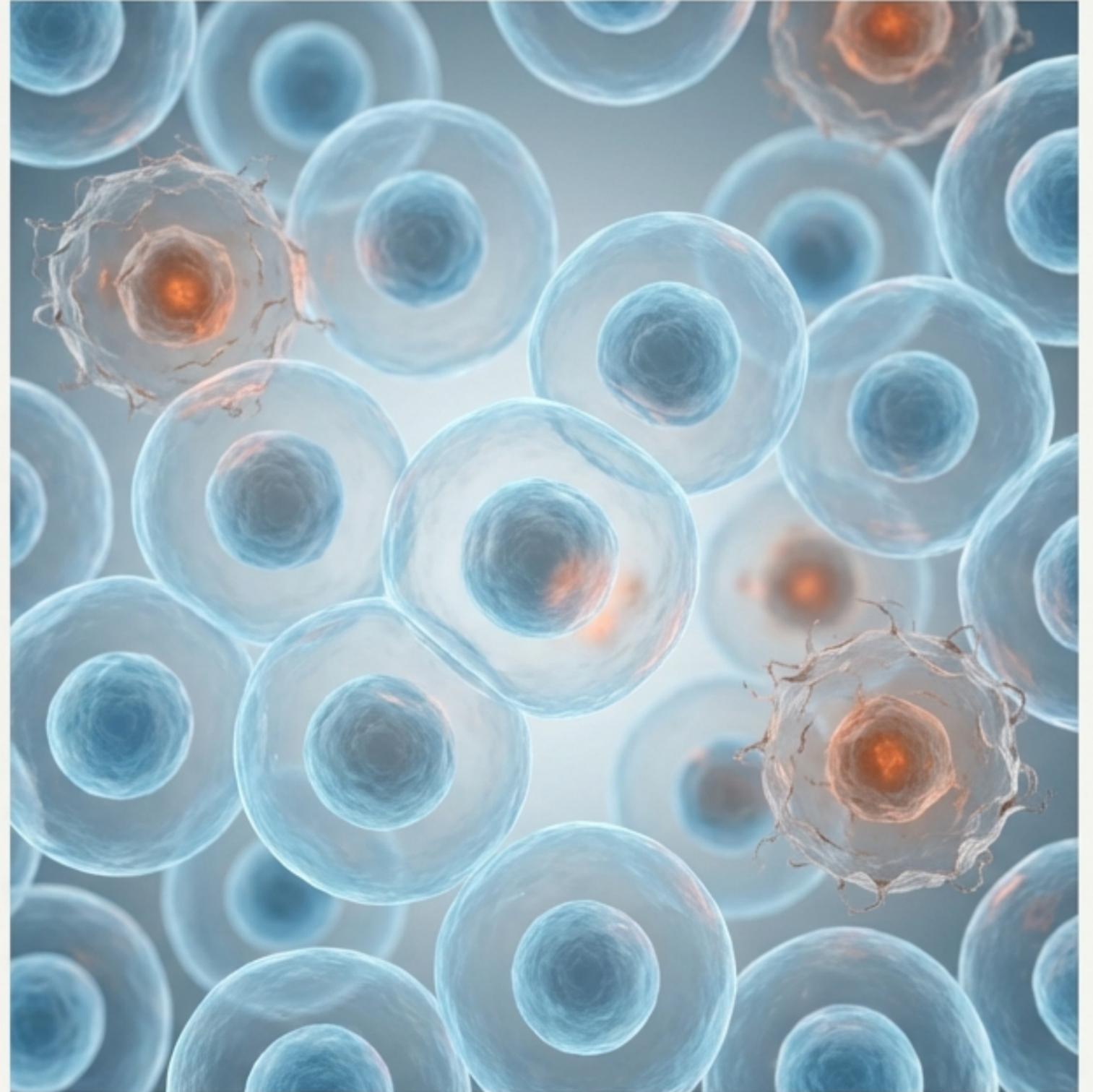


The Hidden Driver of Cellular Damage

A state of imbalance between free radicals and the body's antioxidant defenses.

