OUTCOVE VITALITY · NAPA VALLEY · BREAKOUT SESSION

# MitoXcel™ Geropeptides

## *Not Your Typical Peptide Technology*

A closer look at origin and validation — comparing the peptides exploding in longevity medicine with the information-encoded MitoXcel™ platform.

**Kevin Slawin, MD**

GEROTHERAPEUTIX · Eos SENOLYTIX · Perseus SENOLYTIX

# The Peptide Gold Rush

Interest in “longevity peptides” has exploded — driven by online communities, biohacker culture, and compounding pharmacies, well ahead of rigorous clinical validation.

**BPC-157**

Gastric-derived healing peptide

**TB-500**

Synthetic thymosin β4 fragment

**KPV**

Alpha-MSH fragment

**MOTS-c**

Mitochondrial-derived peptide

**Semax**

Russian nootropic

**Epitalon**

Pineal peptide bioregulator

JULY 23–24, 2026

## FDA Pharmacy Compounding Advisory Committee

reviewed 7 popular peptides for the 503A bulk compounding list.

# 6 of 7

received a favorable committee recommendation — BPC-157, KPV, TB-500, MOTS-c, Semax, and Epitalon.

# What "FDA-Allowed" Really Means

A 503A bulks-list recommendation is not FDA drug approval. It is a permission slip for compounding pharmacies — not a verdict on safety or efficacy.

| | 503A Bulks-List Recommendation | FDA Drug Approval |
|---|---|---|
| **Review type** | Advisory committee vote | Full premarket safety & efficacy review |
| **Binding?** | No — rulemaking still required | Yes — legally required before marketing |
| **Manufacturing** | Individual compounding pharmacies | Standardized, FDA-inspected GMP facilities |
| **Human efficacy data** | Largely absent or uncontrolled | Adequate & well-controlled trials required |

*FDA's own scientific reviewers recommended AGAINST adding all seven peptides, citing gaps in characterization, effectiveness, and safety data. The committee vote overruled its own agency staff.*

ORIGIN STORIES

# Where These Peptides Came From

1989

## BPC-157

Isolated from screened human gastric juice samples at the University of Zagreb; never advanced through completed human efficacy trials.

1990s

## TB-500

A synthetic fragment of thymosin beta-4, studied almost entirely in animal and in vitro models.

2015

## MOTS-c

A short peptide encoded in mitochondrial DNA, discovered via genomic analysis; no controlled human trials.

Soviet-era

## Semax & Epitalon

Peptide “bioregulators” developed in Russia; Semax is an approved drug in Russia only, not reviewed by the FDA.

*None of these peptides originated from a rationally designed platform built around a defined mechanism of aging.*

# The Validation Gap

Per the FDA's own July 2026 briefing materials, evidence for these peptides is thin — and several carry specific safety signals.

1

**No controlled human trials**

KPV, TB-500, and MOTS-c: human clinical evidence is essentially absent.

2

**Small, uncontrolled, or contradictory**

BPC-157, emideltide, and Semax: available human studies don't settle efficacy.

3

**Specific safety signals flagged**

BPC-157 adverse-event reports; epitalon's telomerase activation with uncertain cancer risk; Semax anticoagulant / amphetamine-potentiation interactions.

4

**Manufacturing & doping concerns**

Limited impurity, aggregate, and endotoxin testing; MOTS-c and TB-500 are WADA-prohibited substances.

