Peptides In Action

Real-World Applications in Podiatry

The Medicine, Podiatry & Economics Conference
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In Medicine

What do we study?

- **Diseases**
- Etiologies
- Triggers
- Risk Factors
- Procedures
- Drug treatment
- Complications

- **Goal:**

Prescribed treatment / protocol / surgery will erase or arrest the disease progression.

What if we focus on the cell & its function?

Focus on preserving health

Understand the body's capacity to heal

The inherent drive for Homeostasis!

Goal

To avoid the downside of aging that triggers disease

As we age ; there is decrease in signaling agents after 30

Focus on Aging and Diseases
Loss of cellular efficiency
Cell damage - senescence

W. Seeds. Peptide Protocols Volume 1, 2020

What are Peptides ?

Endogenous signaling tools that restore homeostasis

50-100 amino acids connected by a peptide bond

Synthesized by ribosomes via mRNA, exist in all cells

Over 7000 naturally occurring peptides in the body

60 FDA approved peptide medicine
140 in therapeutic treatments
> 500 in preclinical development

Can re-create these signaling agents in the body

- Insulin – 51 amino acid peptide
- Glucagon
- Oxytocin
- Gonadrotrophin releasing hormone
- Vasopressin
- Somatostatin
- Glutathione

Peptides

- Aid in signaling
- Target cellular function, signaling pathways and root cause
- Immune modulators
- Have a short ½ life in the body
- They signal- work – exit
- Give the cells what they need to function efficiently
- Support metabolic flexibility
- Modulate inflammatory response

- **Metabolism**
- **Immunity**
- **Inflammation**

Key Actions of Peptides

Interact between:

- hormones
- neurotransmitters
- growth factors
- ion channel control
- ligands
- anti-infective properties

of the cell function

Function as therapeutics - homeostasis

Offset cellular senescence

Amerliorate tissue, bone, muscle healing and function

Support immune response after injury and during repair

Regain neuromuscular functioning

Preserve collagen / extracellular matrix

Minimize soft tissue, kidney, cardiac , liver and pulmonary fibrosis

Treat anxiety, depression and improve cognition and memory

Improve recovery from training (change landscape for athletes)

