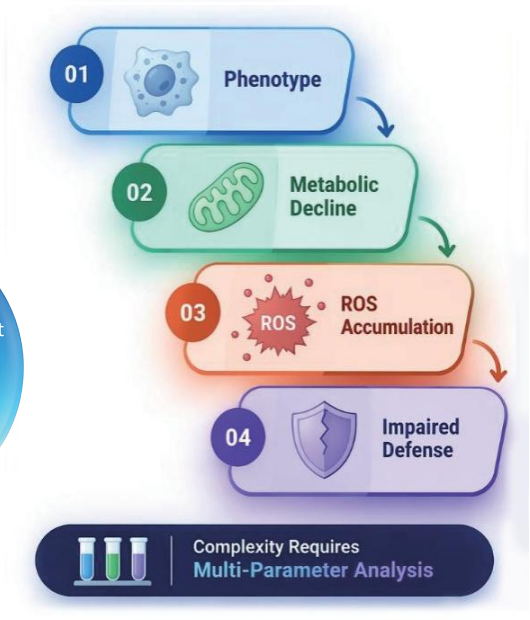
Elabscience®

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
H_2O_2 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

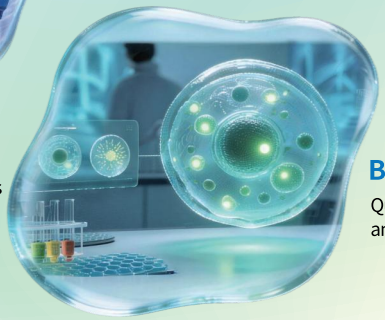
Decodes mechanisms linking metabolism, ROS, and senescence

Drug Screening

Identify candidates targeting oxidative stress and mitochondrial dysfunction

Natural Products

Validate anti-aging efficacy of plant extracts and probiotics



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

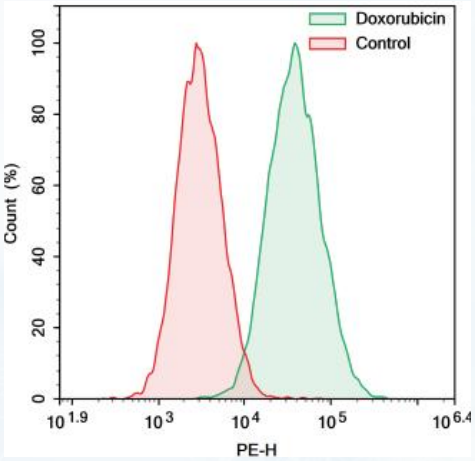


Fig 1. Doxorubicin-induced senescence in WI-38 cells vs control

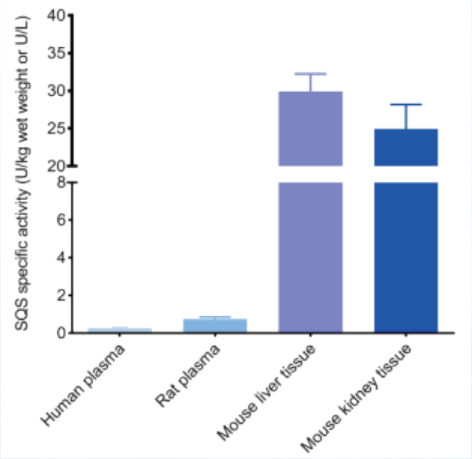


Fig 2. SQS activity across multiple sample types

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

Links Lipid Metabolism to Aging Pathways

- low input (10 µL), 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)

Elabscience Bionovation Inc.

Toll-free: 1-888-852-8623 Tel: 1-832-243-6086 Fax: 1-832-243-6017

Web: www.elabscience.com Email: orders@elabscience.com; techsupport@elabscience.com