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REVIEW

Reactive oxygen species: re-evaluation of generation, monitoring and role in stress-signalling in phototrophic organisms

Franz-Josef Schmitt¹, Gernot Renger^{1,a}, Thomas Friedrich¹, Vladimir D. Kreslavski^{2,3}, Sergei K. Zharmukhamedov², Dmitry A. Los³, Vladimir V. Kuznetsov^{3,4}, Suleyman I. Allakhverdiev^{2,3,*}

¹*Technical University Berlin, Institute of Chemistry Sekr. PC 14, Max-Volmer-Laboratory of Biophysical Chemistry, Straße des 17. Juni 135, D-10623 Berlin, Germany*

²*Institute of Basic Biological Problems, Russian Academy of Sciences, Institutskaya Street 2, Pushchino, Moscow Region 142290, Russia*

³*Institute of Plant Physiology, Russian Academy of Sciences, Botanicheskaya Street 35, Moscow 127276, Russia*

⁴*Tomsk State University, Lenin Avenue 36, Tomsk 634050, Russia*

* Corresponding author: suleyman.allakhverdiev@gmail.com

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Abbreviations: Ala, delta-aminolevulinic acid ; Asc, ascorbate; APX, ascorbate peroxidase; CALI, chromophore-activated laser inactivation ;CHO, Chinese hamster ovary; COX, cytochrome c oxidase; DHA, dehydroascorbate; DHAR, DHA reductase; EF-G, elongation factor G; EPR, electron paramagnetic resonance; ETC, electron transfer chain; Fd, ferredoxin; GFP, green fluorescent protein; GR, glutathione reductase; GS, glutathione; GSH, reduced glutathione; GSSG, glutathione disulphide; H₂DCF-DA, 2',7'-dichlorodihydrofluorescein diacetate, acetyl ester; HOCl, hypochloric acid; Hsfs, heat stress transcription factors; ISC, inter system crossing; LHC, light harvesting complex; MAPK, mitogen-activated protein kinase; MDHA, monodehydroascorbate radical; MDHAR, MDHA reductase; MPO, myeloperoxidase; NBT, nitroblue tetrazolium; NOX, NADPH oxidase; NPQ, nonphotochemical quenching, OS, oxidative stress; PPFD , photosynthetic photon flux density; PQ, plastoquinone; Prx, peroxiredoxins; PS, photosystem; RBOHs, respiratory burst oxidase homologs; RFP, red fluorescent protein; ROS, reactive oxygen species; RS, redox-sensitive proteins; SOD, superoxide dismutase; t-APX, APX bound to the thylakoid membrane; TF, transcription factors; WOC, water-oxidizing complex; YFP, yellow fluorescent protein .

^a**This article is devoted to the memory of Prof. Dr. Gernot Renger.**

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