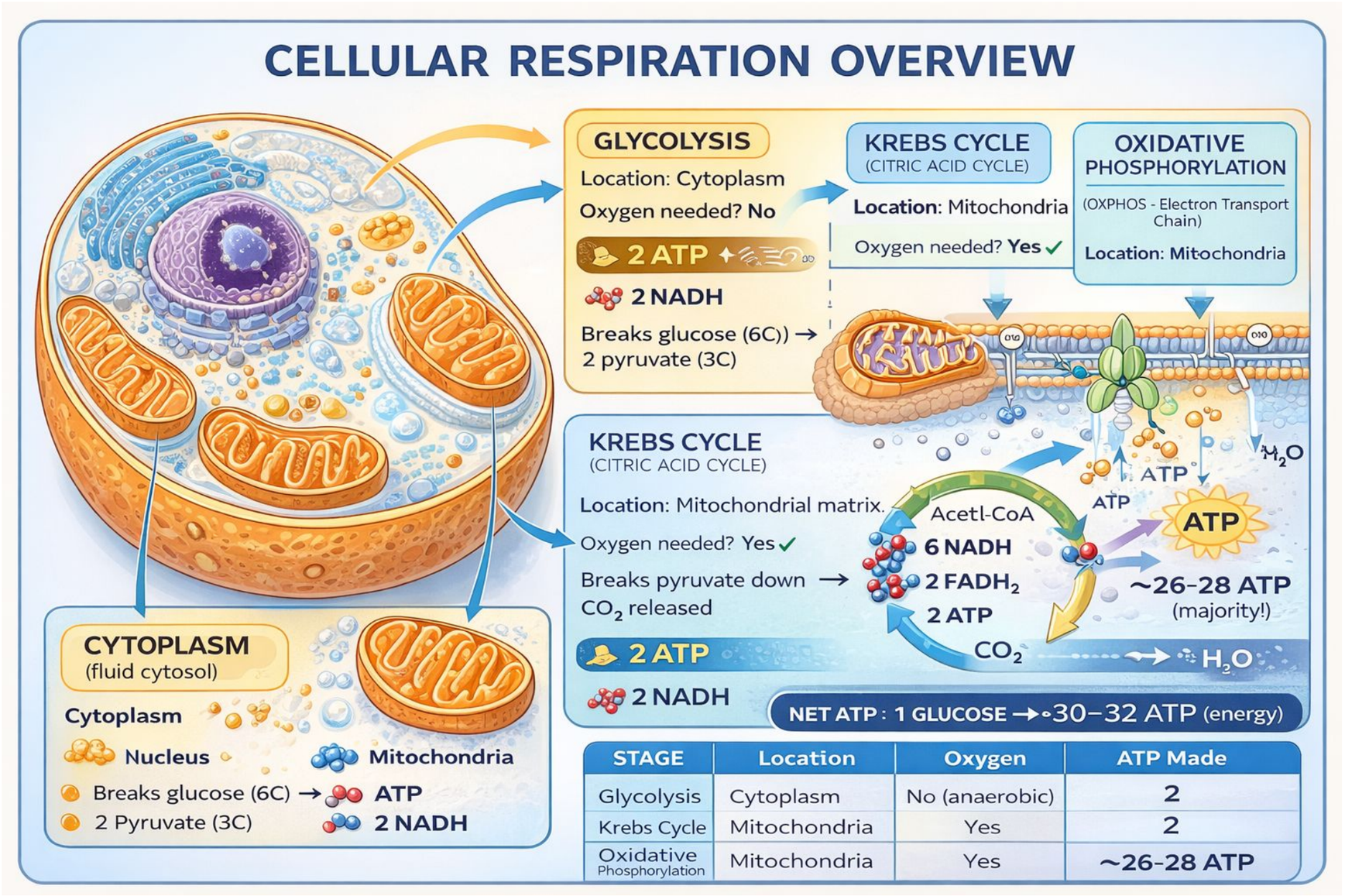
Adaptation
Mitochondria biogenesis

Stress

Cellular dysfunction

Epigenetic changes

Peptides restore homeostasis →



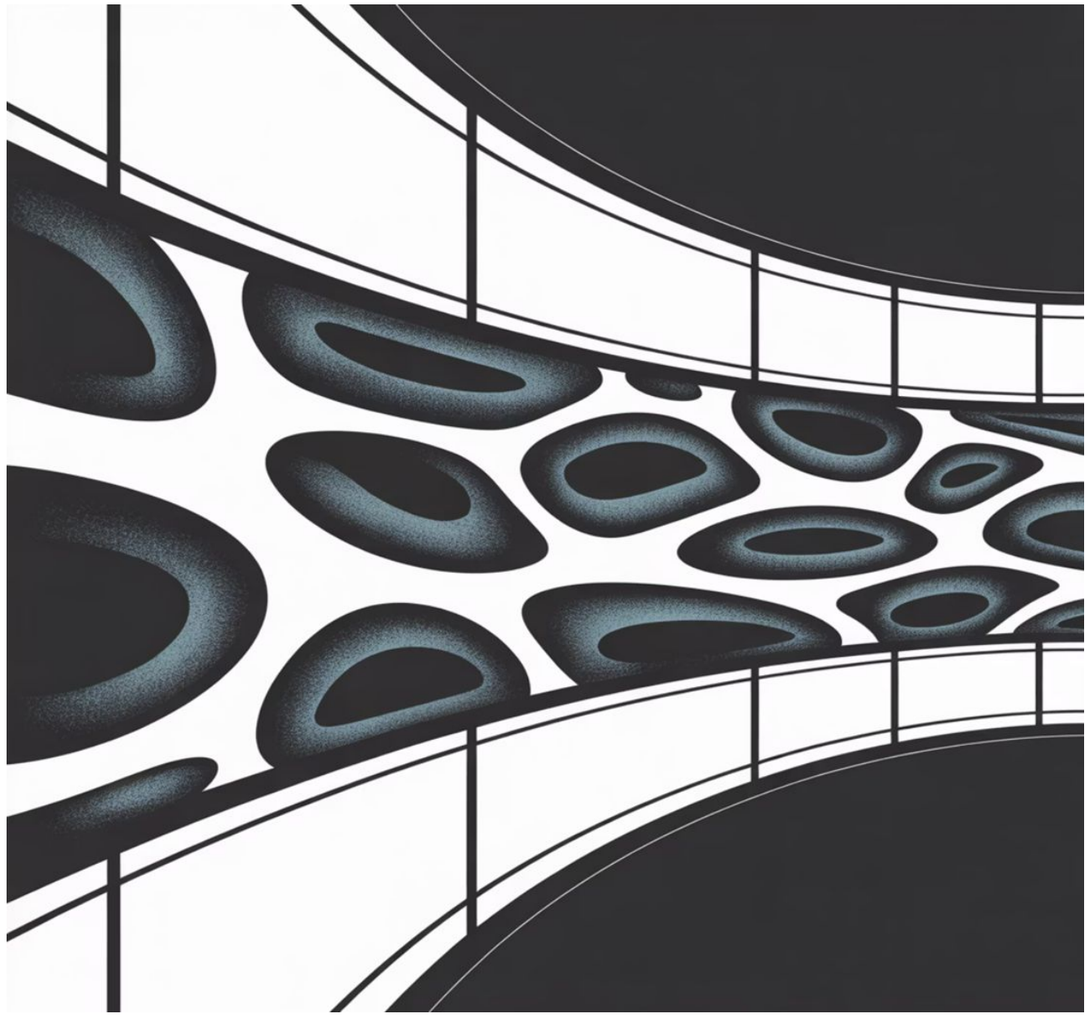
STAGE	Location	Oxygen	ATP Made
Glycolysis	Cytoplasm	No (anaerobic)	2
Krebs Cycle	Mitochondria	Yes	2
Oxidative Phosphorylation	Mitochondria	Yes	~26-28 ATP

Understanding BPC-157: The Vascular Healing Peptide

- BPC-157 (Body Protection Compound-157) is a synthetic peptide derived from a protective protein naturally present in human gastric juice.

- 15 amino-acid sequence (pentadecapetide)

Gly-Glu-Pro-Pro-Pro-Gly-Lys-Pro-Ala-Asp-Asp-Ala-Gly-Leu-Val



How It Works

BPC –157 is a signaling coordinator, orchestrating multiple repair pathways

Key Actions

1. Promote tissue healing
2. Support Angiogenesis
3. Protect the gut lining
4. Modulate inflammation
5. Neuroprotective potential

Clinical Pearl: BPC-157 is often called the "vascular healing peptide" because its primary strength is enhancing blood flow to damaged areas — critical for wound healing and post-surgical recovery in the lower extremities.

HOW ?

1. Tissue Healing

- Nitric Oxide (NO) Signaling/ Enhance mitochondria function
- Cytoskeletal & Cell Migration
- Interaction with Growth & Repair Hormones

NO Signaling

Stimulates **eNOS** (endothelial nitric oxide synthase) → ↑ **NO** → **vasodilation** & **increased microcirculation**

Modulates **NO–cGMP** pathway for improved **blood flow** and reduced oxidative stress

Result

Better oxygen/nutrient delivery to injured areas

Cell Migration

Influences the **FAK–paxillin** complex → regulates **actin** cytoskeleton dynamics → enhances **fibroblast migration**

Supports **extracellular matrix remodeling**

Result

Speeds closure of wounds and ligament / tendon repair

Interaction with Growth & Repair Hormones

↑ Expression of GH receptor and possibly IGF-1 sensitivity in damaged tissue

Synergistic effects with systemic repair mechanisms

Result

Boosts the efficiency of natural growth factor-driven healing

2. **Angiogenesis & Blood Vessel Repair**

Stimulate angiogenesis via VEGF pathway

Accelerate endothelial repair, protects mucosal and vascular lining.

