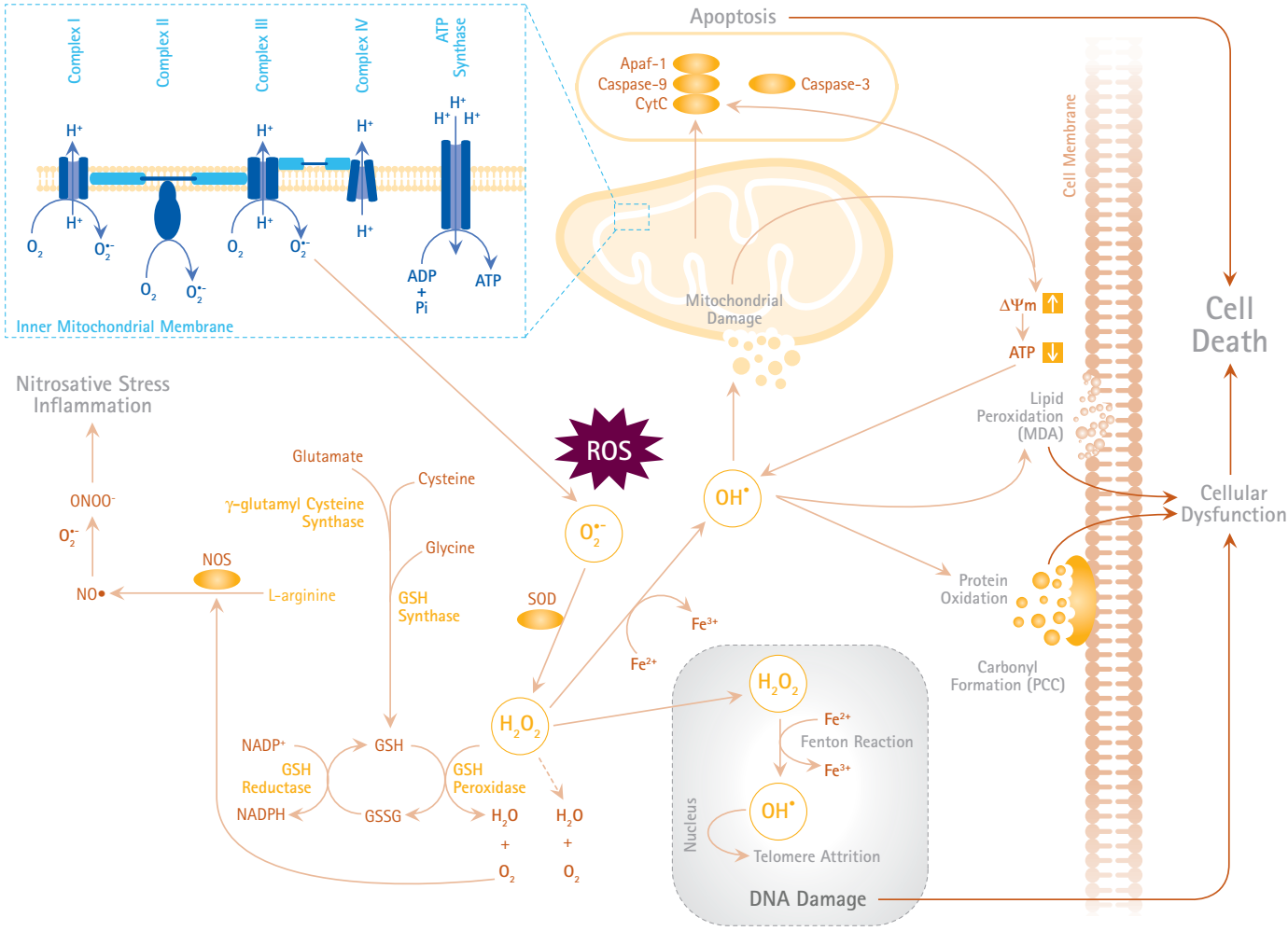
Pathways and Biomarkers of

Oxidative Stress



Oxygen metabolism, although essential for life, imposes a potential threat to cells because of the formation of partially reduced oxygen species. Normal cellular homeostasis is a delicate balance between the rate and magnitude of oxidant formation and the rate of oxidant elimination. The inherent ability of cells to withstand oxidative stress depends on upon several factors, such as their antioxidant capacity, the ability to sustain metabolic requirements by deriving energy from alternate pathways, efficiency to repair oxidatively modified biomolecules. Hence, oxidative stress can be defined as the pathogenic outcome of the overproduction of oxidants that overwhelms the cellular antioxidant capacity. A critical function of reactive species is immunological host response. Generation of reactive species and strong oxidants by inflammatory cells is essential for killing invading microorganisms. However, excessive production of reactive species is also responsible for pathogenetic processes in cells. It is, therefore, important to understand the biochemical pathways for the induction of oxidative stress by reactive species.

