Special Issue

Advances in Peroxiredoxin Biology

Message from the Guest Editors

Peroxiredoxins (Prxs) are a group of antioxidant enzymes. Acting as thiol-specific peroxidases and modulators of hydrogen peroxide (H2O2) signaling, they convert harmful peroxides, particularly H2O2, organic hydroperoxides, and peroxynitrite, into harmless compounds, utilizing electron donors such as thioredoxin. Prxs are divided into three primary categories based on their catalytic mechanisms: typical 2-Cys, atypical 2-Cys, and 1-Cys peroxiredoxins. Widely conserved across all forms of life, Prxs are crucial for sustaining redox balance and modulating signaling pathways linked to H2O2. Beyond their peroxidase function, they also serve as chaperones and redox receptors and transducers. During oxidative stress, Prxs can undergo reversible hyperoxidation, temporarily halting their peroxidase activity while potentially boosting their chaperone role.

Reduced Prx activity is associated with aging and age-related diseases, whereas mildly boosting Prx activity slows down aging and reduces the incidence of age-related diseases. In essence, Prx are versatile proteins that play a key role in combating oxidative stress, maintaining cellular signaling, and preventing redox-related damage.

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Deadline for manuscript submissions

23 January 2026

Antioxidants

an Open Access Journal by MDPI

Impact Factor 6.6
CiteScore 12.4
Indexed in PubMed

mdpi.com/si/246593

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About the Journal

Message from the Editor-in-Chief

It has been recognized in medical sciences that in order to prevent adverse effects of "oxidative stress" a balance exists between prooxidants and antioxidants in living systems. Imbalances are found in a variety of diseases and chronic health situations. Our journal *Antioxidants* serves as an authoritative source of information on current topics of research in the area of oxidative stress and antioxidant defense systems. The future is bright for antioxidant research and since 2012, *Antioxidants* has become a key forum for researchers to bring their findings to the forefront.

Editor-in-Chief

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