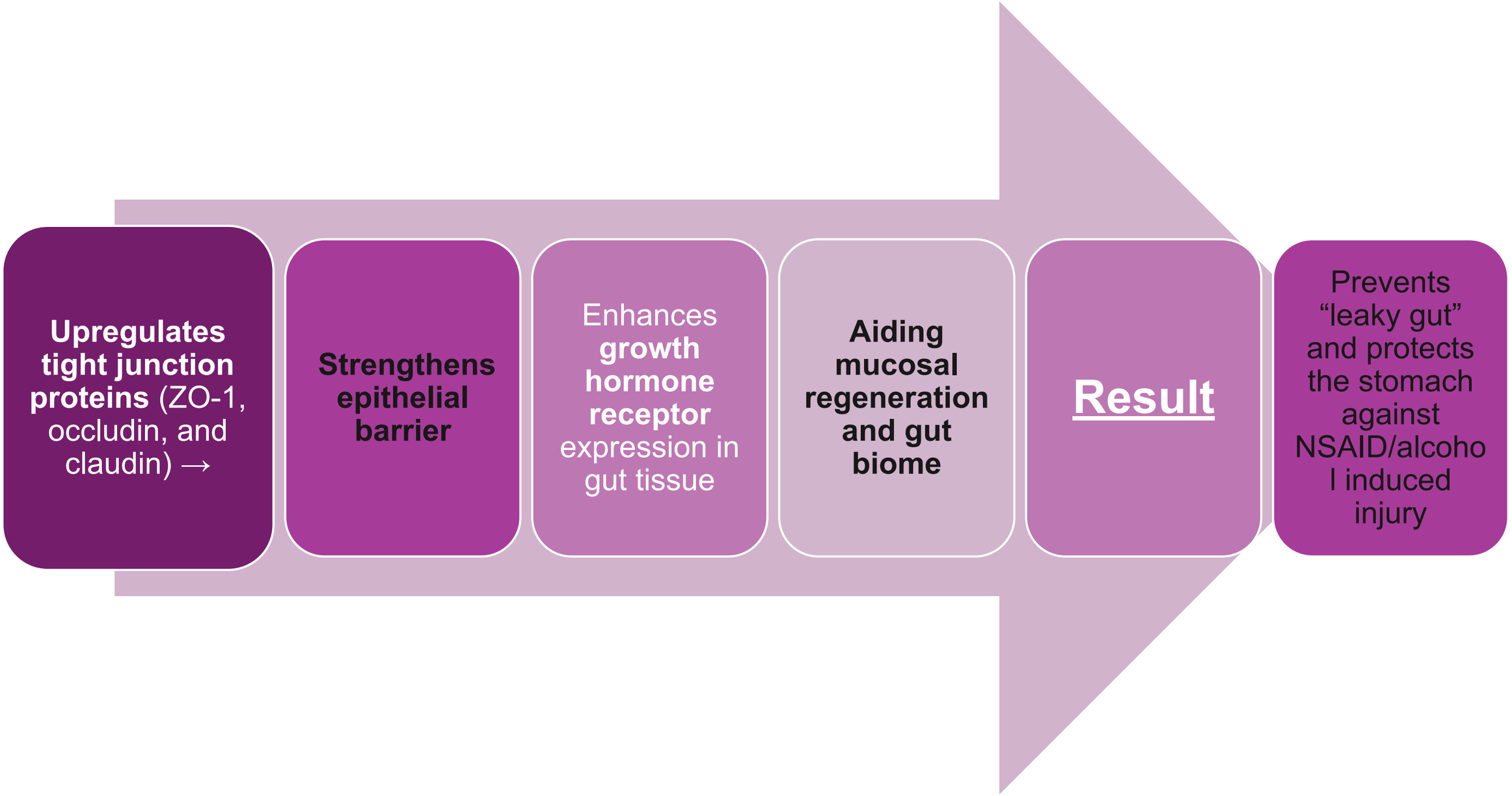
↑ **VEGF (Vascular Endothelial Growth Factor)** → binds **VEGFR2** on endothelial cells → activates **PI3K/Akt** and **MAPK/ERK** → endothelial proliferation & migration → **new blood vessel formation**

Enhances **FAK–paxillin signaling-** improving cell adhesion and migration

Result:

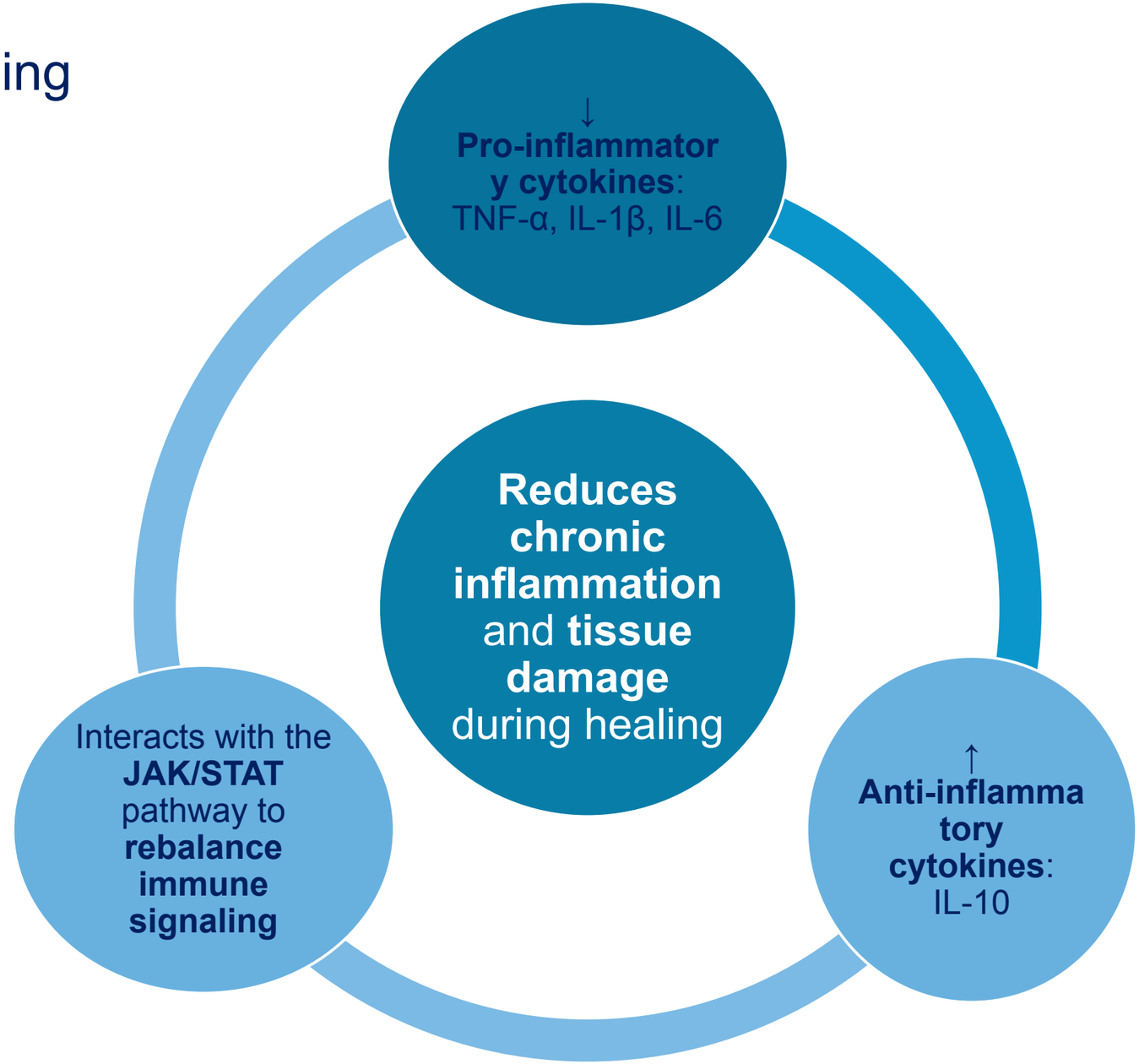
Faster wound healing and improved blood supply to damaged tissues