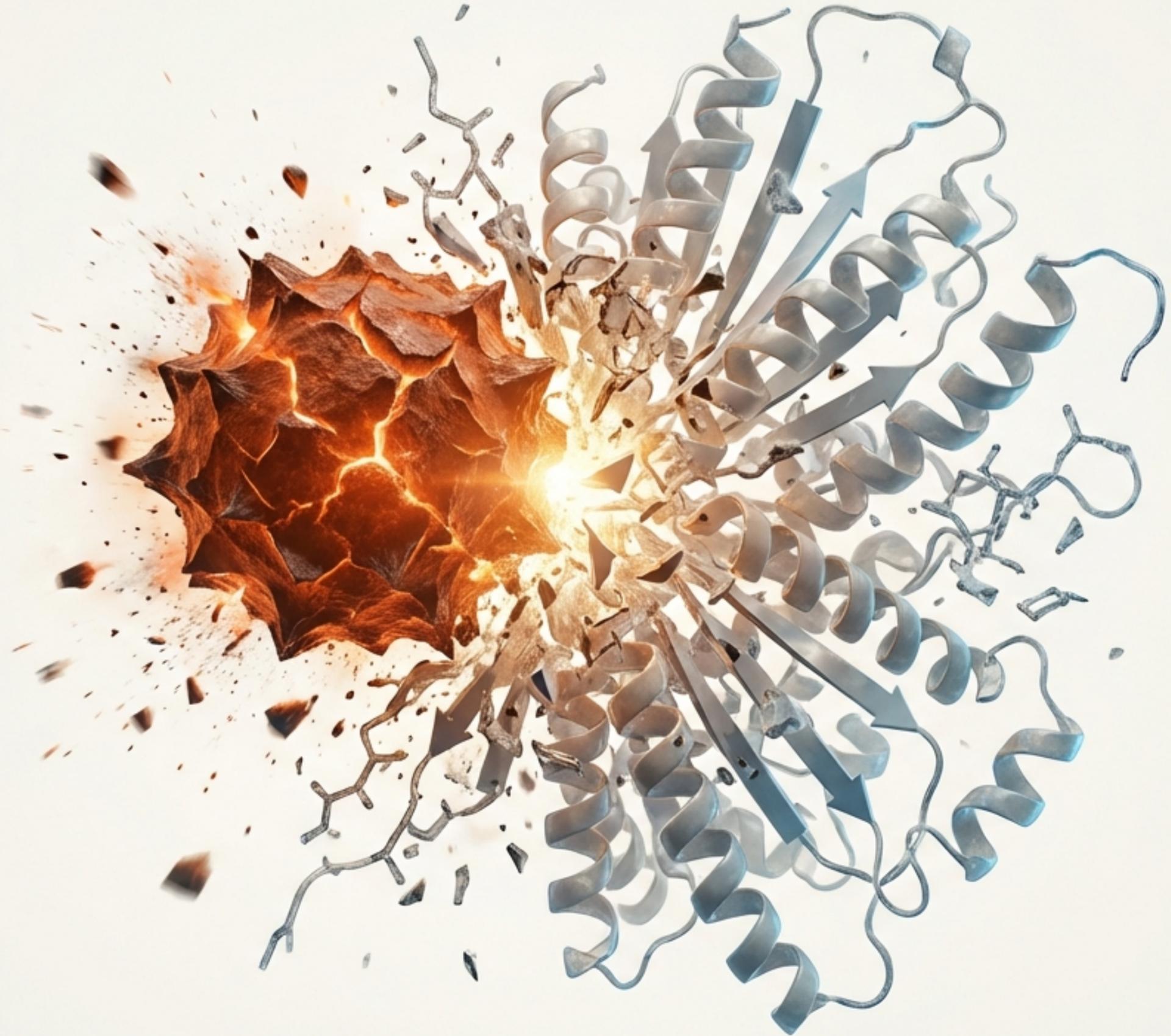
This relentless process causes cumulative damage to DNA, proteins, and cell membranes.

