

Inside Cellular Aging

Integrated Insights into Metabolism, Oxidative Damage, and Cellular Defense

Biological Progression of Senescence Framework

The Senescence Cascade

Phenotypic Shift

—Senescence validation

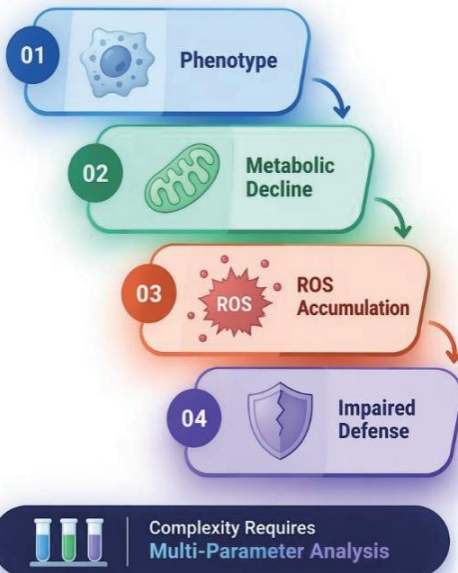
SA-β-gal

Lysosomal activity

Oxidative Damage

—Damage assessment

ROS 8-OHdG
H₂O₂ MDA
Protein carbonyl
Mitochondrial superoxide



Antioxidant Response

—Defense capacity

SOD / CAT / GPx activities
GSH / GSSG ratio
Vitamin C/Vitamin E/Coenzyme Q10
Total antioxidant capacity

Energy Imbalance

—Metabolic status

ATP NAD⁺ / NADH
OCR SQS
Membrane potential

Senescence is driven by metabolic decline, oxidative damage, and redox
40+ validated indicators enable precise, end-to-end quantification.

Where It Applies

Basic Research

Decodes mechanisms linking metabolism, ROS, and senescence

Natural Products

Validate anti-aging efficacy of plant extracts and probiotics

Drug Screening

Identify candidates targeting oxidative stress and mitochondrial dysfunction

Biomarker Analysis

Quantifies intervention outcomes in blood and tissue samples

Flagship Assays

Cellular Senescence Fluorometric Assay Kit (E-BC-F086)

Reliable Phenotype Validation

- high sensitivity, strong signal retention
- cell-permeable, simple workflow, Flow Cytometry-Ready

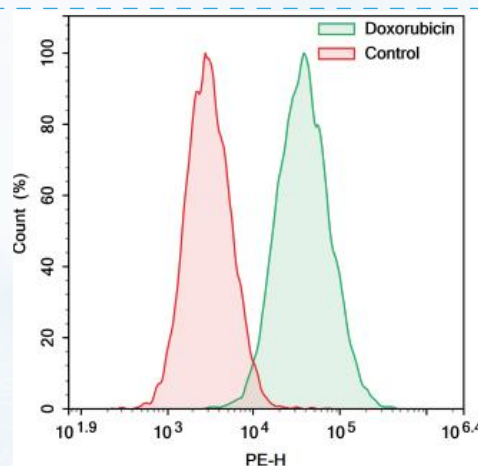


Fig 1. Doxorubicin-induced senescence in WI-38 cells vs control

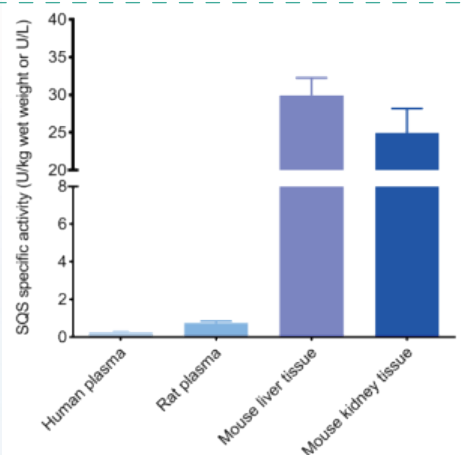


Fig 2. SQS activity across multiple sample types

Squalene Synthase (SQS) Activity Colorimetric Assay Kit (E-BC-K794-M)

Links Lipid Metabolism to Aging Pathways

- low input (10 μ L), broad sample compatibility
- high accuracy, reliable recovery across dilutions

Popular Senescence-Related Assays

Cellular Senescence Phenotype

Cellular Senescence (E-BC-F086), OCR (E-BC-F070), ECAR (E-BC-F069), FAO (E-BC-K784-M), Lysosomal (E-BC-F202), NAD⁺/NADH (E-BC-K804-M)

Oxidative Damage

8-OHdG (E-EL-0028), Hydroxyl Free Radical Scavenging Capacity (E-BC-K042-M), MDA (E-BC-K025-M), Mitochondrial Superoxide (E-BC-F008), ROS (E-BC-F005)

Antioxidant Defense

SQS (E-BC-K794-M), TAS (E-BC-K801-M), T-GSH & Reduced GSH (E-BC-F045), TOS (E-BC-F008), T-SOD (E-BC-K020-M)

Others

HYP (E-BC-K062-M), SIRT-1 (E-BC-F056)

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