3. **Gut Barrier Protection**

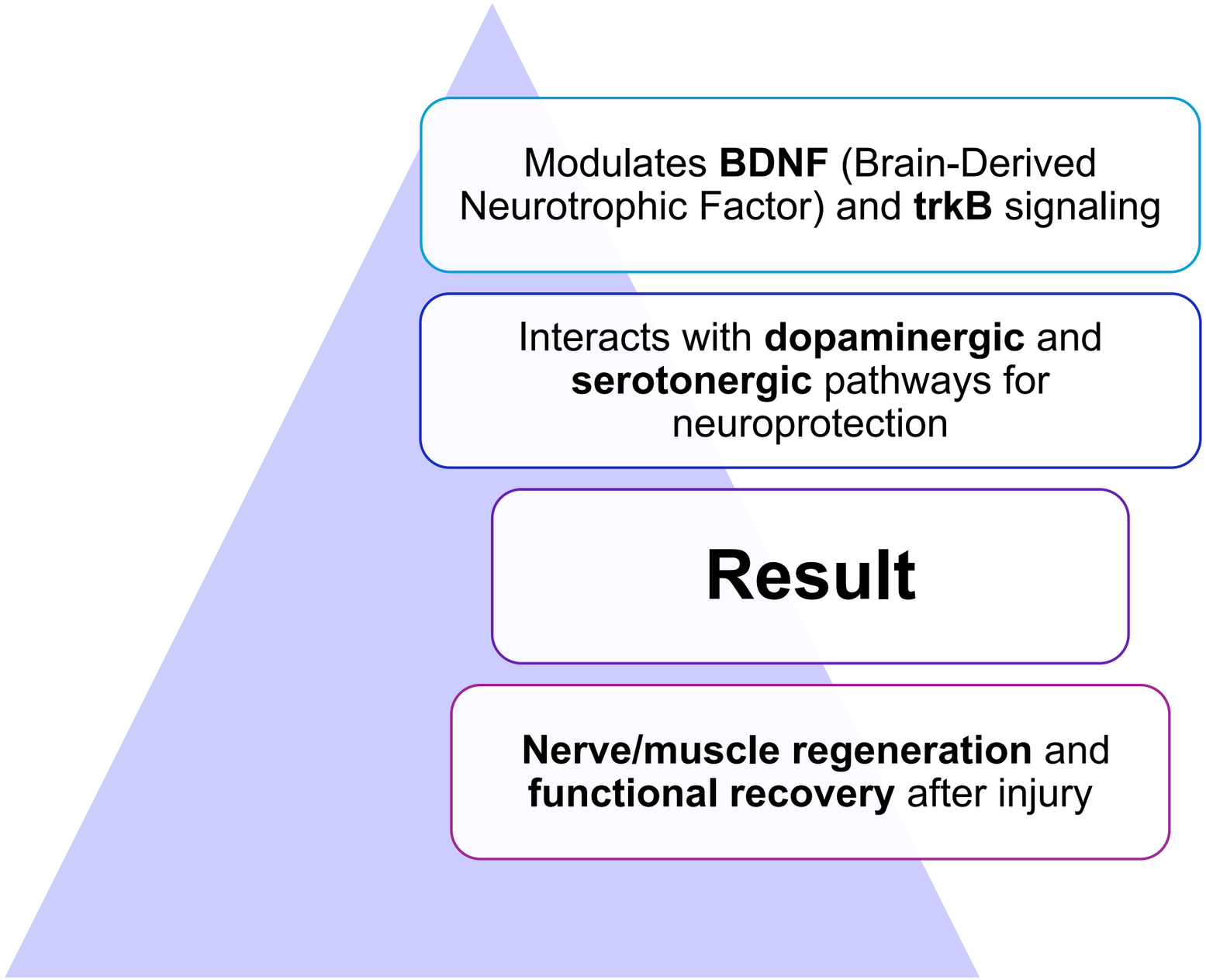


4. **Inflammation & Immune Modulation**

- Balances Cytokine signaling



5. **Neurological Repair**



Why I Integrate BPC-157 in My Practice

Patients heal faster, report less pain and reduced edema. It has become a cornerstone of my treatment protocols.

Wound Management: DFUs, VLUs and Arterial ulcers.
Decrease fibrosis, promote angiogenesis, jump-starting stalled healing processes.

Post-Surgical Recovery: All osseous and soft tissue repair.
Reduction in edema, scarring, and recovery time. Sooner return to activity weeks.

Tendon and ligament injuries: Tendon/Ligament repair, plantar fasciitis improve faster.

Enhances collagen organization and tensile strength during the healing phase.

Patient-Driven Demand: Results driven. Additional support to surgery with faster recovery

Minimal Side Effects The safety profile is favorable and well tolerated.

Not used on cancer patient. Not Use on Pregnant patients. Not use on children < 12

The Advantages of Oral BPC-157

Oral BPC-157 offers distinct benefits that make it the preferred choice for many patients and practitioners. Convenience, patient compliance, and systemic effects combine to create an accessible healing tool.

Why Oral Administration Works

BPC-157 is stable in the gastric environment— survives stomach acid and is absorbed systemically, reaching target tissues throughout the body including the lower extremities.

Patient Compliance

No injection anxiety and no barriers to adherence. Daily or every other day application

Cost-Effective

Easy administration and overall treatment costs.

Systemic Benefits

Oral BPC-157 addresses gut health, reduces systemic inflammation, and supports overall healing capacity—benefits that extend beyond the foot or ankle.

Broad Application

Oral BPC-157 is ideal for patients with any inflammatory or musculoskeletal conditions .

Case Study #1: Dramatic Wound Healing in One Week

70 yr-old male presented with a recurrent Diabetic foot ulcer that had been slow to heal using standard wound-care. One week of starting BPC-157, the wound showed remarkable improvement in granulation tissue, reduction in wound size, and healthy epithelialization at the margins.





MIS Surgery and Fat Allograft Injection

Initial Presentation

Wound bed with hemorrhagic callus and underlying full thickness wound, inflammation, delayed healing despite standard wound care protocols for several weeks.

After One Week

Visible reduction in wound dimensions, healthy epithelization filling the wound bed.

Clinical Takeaway

The accelerated angiogenesis, tissue healing and anti-inflammatory effects of BPC-157

Allow for surgical planning

Case Study #2: Two Weeks of Progressive Healing

72 yr old male with a long-standing history of a diabetic foot ulcer. After months of standard wound-care, BPC-157 was integrated as an adjunct to offload, diet, controlled BG levels and wound-care.

Week 1 Progress

Wound contraction visible, inflammation subsiding, early signs of re-epithelialization at wound margins. Patient reported reduced pain and improved mobility.

Week 2 Outcome

Closure with minimal scarring, return of normal skin texture. Patient able to resume regular footwear without discomfort.