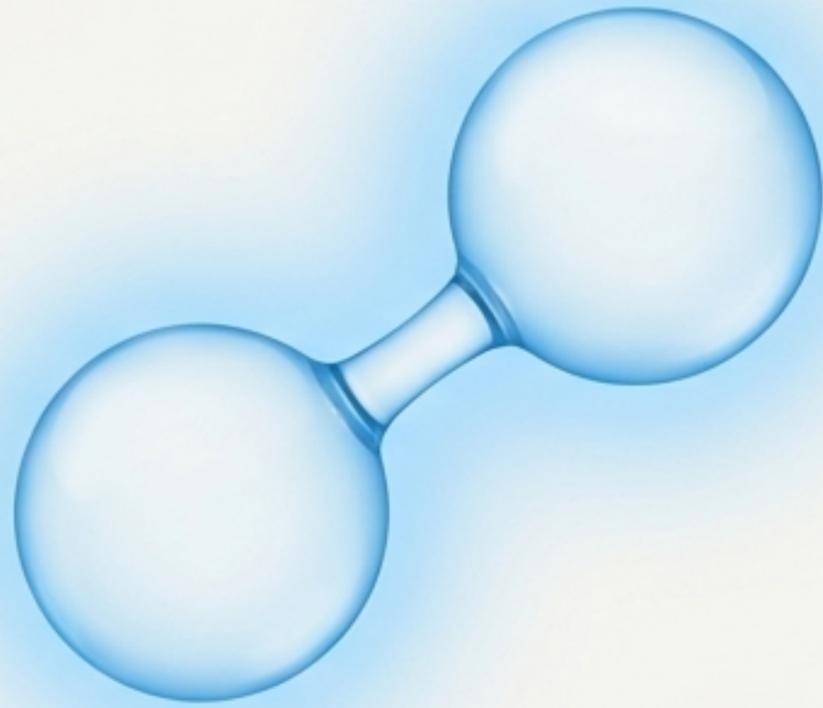
Directly linked to accelerated aging, chronic inflammation, neurodegenerative diseases, and cardiovascular problems.



Meet the True Culprit: The Hydroxyl Radical

- **The most reactive** and harmful free radical in the body.
- **Indiscriminate:** Reacts instantly with any nearby molecule, causing massive collateral damage.
- **Unstoppable by conventional means:** Cannot be effectively neutralized by common antioxidants like Vitamin C or glutathione.





An Unlikely Hero Emerges

The smallest and most abundant element, previously considered biologically inert.

The 2007 *Nature Medicine* paper revealed its role as a therapeutic antioxidant.

Its power lies not in strength, but in its unparalleled precision.

