

Glutathione biosynthesis

L-Glutamate + L-Cysteine

γ Glu-Cys synthetase

γ -L-Glutamyl-L-Cysteine

Glycine

Glutathione synthetase

γ -L-Glutamyl-L-Cysteinyl-Glycine
(glutathione; GSH)

Pentose phosphate cycle

NADPH+H⁺

NADP⁺

Ribonucleotide
reductase

TrxS₂

Thioredoxin
reductase

2H₂O + O₂

2-Cys peroxiredoxin

TrxSH₂

2H₂O₂

Toxic
nucleophile

GSH
conjugate

MRP and/or GSSG pumps

Host cell

ROS generators

Mitochondrial
electron
transport

Other metabolic
processes

2O₂⁻

2H⁺

Superoxide
dismutase (Mn)

O₂

2O₂⁻

2H⁺

Superoxide
dismutase (Fe)

O₂

H₂O₂

Hemoglobin
digestion in the
food vacuole

2H₂O₂

GrxS₂

Glutathione
S-transferase

2H₂O + O₂

GrxSH₂

Ribonucleotide
reductase

1-Cys Prx (ox)

2H₂O + O₂

1-Cys Prx (red)

2H₂O₂