Patient Communication Tip: Set realistic expectations by explaining that healing is progressive. Show patients that even small improvements in the first week signal that the body's repair mechanisms are engaging effectively.

Case Study #3: Reduced Post-Operative Edema & Pain

Two patients, same day - 1st MPJ implant.

Patient #1 started oral BPC-157 1-week pre-op and continued through the recovery period.

Patient #2- continued edema/ pain. Started BPC-157 1week postop.

Patient #1

Sutures 10 days. Reduced post-surgical swelling and pain 1-2 weeks . Walking in sandals at 4 weeks

Patient #2

Sutures 14-21 days. Persistent post-surgical edema and pain.

Walking at 51/2 weeks - dehiscence

Clinical Insight

The anti-inflammatory and vascular protective effects of BPC-157 appear to modulate the inflammatory cascade following surgical trauma, leading to a smoother, more comfortable recovery trajectory. BPC-157 can improve the post-operative experience by accelerating functional recovery.

Case Study #4: One-Week Transformation

65 year-old male with DFU, Mild PAD and venous insufficiency.
1 week post BPC - 157

Before Treatment

Fibro-granular base with traditional wound-care. Diffuse peri-wound erythema and edema.

After One Week

Reduction in inflammation, improved granulation tissue, visible neovascularization, and decrease edema and peri-wound area.

Key Success Factors

Early intervention, consistent daily dosing, patient compliance, and integration with appropriate local wound care protocols.

Practice Pearl: Document before-and-after photos systematically. Visual evidence builds patient confidence, supports insurance conversations, and creates powerful case studies for educating colleagues and patients.

Case Study #5: Peptide combined with Fat allograft

79 yr-old male presented with a recurrent Diabetic foot 1st met ulcer with fat pad atrophy. He had a planned trip to the Antarctica and the Amazon.

Staged treatment: BPC -157 – healed – medial sesamoid planning with fat allograft injection – healed in time for his trip. Then schedule MIS bunion/hammer toe surgery

Initial Presentation

Wound bed with undermining and tunneling.

Increase FF pressure with fat pad atrophy and prominent sesamoid

After 3 Weeks

Added on BPC -157

Decrease in wound size

Prepare for staged surgery

Clinical Takeaway

The accelerated angiogenesis, tissue healing and anti-inflammatory effects of BPC-157 as an adjunct with other modalities

Protocols and Cycling – 30-day supply

Wound-care

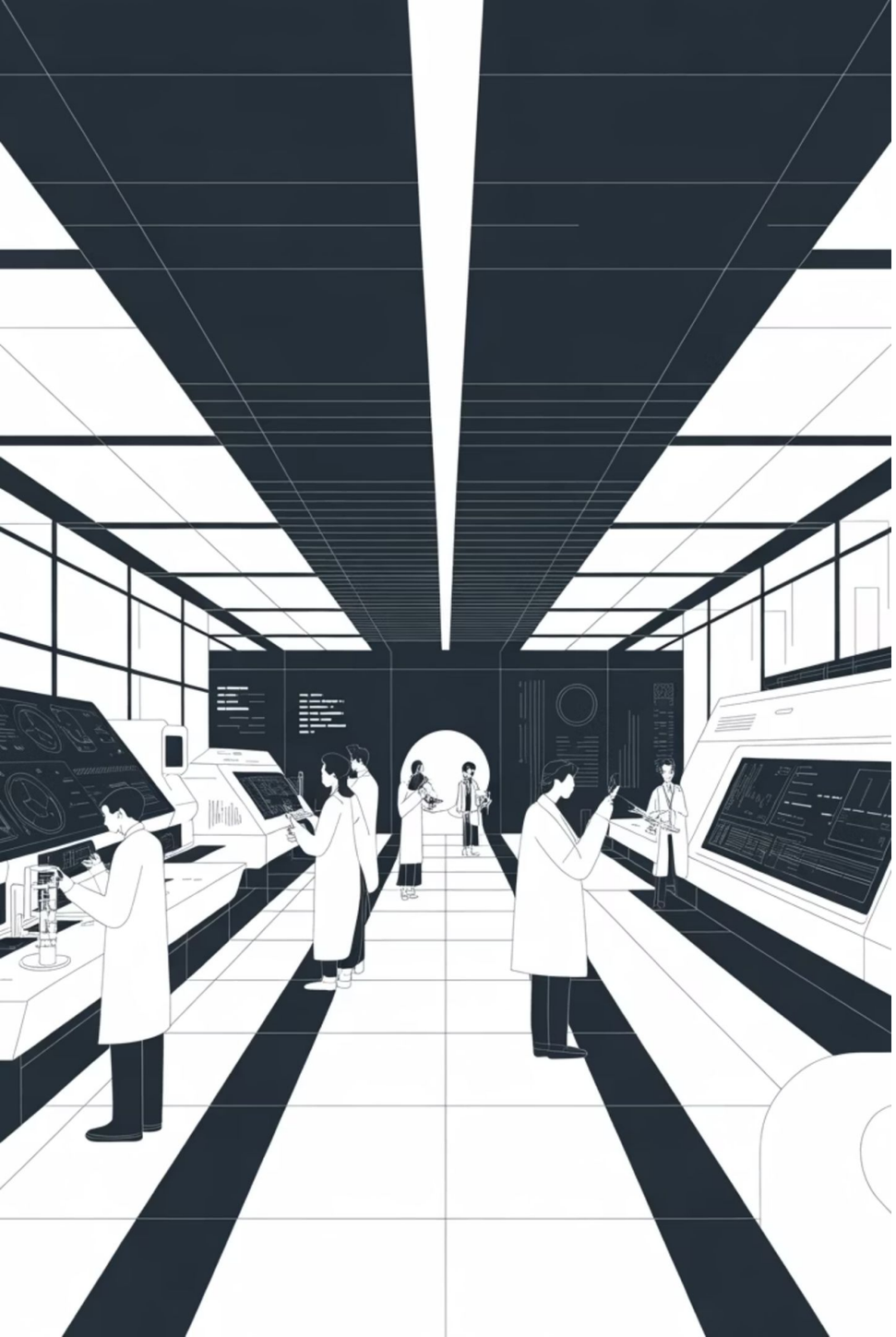
- BPC-157 – daily x 1 week
- Then every other day
- 1 month cycle then resume every other day

Pre-op/Post-op

- Start 1 week before surgery – every other day x 8 weeks
- Can continue to cycle

Tendinits / Fasciitis

- BPC – 157 daily x 2-3 weeks, follow-up after adjunct treatment
- Then every other day
- Can continue to cycle