The Mechanism is Deceptively Simple



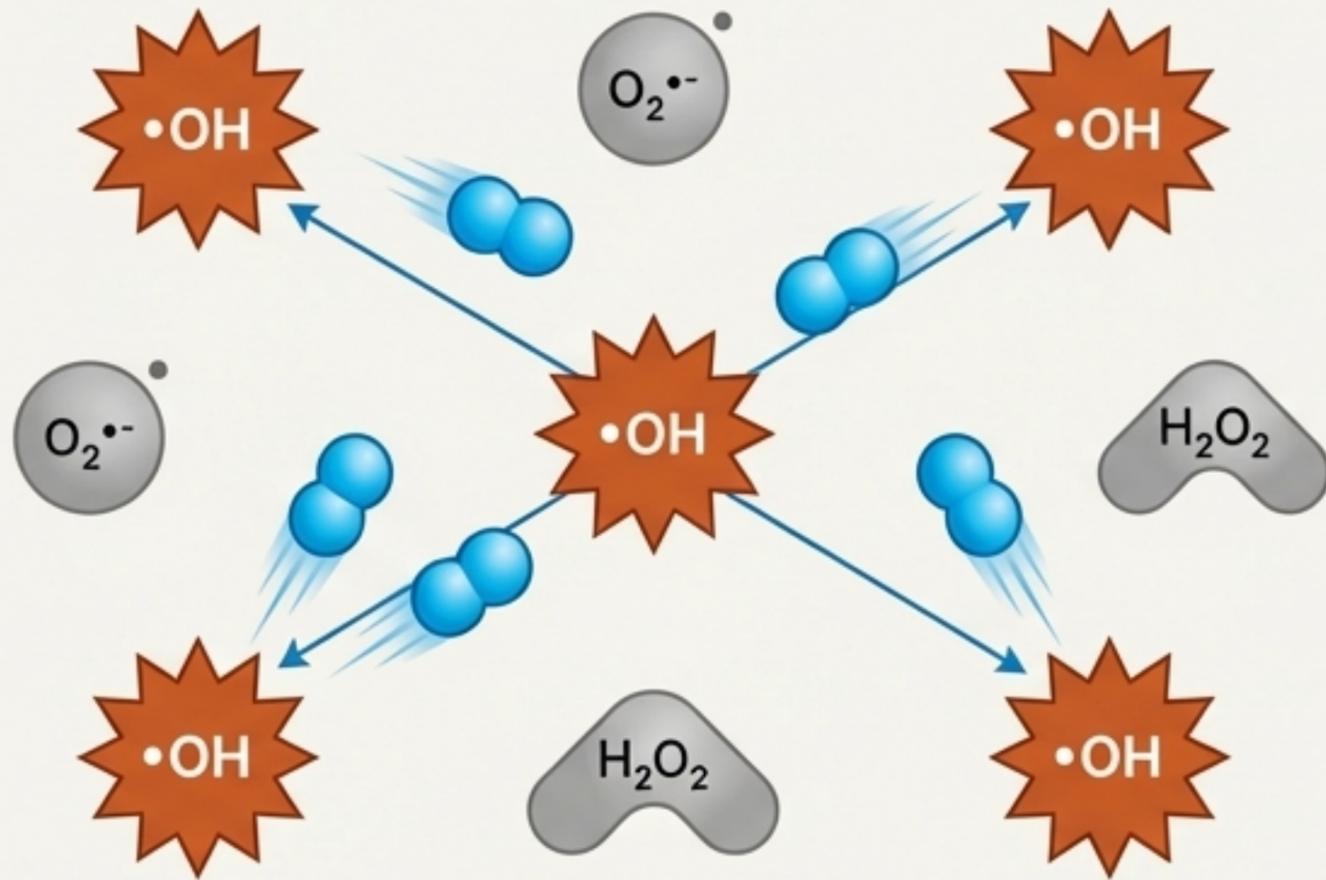
Molecular hydrogen donates electrons to two hydroxyl radicals.

The byproduct of this reaction is simply two molecules of harmless water.

This is a direct, clean neutralization with no toxic aftermath.