Tools for the study of oxidative stress

For a complete selection, please visit: **www.merckmillipore.com**

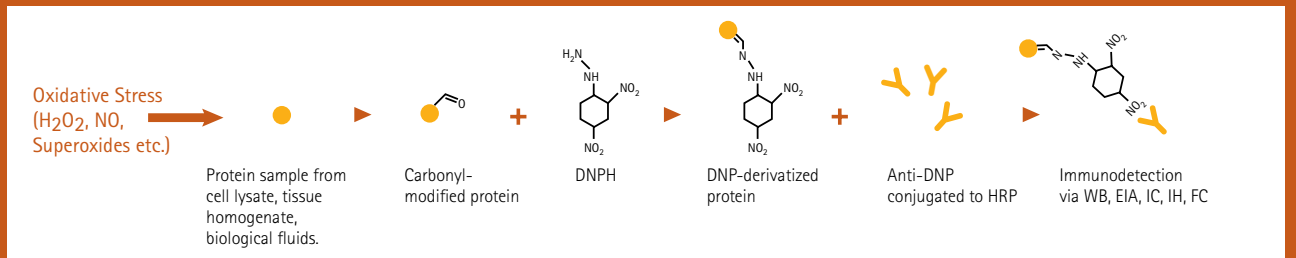
Description	Cat. No.
Antibodies	
Anti-4-Hydroxynonenal	AB5605
Anti-8-Hydroxydeoxyguanosine	AB5830
Anti-8-Oxoguanine, clone 483.15	MAB3560
Anti-AGE (Advanced Glycated End-products)	AB9890
Anti-Cu/Zn-SOD	07-403
Anti-Cytochrome C, clone C-7	05-479
Anti-eNOS/NOS III, CT	07-520
Anti-Glutathione, clone D8	MAB5310
Anti-Glutathione-S-Transferase, S. japonicum form	AB3282
Anti-iNOS/NOS II, clone 13F5.1	MABN527
Anti-KEAP1	ABS97
Anti-KEAP1, clone 7G4B10	MABC713
Anti-Lactotransferrin	07-685
Anti-Mitochondrial dicarboxylate carrier, clone 1F5.1	MABN457
Anti-Mn-SOD	06-984
Anti-NDUFB7	ABC391
Anti-Nitric Oxide Synthase I	AB5380
Anti-Nitric Oxide Synthase II	AB5382
Anti-Nitric Oxide Synthase III	AB16301
Anti-Nitric Oxide-Dopamine	AB5902
Anti-Nitric Oxide-Glutathione	AB5540
Anti-Nitrotyrosine	AB5532
Anti-Nitrotyrosine, clone 1A6	05-233
Anti-Nitrotyrosine, clone 1A6, Alexa Fluor® 488 conjugate	16-226
Anti-Nitrotyrosine, clone 1A6, HRP conjugate	16-207
Anti-Nitrotyrosine Magnetic Bead Conjugate	16-310
Anti-nNOS/NOS I	07-571
Anti-Peroxiredoxin 1	07-609
Anti-Peroxiredoxin 2	07-610
Anti-Peroxiredoxin 3	07-611
Anti-Peroxiredoxin 4	07-612
Anti-phospho-eNOS (Ser1177)	07-428
Anti-phospho-eNOS/NOS III (Ser116)	07-357

Description	Cat. No.
Anti-phospho-eNOS/NOS III (Ser617)	07-561
Anti-phospho-eNOS/NOS III (Ser635)	07-562
Anti-RAGE	AB5484
Anti-RAGE, clone DD/A11 or A11	MAB5328
Anti-REDD1	ABC245
Anti-SOD1, clone 6F5	MABC684
Anti-SOD2	AB10346
Anti-Superoxide Dismutase 1	AB5482
Anti-Thioredoxin 1	AB9328
Small Molecules	
7-Nitroindazole	483400
AAPH	100100
AG126	658452
α-Lipoic Acid	437692
Apocynin	178385
Carboxy-PTIO, Sodium Salt	217386
Diphenyleneiodonium Chloride	300260
DL-α-Difluoromethylornithine, Hydrochloride	288500
DPPH Free Radical	300267
FeTPPS	341492
Keap1-Nrf2 Interaction Probe, ML334	505987
L-NIL, Dihydrochloride	482100
MCI-186	443300
Methylene Blue	467250
MnTMPyP	475872
N^G,N^G-Dimethyl-L-arginine, Dihydrochloride	311203
NG-Hydroxy-L-arginine, Monoacetate Salt	399250
Nitric Oxide Synthase, Neuronal Inhibitor I	490070
nNOS - PSD-95 Interaction Inhibitor, ZL006	482740
NOX Inhibitor VIII, VAS3947	532336
NOX1 Inhibitor, ML171	492002
Nrf2 Activator	492040
NS 2028	492030
SKF-525A, Hydrochloride	567300

▶ TECHNOLOGY HIGHLIGHT

Protein Oxidation Detection Kits: OxyBlot™, OxyELISA™, OxyICC™, and OxyIHC™

Merck Millipore's oxidative stress detection kits enable a simple and sensitive measurement of protein oxidation using various techniques. These kits provide all chemical and immunological reagents necessary to perform quantitative and qualitative detection of carbonyl groups introduced into proteins by oxidative reactions with oxygen free radicals and other reactive species. The test method of our kits involves chemical derivatization of protein carbonyl groups with 2,4-dinitrophenylhydrazine (DNPH). This chemical reaction results in proteins being covalently coupled to DNP at their carbonyl sites. The DNP-derivatized proteins are then detected using an antibody that specifically binds to the DNP moiety.



Description	Cat. No.
OxyBlot™ Protein Oxidation Detection Kit	S7150
OxyELISA™ Oxidized Protein Quantitation Kit	S7250

Description	Cat. No.
OxyICC™ Oxidized Protein Detection Kit	S7350
OxyIHC™ Oxidized Protein Detection Kit	S7450

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