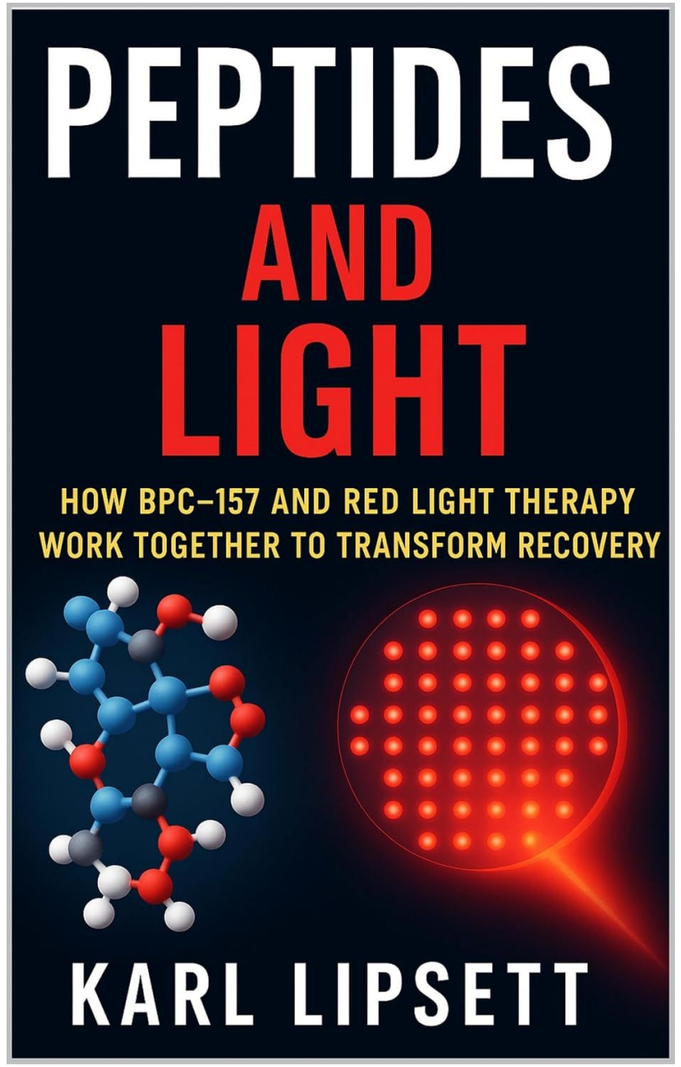


Looking Ahead

BPC-157 has been transformative in my practice.

The peptide landscape offers powerful opportunities to enhance recovery, support tissue health, and elevate patient outcomes.

Integrating additional peptides can further expand regenerative care.



- **BPC-157** and
  red / near-infrared light therapy (photobiomodulation, PBM) can create a “1+1=3” effect for recovery by

- **supporting repair signaling**
- **tissue remodeling** (BPC-157)
- while **boosting cellular energy and**
- **moderating inflammation locally** (PBM).

The book argues this combo helps people bounce back faster from training stress, soft-tissue irritation, and nagging injuries.

Other Peptides

Inflammation : Wound-care - GHK-Cu

- – naturally occurring in plasma and decrease with age
- - activate wound healing, regulate immune response, stimulate collagen synthesis

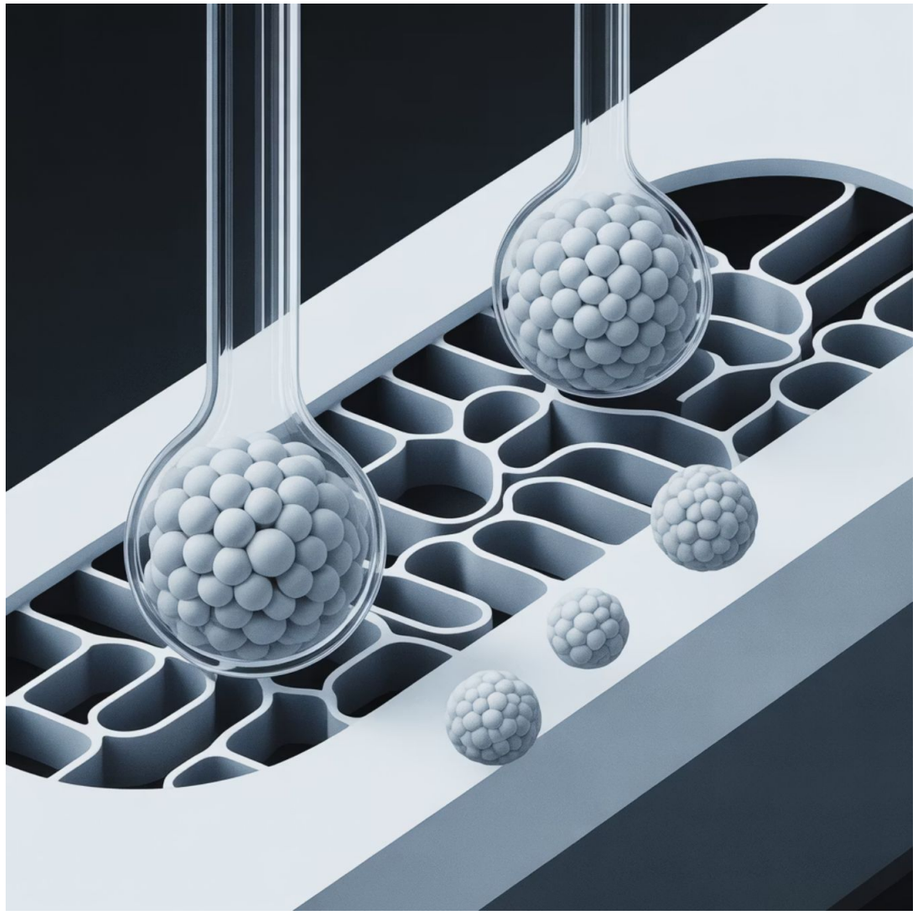
Metabolism: Increase muscle mass - GHRH Sermorelin / Tesamorelin

- - muscle/lipid metabolism, influence bone density
- - Treat NWB post-op patients

Immunity / Repair: Thymosin Beta 1 / Thymosin alpha -1

- - Increase cell migration, decrease fibrosis in tendons, muscle, ligaments
- - Promote angiogenesis,
- - Restore thymus function and immune homeostasis, fights sepsis
- - Treat Infection

Why Podiatrists Are Uniquely Positioned to Lead in Peptide Medicine



- **Regenerative Medicine Is Expanding — and Podiatry Fits Naturally In**

Chronic injuries, tendon pathology, wound healing, and recovery — these are reparative by nature, aligning with peptide science.

- **Clinical Gaps Create Opportunity**

Patients with persistent inflammation or delayed recovery are seeking modern solutions that traditional approaches cannot fully address.