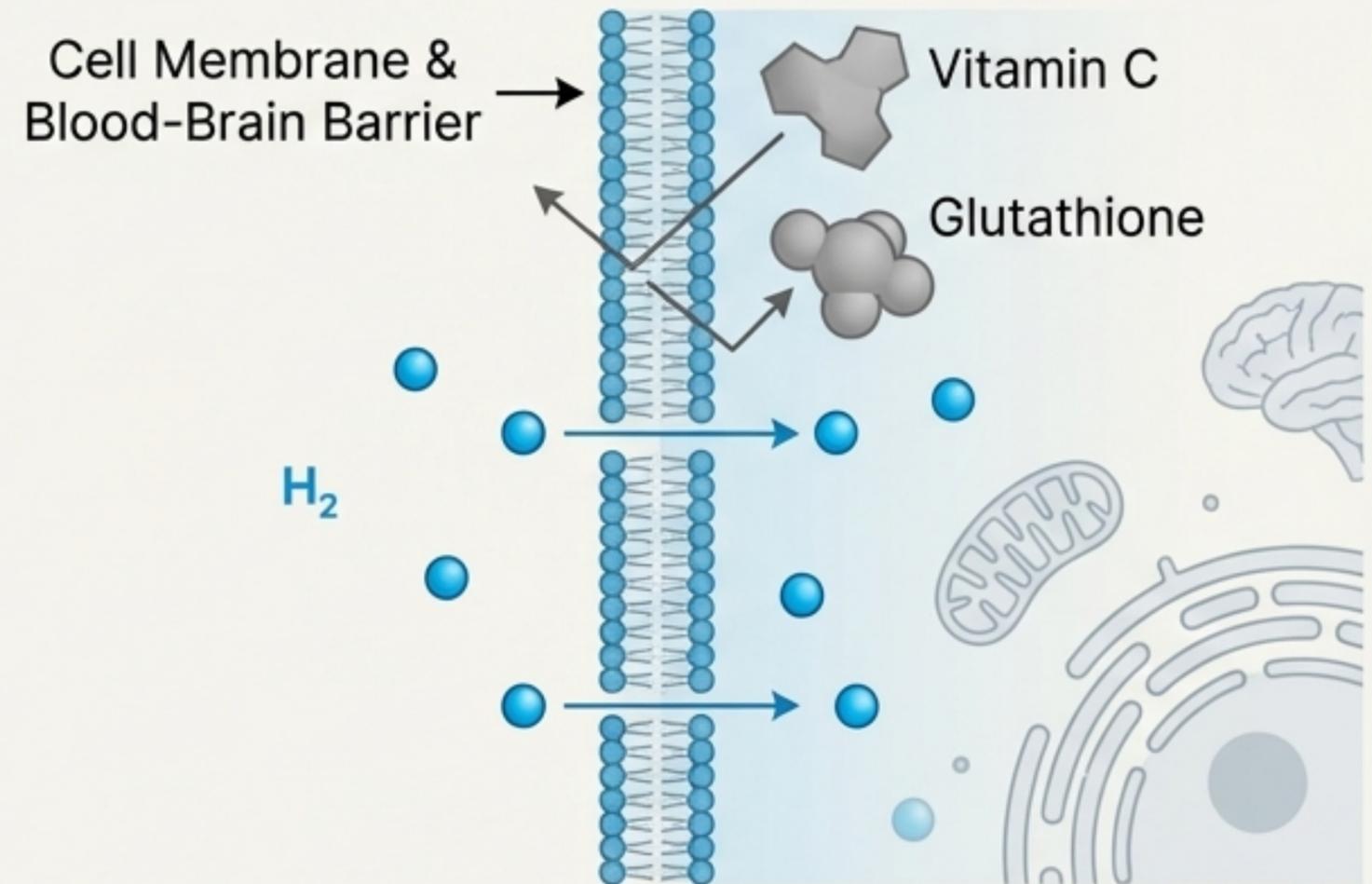
H₂ Possesses Two Unrivaled Advantages

SELECTIVE



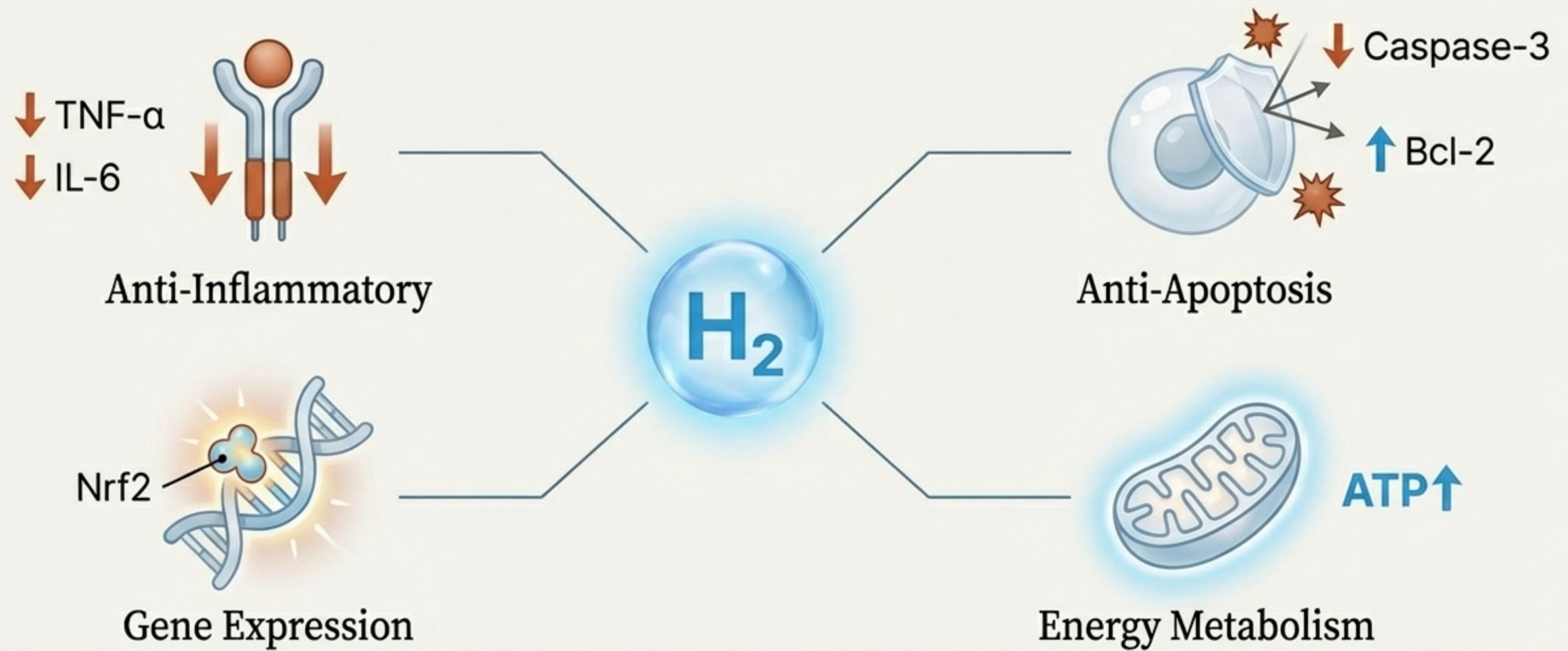
Targets only cytotoxic radicals (•OH, ONOO⁻), leaving beneficial signaling ROS untouched. It does not disrupt essential redox signaling pathways.

