **Repair interest:** Surface wounds, corneal repair, tissue remodeling.
- **Evidence:** Small human ophthalmic research.

EVIDENCE: SMALL HUMAN STUDY

TB-500 FRAGMENT

- **Mechanism:** Proposed actin-associated fragment activity.
- **Repair interest:** Soft-tissue repair themes (e.g., tendon, ligament, muscle).
- **Evidence:** Not equivalent to full-length Tβ4; no validated human trials.

EVIDENCE: PRECLINICAL

GHK-Cu

- **Mechanism:** Fibroblasts, collagen synthesis, and matrix turnover.
- **Repair interest:** Skin and extracellular matrix (ECM) health and repair.
- **Evidence:** Topical/cosmetic human data; deep-tissue healing unproven.

EVIDENCE: LIMITED HUMAN

KPV

- **Mechanism:** Inflammatory and epithelial signaling (e.g., modulates pro-inflammatory pathways).
- **Repair interest:** Useful for inflammation-related tissue environments (e.g., skin, gut, mucosa).
- **Evidence:** Cell and animal evidence.

EVIDENCE: PRECLINICAL

LL-37

- **Mechanism:** Antimicrobial and innate immune signaling (helps control microbes and modulate inflammation).
- **Repair interest:** Chronic wound biology (e.g., hard-to-heal or infection-prone wounds).
- **Evidence:** Small human topical wound trial.

EVIDENCE: SMALL HUMAN STUDY

ARA-290 (CIBINETIDE)

- **Mechanism:** Tissue-protective / inflammatory signaling (e.g., modulates cytokines and supports cell survival).
- **Repair interest:** Small-fiber nerve injury (e.g., neuropathic conditions).
- **Evidence:** Small controlled human studies in selected neuropathies.

EVIDENCE: SMALL HUMAN STUDY

MGF

- **Mechanism:** IGF-1 splice-variant / muscle-cell signaling (associated with muscle repair and growth pathways).
- **Repair interest:** Muscle satellite-cell biology (muscle repair and adaptation).
- **Evidence:** Laboratory and animal research; no human synthetic-MGF therapy trials.

EVIDENCE: PRECLINICAL

WHY THE DETAILS MATTER

HOW TO READ THE EVIDENCE

- A study in eye drops, leg ulcers, or neuropathy answers a specific question only (e.g., corneal healing, wound closure, or nerve symptoms) — it can't be assumed to apply to all tissues or injuries.
- Animal findings are promising but not proof of human benefit (human biology and outcomes can differ).
- Formulation and route matter (e.g., topical, local, or systemic use can lead to different effects and levels of evidence).
- None of these compounds is FDA-approved in the U.S. as a general tissue-regeneration treatment.

WHERE SCIENCE IS HEADING

- **More precise inflammation control** — enough to support repair without blocking the healing process.
- **Better local delivery** — such as hydrogels and advanced wound dressings that keep peptides at the site longer and improve effect.
- **Stronger functional outcomes** — including mobility, tissue strength, durable wound closure, nerve function, and return to activity.
- **Smarter tissue remodeling and scar control** — to build stronger, more organized, and more resilient tissue.
- **Tailored regenerative medicine** — matching the right compound(s) and approach to the specific tissue (e.g., skin, tendon, muscle, nerve) and type of injury.



PROMISING BIOLOGY DOES NOT YET EQUAL PROVEN HUMAN REGENERATION.

Educational research overview | November 2026 | Not medical advice