A DIFFERENT STARTING POINT

# Enter MitoXcel™

Not a molecule pulled from folk remedies, gastric extracts, or Soviet-era research — but an information-encoded, AI-designed platform built from a defined design framework.

| | |
|---|---|
| DEVELOPER | SENOTHERAPEUTIX, Inc. (d/b/a GEROTHERAPEUTIX, Inc.), Houston, TX — founded 2019 |
| DESIGN METHOD | Computationally-derived rules: charge distribution, amphipathicity, structural motifs |
| NOT A SINGLE DRUG | A platform — any sequence must satisfy the MitoXcel™ blueprint to qualify |

# One Target, Chosen Deliberately

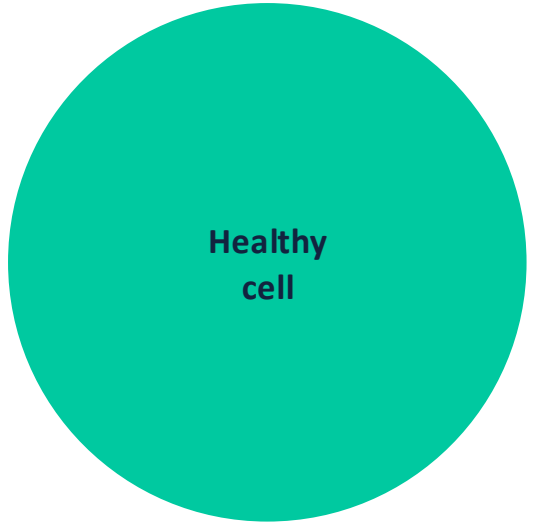
## Mitochondrial Membrane Potential (ΔΨm)

Across every studied organism, aging brings a predictable, measurable decline in ΔΨm. This bioenergetic decay precedes impaired ATP production, metabolic instability, and the transition of cells into senescence.

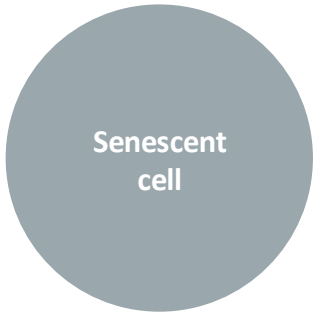
Senescent cells run at markedly lower ΔΨm than healthy cells — a naturally occurring selectivity filter that MitoXcel™ geropeptides are engineered to recognize, without relying on a specific cell-surface receptor.

**Why this matters**

*A universal, cell-type-agnostic vulnerability — not a single-pathway drug target — is what makes a true gerotherapeutic possible.*




High ΔΨm




Low ΔΨm

MODE OF ACTION

# Two Mechanisms, One Molecule

1

## Rapid Bioenergetic Restoration

Elevates ΔΨm in aging cells, restoring mitochondrial efficiency toward a more youthful phenotype — rapidly, with no receptor engagement or external co-factors required.

2

## Selective Apoptotic Clearance

Triggers self-elimination of senescent cells across every major organ, including senescent glial cells in the brain — reducing systemic inflammatory burden.

**The downstream effect**

Reduced fat mass, increased muscle mass, enhanced tissue function, and improved cognition are not directly targeted — they emerge naturally from restored cellular energetics and lower senescent-cell burden.

# Preclinical Validation, By the Numbers

**>75 wks**

long-term dosing studies with no evidence of safety issues or dose limiting toxicity

**p=0.0098**

extended lifespan vs. saline by 13.1% to date.

**First Gerotherapeutic?**

extensive studies in naturally aged mice demonstrate system-wide healthspan improvements

**2 / 3 Bladder Ca**
**1 / 2 Breast Ca**
**2 / 3 Colon Ca**
**4 / 4 Melanoma Ca**

cell lines responded to the MitoXcel™ oncopeptide PTC-2128 in solid-tumor screening

*Validated with a systematic preclinical program — dose escalation, long-term toxicology, and disease-model efficacy — advancing toward the FDA's actual drug-approval pathway, not the compounding pathway.*

**Source**

Preclinical data disclosed by Eos SENOLYTIX and Perseus SENOLYTIX (MitoXcel.com, EosSenolytix.com, PerseusSenolytix.com, GEROTHERAPEUTIX.com).

