PEPTIDE PERSPECTIVES®
SCIENCE • LONGEVITY • HUMAN PERFORMANCE

PROTECTING THE HEART

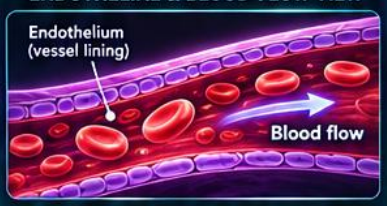
Emerging Peptide Research for Circulation, Blood Vessels & Cardiovascular Aging

WHY CARDIOVASCULAR HEALTH IS MORE THAN A HEARTBEAT

- Blood vessels regulate flow, clotting, immune traffic, oxygen delivery, and communication with other organs.
- Cardiovascular aging involves artery stiffness, endothelial dysfunction, inflammation, fibrosis, and mitochondrial stress.
- Not all peptides have the same level of evidence.



ENDOTHELIAL & BLOOD-FLOW VIEW



- ✓ Healthy endothelium → nitric oxide (NO)
- ✓ Vasodilation & better circulation
- ✓ Less inflammation & vascular stress

FOUR BIOLOGICAL SYSTEMS THAT PROTECT THE HEART

ENDOTHELIAL FUNCTION

- Nitric oxide (NO) production
- Vascular tone and relaxation
- Flow-mediated dilation (FMD)
- Healthy vessel lining (endothelium)

MITOCHONDRIAL PROTECTION

- ATP (cellular energy) production
- Cardiolipin (key mitochondrial lipid)
- Resilience to ischemia-reperfusion stress (e.g., during reduced and restored blood flow)

INFLAMMATION, METABOLISM & ATHEROSCLEROSIS

- Links to obesity and excess adiposity
- Insulin resistance and metabolic stress
- Plaque biology (formation, progression, and stability)

CARDIOVASCULAR AGING

- Cardiovascular remodeling (structural changes over time)
- Fibrosis (excess tissue buildup)
- Cellular senescence (aged, less functional cells)

COMPOUNDS RESEARCHERS ARE EXPLORING

A. STRONG HUMAN OUTCOME DATA / APPROVED CONTEXT

SEMAGLUTIDE — GLP-1 AGONIST

- GLP-1 receptor agonist.
- SELECT trial showed about 20% relative reduction in major cardiovascular events in eligible adults with established CVD and overweight/obesity.
- FDA-approved cardiovascular indication in specific Wegovy populations.

TIRZEPATIDE — GIP/GLP-1 AGONIST

- Dual GIP/GLP-1 agonist.
- SUMMIT showed better outcomes in obesity-related HFpEF and improved health status.
- SURPASS-CVOT was noninferior, not superior, to dulaglutide for the primary composite.

B. HUMAN TRIALS / NARROW APPROVED CONTEXT

SS-31 / ELAMIPRETIDE — MITOCHONDRIAL PEPTIDE

- Cardiolipin-targeting mitochondrial peptide.
- FDA accelerated approval only for eligible Barth syndrome patients.
- Broader heart-failure trials were less convincing.

C. PRECLINICAL / EXPERIMENTAL CARDIOVASCULAR RESEARCH

HUMANIN	MITOCHONDRIAL / STRESS RESPONSS	• Mitochonadrial stress-response peptide. • Ischemia-reperfusion protection in animal models.
MOTS-c	METABOLIC PEPTIDE	• Metabolic adaptation and AMPK-related signaling. • Cardiovascular relevance is indirect and largely preclinical.
ANGIOTENSIN-(1–7)	RAS PEPTIDE	• Endogenous peptide in the renin-angiotensin system. • Studied for nitric-oxide signaling, vasodilation, remodeling and fibrosis.
CARDIOGEN (AEDR)	BIOREGULATOR	• Short bioregulator studied for heart-tissue signaling and cell-survival biology. • No validated human cardiovascular protocol.
VESUGEN (KED)	BIOREGULATOR	• Vascular bioregulator studied for endothelial-cell aging and proliferation markers. • No validated human circulation outcomes.

WHAT GOOD CARDIOVASCULAR STUDIES SHOULD MEASURE

- Major cardiovascular events
- Heart-failure symptoms / function
- Endothelial function / arterial stiffness
- Blood pressure, glucose, and weight
- Safety and tolerability
- Meaningful human outcomes, not only lab markers

WHERE THE SCIENCE IS HEADING

- Better endothelial-targeted therapies
- More precise mitochondrial medicine
- Cardiometabolic protection through interconnected pathways
- Trials that compare biomarkers with real-world outcomes

EVIDENCE TAKEAWAY

- Semaglutide currently has the clearest direct cardiovascular-outcome evidence in this infographic.
- Tirzepatide has important cardiometabolic and HFpEF data, but not universal cardiovascular approval.
- SS-31 proves mitochondrial targeting is clinically relevant, but not established for general heart protection.
- Cardiogen, Vesugen, Humanin, MOTS-c, and angiotensin-(1–7) remain research-stage in this context.
- Educational overview only; not medical advice.

PROMISING BIOLOGY DOES NOT EQUAL PROVEN CARDIOVASCULAR PROTECTION — HUMAN OUTCOMES MATTER MOST.