- **Podiatrists as Innovators**

The mix of biomechanics, tissue biology, and procedural care creates a perfect foundation to pioneer new, restorative therapies.

- **Timing Is Everything**

Peptide medicine is at the early adoption curve — podiatrists who explore it now can define its clinical standards and patient communication models.

Becoming Thought Leaders in Regenerative Medicine

Early Adoption = Leadership

- **Be the Voice of Evidence and Ethics**

By engaging early — responsibly and scientifically — clinically relevant peptide use.

- **Bridge Research to Real-World Practice**

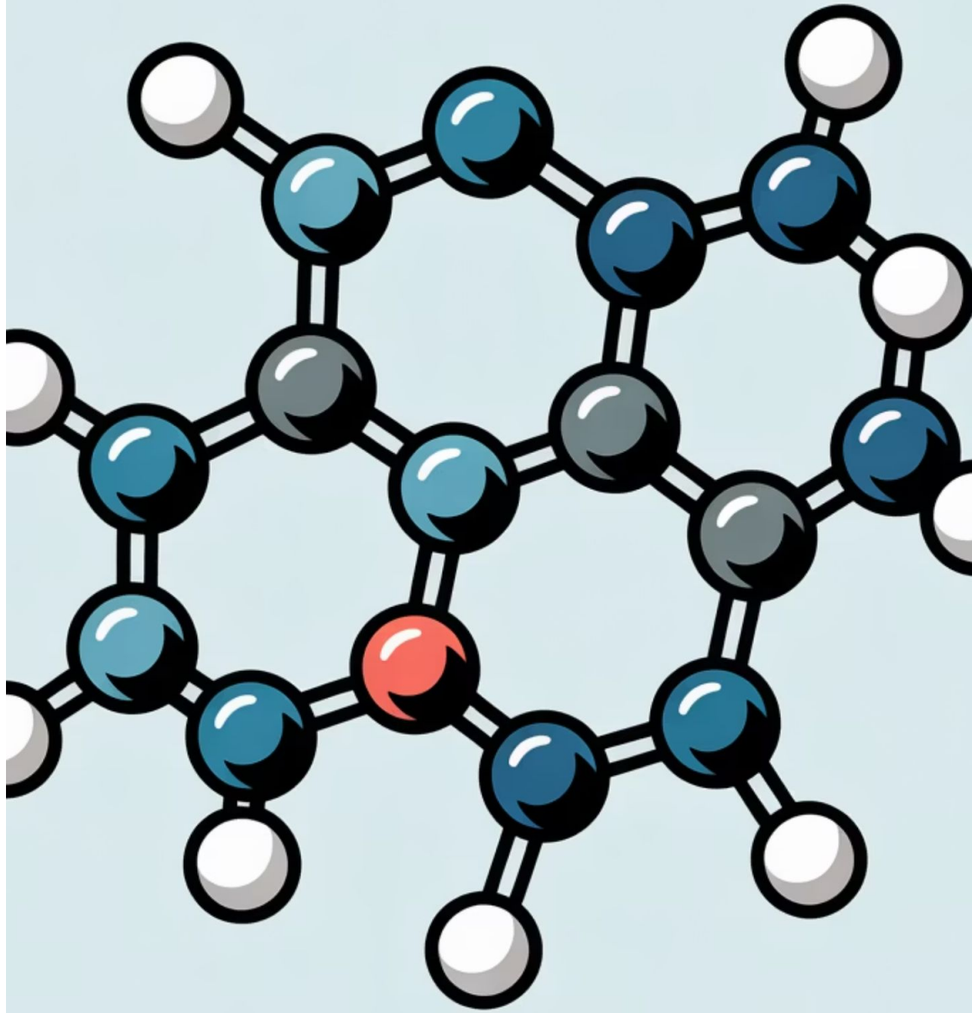
Translating peptide research into practical musculoskeletal and recovery protocols.

- **Peer Education & Collaboration**

Hosting educational sessions, case reviews, and interdisciplinary discussions reinforces credibility.

- **Brand Differentiation**

Patients are given options with innovation, advanced outcomes.



The Path Forward

Expanding Reach, Redefining What's Possible

→ **Start With Learning & Integration**

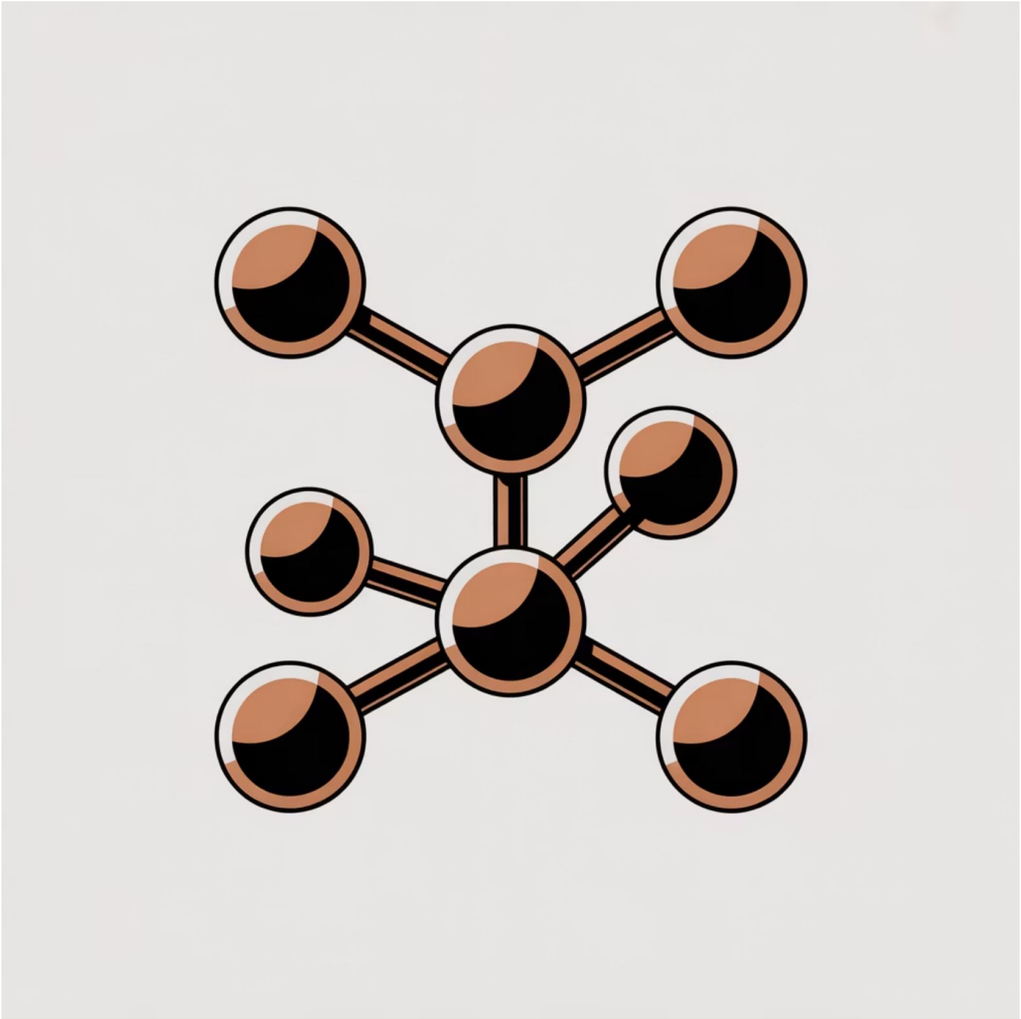
Study clinical evidence and identifying peptides that align with your patient base — inflammation, recovery, circulation, or repair.