# Side-by-Side: Origin & Validation

| | Popular Longevity Peptides | MitoXcel™ Geropeptides |
|---|---|---|
| **Discovery method** | Gastric extracts, animal fragments, genomic screening, Soviet-era research | Computational / AI design against a defined aging mechanism |
| **Mechanism clarity** | Often unclear or receptor-based, case by case | Single, universal target: mitochondrial membrane potential (ΔΨm) |
| **Human trial status** | Absent, small, uncontrolled, or foreign-market only | Advancing through a structured preclinical-to-IND program |
| **Regulatory pathway** | 503A compounding (no premarket efficacy review) | FDA drug-approval pathway (IND / clinical development) |
| **Manufacturing** | Variable, pharmacy-by-pharmacy compounding | Controlled, standardized development program |

# Pipeline & Path Forward

## Lead candidate: PTC-2105

A homeostatically adaptive geropeptide for sarcopenia and sarcopenic obesity — unique in restoring the body's healthy physiological set point rather than pushing biology in a single direction.

**Eos SENOLYTIX**

PTC-2105, PTC-2107, PTC-2113, PTC-2118

*Healthspan / longevity geropeptides*

**Perseus SENOLYTIX**

PTC-2109, PTC-2110, PTC-2117, PTC-2128

*First-in-class MitoXcel™ oncopeptides*

**Ponce Aurora SENOLYTIX**

PTC-2111, PTC-2116, PTC-2119, PTC-2132

*YUUTH™ cosmetics, YUURN™ longevity beverages, CHUUS™ gummies*

### The path we're choosing

- Unlike compounded peptides sold under the 503A bulks-list pathway, which are often research grade, MitoXcel™ geropeptides are advancing through the FDA's IND / clinical development pathway — the same rigorous route required of any approved medicine
- May be manufactured to full GMP, ISO22716 or ISO9001+additional QA quality standards depending on the need
- That means standardized manufacturing, controlled dosing, and clinical trials designed to establish safety and efficacy — not just eligibility for a compounding pharmacy to prepare a batch.