PENETRANT



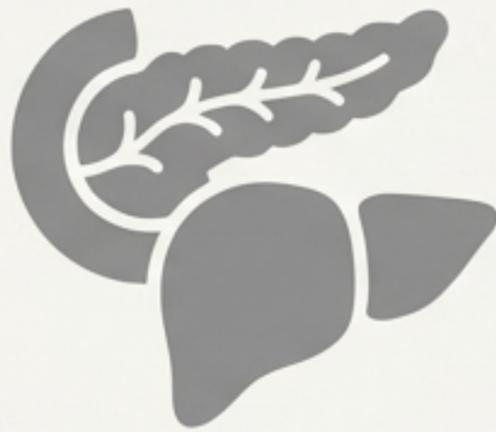
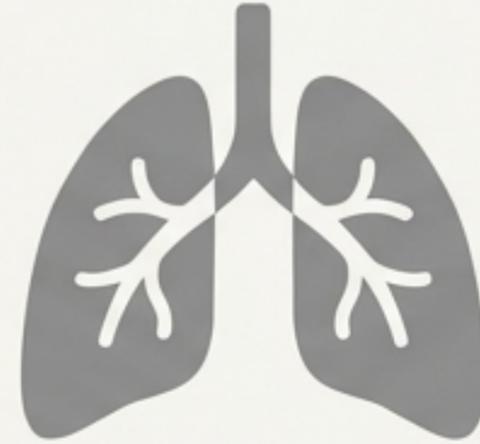
As the smallest molecule, it rapidly diffuses across all membranes to reach every cellular compartment, including mitochondria, the nucleus, and the brain.

