

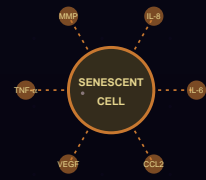
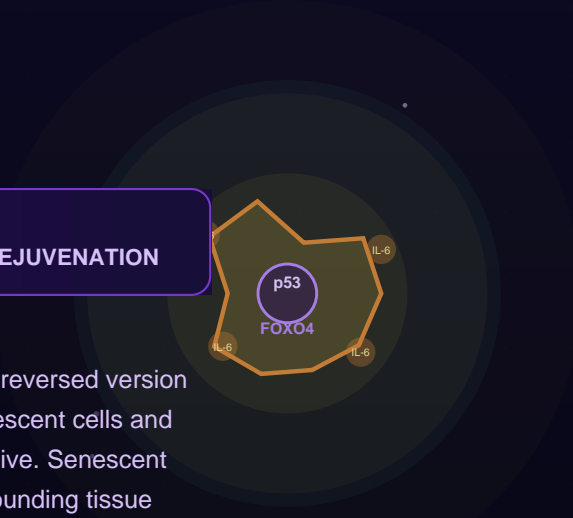
FOXO4- DRI

Clear What Ages You.

The Senolytic Pioneer.

SENOLYTIC · ZOMBIE CELL CLEARANCE · LONGEVITY · REJUVENATION

FOXO4-DRI is a **D-retro-inverso peptide** — a mirror-image, reversed version of a naturally occurring sequence — engineered to enter senescent cells and disrupt the **FOXO4-p53 survival complex** that keeps them alive. Senescent cells, or "zombie cells", accumulate with age and poison surrounding tissue through chronic inflammatory secretions. FOXO4-DRI selectively clears them, triggering their apoptosis while leaving healthy cells untouched — making it the most targeted and studied **senolytic** compound ever developed.



D-RI

MIRROR PEPTIDE

Selective

SENESCENT ONLY

FOXO4

P53 PATHWAY

Longevity

REJUVENATION

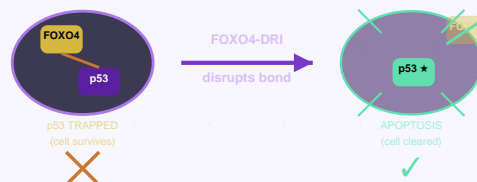
Zombie Cells — The Hidden Driver of Aging

Cellular senescence is a state in which a damaged or stressed cell stops dividing but refuses to die. In young tissue, these cells are quickly cleared by the immune system. But with age, they accumulate — and their presence is profoundly damaging. Senescent cells secrete a toxic cocktail of inflammatory cytokines, proteases, and growth factors known as the **Senescence-Associated Secretory Phenotype (SASP)** — corrupting surrounding healthy cells, promoting chronic inflammation, inhibiting stem cell function, and accelerating the aging of every tissue they inhabit. They have been directly linked to frailty, cardiovascular disease, neurodegeneration, diabetes, cancer, and reduced lifespan.

How FOXO4-DRI Clears Senescent Cells — Precisely

Senescent cells have a critical survival trick: the transcription factor **FOXO4** sequesters the tumour-suppressor protein **p53** in the cell nucleus, preventing it from triggering apoptosis. FOXO4-DRI is a **D-retro-inverso** version of the FOXO4 interaction domain — a mirror-image peptide with reversed amino acid sequence that is resistant to enzymatic breakdown. It enters the senescent cell, competitively binds FOXO4, and physically displaces p53 from the FOXO4 complex — freeing p53 to execute its natural death programme. Healthy cells, which do not rely on this FOXO4-p53 survival complex, are completely unaffected.

The FOXO4-p53 Disruption — Step by Step



★ LANDMARK STUDY — NATURE MEDICINE, 2017

The original FOXO4-DRI study by Baar et al. (Nature Medicine, 2017) demonstrated that the peptide selectively induced apoptosis in senescent cells in vitro and in vivo — restoring hair density, physical fitness, and renal function in aged and chemotherapy-damaged mice, without toxicity to healthy cells. It marked the first proof-of-concept for a peptide-based senolytic approach.

The Benefits of FOXO4-DRI

What happens when you clear the cells that should have died — and didn't

01 Selective Senescent Cell Clearance

FOXO4-DRI is the most targeted senolytic compound studied — selectively inducing apoptosis in FOXO4-dependent senescent cells while leaving healthy cells completely untouched. This precision is what distinguishes it from broad-spectrum senolytics like quercetin/dasatinib.

02 Reversal of Physical Frailty

In the landmark Nature Medicine study, FOXO4-DRI treatment in aged mice significantly restored physical fitness, exercise tolerance, and muscle function — reversing hallmarks of physical frailty linked to senescent cell accumulation in muscle and connective tissue.



03 Tissue Regeneration & Stem Cell Rescue

Senescent cells suppress nearby stem cell activity, preventing tissue self-renewal. Clearing them with FOXO4-DRI restores the local tissue environment, allowing stem cells to re-enter active regeneration — rejuvenating tissue function from the ground up.

04 Reduced Chronic Inflammation (SASP Suppression)

By eliminating the source of SASP secretion, FOXO4-DRI dramatically reduces the chronic, low-grade inflammation that senescent cells generate — the same inflammation implicated in virtually every major age-related disease.

05 Kidney & Organ Function Restoration

The original study demonstrated measurable restoration of renal function in animals with chemotherapy-induced senescence. Clearing senescent cells from vital organs allows them to repair and regenerate, with implications for heart, liver, lung, and kidney aging.

06 Hair Follicle Regeneration

One of the most striking results in the FOXO4-DRI study was the restoration of hair density in aged and chemotherapy-treated mice — demonstrating that senescent cell clearance can re-activate dormant follicles and reverse hair loss driven by cellular aging.

07 Potential Cancer Chemoprevention

Senescent cells create a pro-tumorigenic microenvironment through SASP factors that promote angiogenesis, tissue remodelling, and immune evasion. Clearing senescent cells may disrupt these tumour-promoting signals, offering a mechanistic basis for cancer prevention.

08 A New Paradigm in Anti-Aging Medicine

FOXO4-DRI represents a conceptual shift: rather than slowing aging, it reverses one of its root causes at the cellular level. By removing cells that have accumulated irreparable damage, it allows the body to rebuild from a cleaner, younger biological foundation.

Every other compound in longevity medicine adds something — a signal, a nutrient, a peptide. FOXO4-DRI subtracts something: the accumulated cellular wreckage that has been quietly poisoning your tissue for decades. It is, uniquely, a compound whose benefit is what it removes.

Important: FOXO4-DRI is a research peptide. It is not approved by the FDA or any regulatory authority for therapeutic or human use. Human clinical trials have not yet been completed. All data cited are from preclinical (animal) studies published in peer-reviewed journals. For research and educational purposes only.