# Focused Portfolio


FULL BODY REVITALIZING SERUM


FULL BODY TREATMENT


CELLULAR VITALITY CREAM


CELLULAR RENEWAL CREAM

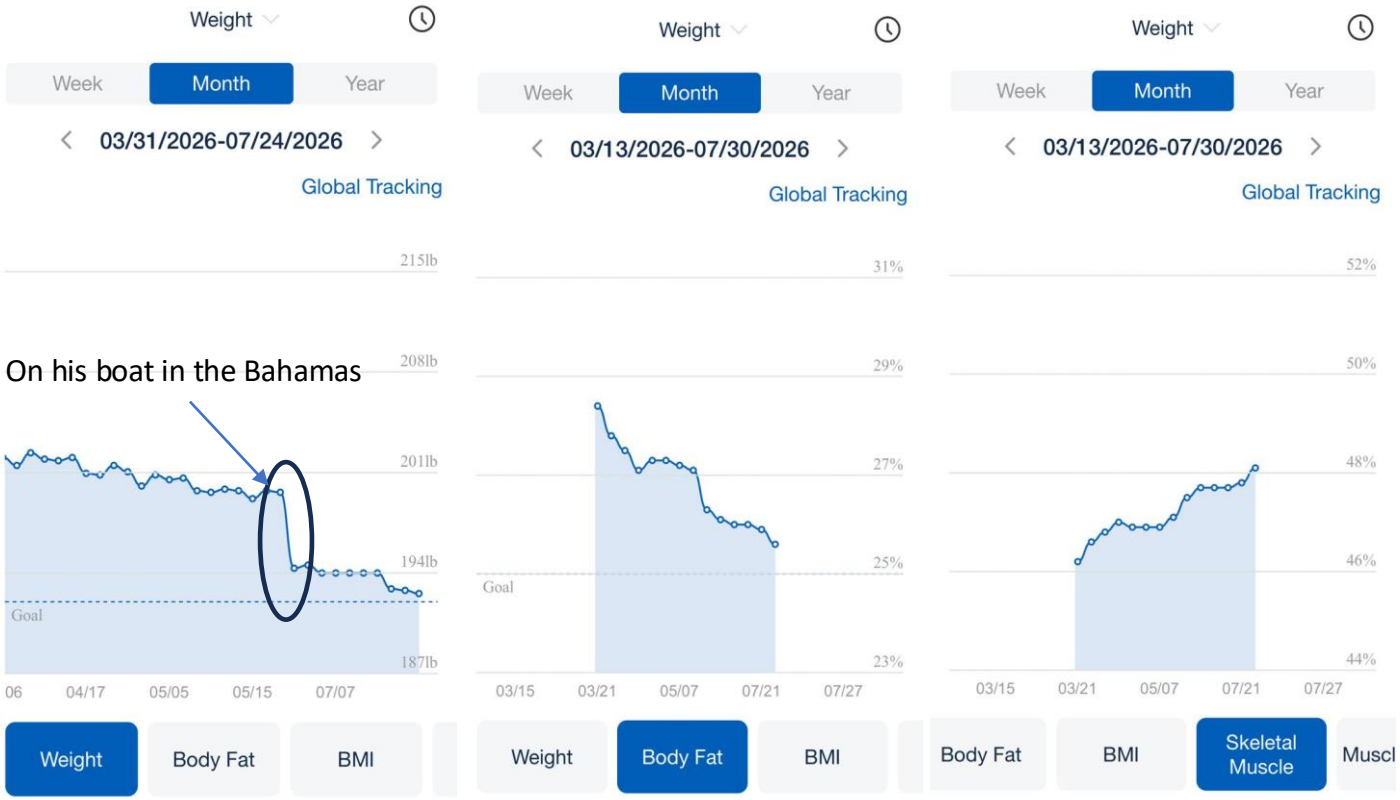

CELLULAR PERFECTING SERUM

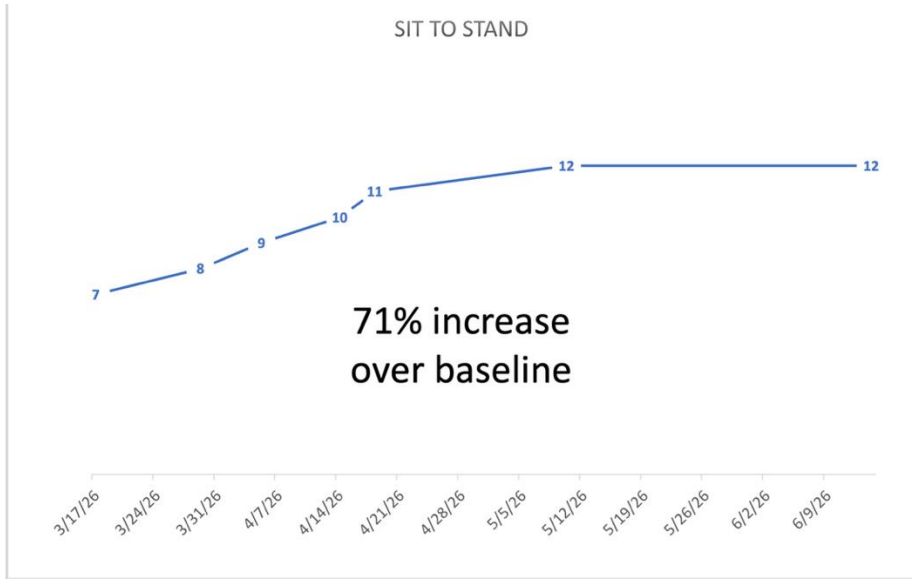
# YUUTH Full Body Treatment – Limited Edition

## Early Access.  Prestige Packaging.

# 63 year old healthy but out of shape white male

# YUUTH™ Full Body Treatment – Pre-Release Sample Applied 3X/Week since 3/2026



KEY TAKEAWAY

# Being on a compounding list isn’t the same as being validated.

MitoXcel™ geropeptides were designed — not discovered by accident — against a single, universal, mechanistically defined signature of aging, and are being validated through the same rigorous pathway required of any approved medicine.

*Not your typical peptide technology.*

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