The Ripple Effect: Beyond Antioxidant Action



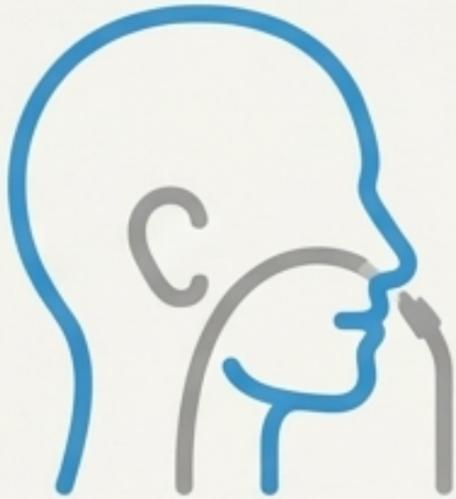
H_2 is not just an antioxidant; it's a gasotransmitter that modulates fundamental cellular pathways.

A Groundswell of Evidence Across a Wide Therapeutic Range



The therapeutic potential of H₂ is supported by a large and rapidly growing body of research across numerous human diseases.

Multiple Pathways for Therapeutic Delivery



Inhalation

Inhaling H_2 gas (typically 2-4%) allows for high, sustained doses and rapid distribution. Ideal for acute conditions and clinical use.



H_2 -Rich Water

Drinking water with dissolved H_2 (up to 1.6 mg/L). Portable, safe, and convenient for daily use and chronic conditions.



H_2 -Rich Saline

Intravenous injection of H_2 -dissolved saline ensures precise dosing and rapid systemic delivery. Used primarily in clinical and research settings.

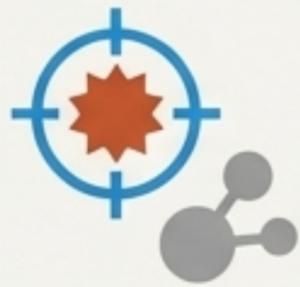
A New Class of Therapeutic Medical Gas

O₂ NO H₂ H₂S

H₂ is not a supplement; it is an emerging therapeutic medical gas with a unique and powerful biological profile.

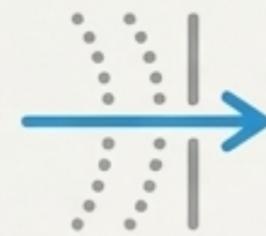
- History in medicine dates back to its use in “Hydreliox” breathing gas for deep-sea diving.
Recommended in China's Clinical Guidance for COVID-19 Pneumonia Treatment (66% H₂ / 33% O₂).
Its excellent safety profile and lack of cytotoxicity set it apart from other gasotransmitters.

The Defining Attributes of a Breakthrough Molecule



1. Selective Cytotoxicity:

Targets only the most damaging free radicals, preserving essential biological signals.



2. Unmatched Bioavailability:

Effortlessly penetrates every cell, tissue, and organelle, including the brain.



3. Benign Byproduct:

Its only metabolic end-product is water, ensuring an exceptional safety profile.



4. Pleiotropic Action:

Functions as a master regulator, exerting antioxidant, anti-inflammatory, and anti-apoptotic effects simultaneously.