→ **Collaborate, Don't Compete**

Partner with trusted regenerative companies and scientific educators to stay compliant.

→ **Build a Regenerative Identity**

Incorporating peptides positions podiatrists at the forefront of musculoskeletal innovation — bridging traditional medicine and wellness.



Lifestyle + Peptides: The Winning Formula

The Foundation

• Lifestyle = Base
Build with nutrition, movement, sleep & stress management.

The Boost

• Peptides = Accelerators
Supercharge repair

Pearl

•Peptides Magnify, Not Replace, Lifestyle
Together: Stronger outcomes.

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● W. Seeds. Peptide Protocols Volume 1, 2020

Questions ??

The Seeds Scientific Research & Performance Institute

upon pledging to uphold patient health and safety through regulated sourcing, and successful completion of the post-assessment examination, we confer upon

Joanne N. Balkaran

a certification in

Peptide Therapy

and merits recognition as a perennial scholar of clinically-validated Cellular Medicine-based therapies.

WILLIAM A. SEEDS MD
FOUNDER AND ACADEMIC CHAIRMAN

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Thank you

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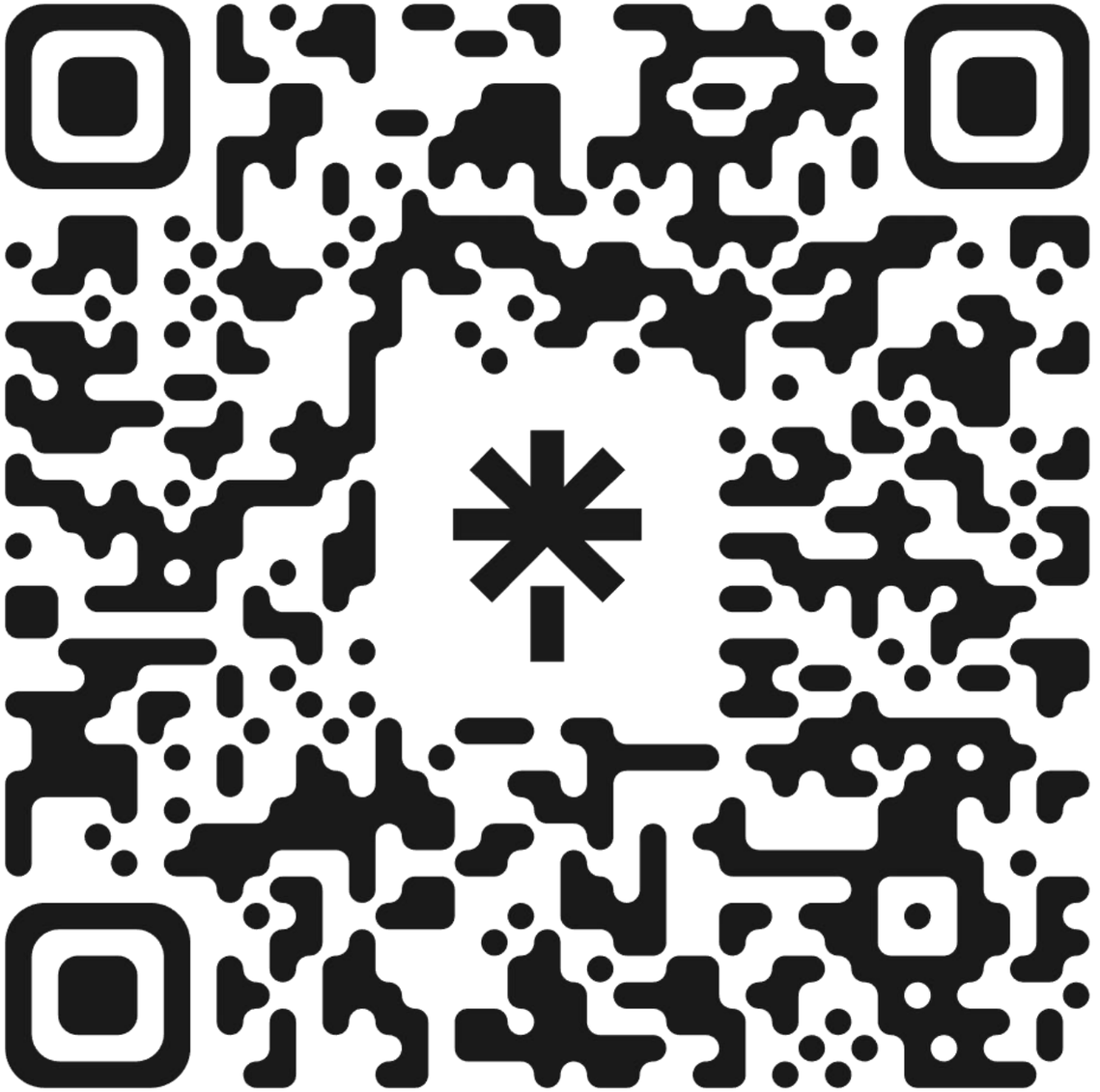

Blood Cancer United
Visionaries of the Year

Dr. Joanne Balkaran

United for people with *blood cancer*

Join me in supporting Blood Cancer United through my Visionaries of the Year campaign.

We're all about blood cancer. *So people with blood cancer can be about everything else.*

We're about changing people's lives...

More than **$1.8B** invested in cutting-edge research to date

Supported patients & families through more than **540K** financial assistance grants

Helped advance **70%** of 170+ FDA-approved blood cancer treatments since 2016

...including right here in North Florida.

More than **33M** in research granted to University of Florida, Florida State, and Moffitt Cancer Center

Connected with more than **5200** households to distribute patient information

Over **$8.8M** Distributed through Financial assistance programs here in North Florida

Want to learn more?
Contact:
kelsey.miller@BloodCancerUnited.org

Every donation is tax-deductible and drives Blood Cancer United's mission to cure blood cancer and improve the quality of life of all patients and their families.