Sergey Khorobrykh, PhD.

Position	ResearcherScientist, Molecular Plant Biology, Department of Biochemistry, University of Turku, FI-20014 Turku, Finland
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Research Interests:

- Photosynthesis,
- Reactive oxygen species, free radicals and regulatory mechanisms in biological systems, The role of free radicals, oxidative stress and antioxidant systems in redox regulation,
- Lipids, lipid-derived compounds (oxylipins) and their effect on cell metabolism,
- Bionergetics

Professional experience:

2012 -	Researcher Scientist, Molecular Plant Biology, Department of Biochemistry, University of Turku, FI-20014 Turku, Finland
2008 - 2012	Senior Research Scientist, Photosynthetic Electron Transport Lab., Institute of Basic Biological Problems, Russian Academy of Sciences.
2006 – 2008	Senior Research Scientist, Lab. of Prof. Jun'ichi Mano, Science Research Center, Yamaguchi University, Yoshida 1677-1, Yamaguchi 753-8515, Japan.
2005 – 2006	Senior Research Scientist, Lab. of Prof. Jun'ichi Mano, Science Research Center, Yamaguchi University, Yoshida 1677-1, Yamaguchi 753-8515, Japan.
2004 – 2005	Visiting Research Scientist, Lab. of Prof. Renate Scheibe, Department of Plant Physiology, Faculty of Biology and Chemistry, University of Osnabrueck, D 49069 Osnabrueck, Germany.

2002 – 2004 Research Scientist, Photosynthetic Electron Transport Lab., Institute of BasicBiological Problems, Russian Academy of Sciences.
2002 – 2002 Visiting Research Scientist, Lab. of Prof. David M Kramer, Institute of Biological Chemistry, Washington State University, Pullman, WA 99164, USA.
1999 – 2001 Jounior Research Scientist, Photosynthetic Electron Transport Lab., Institute of BasicBiological Problems, Russian Academy of Sciences.

Education:

1987 – 1992: MSc in Physics, Department of Physics, Yaroslavl State University, Yaroslavl, Russia.
1994 – 1996 MSc in Biochemistry, Ecology-Biosphere Department, Pushchino State University, Pushchino, Russia.

1996 – 1999 PhD in Biochemistry, Ecology-Biosphere Department, Pushchino State University, Pushchino, Russia.

Academic history:

June, 2001: PhD, the theme of the thesis is: “Light-induced oxygen consumption and reduction of monodehydroascorbate radical in thylakoids of higher plants”. Speciality – biochemistry

Teaching Experience:

1999-2003 Lectures and Labs in Absorption Spectroscopy. Students' Summer Practice Program, Moscow State University
2012- Lectures within series of advanced photosynthesis courses of the Molecular Plant Biology at University of Turku, Finland.

Awards and Grants:

2006- 2008 The JSPS Postdoctoral Fellowship for Foreign Researchers.
2005 2006 Postdoctoral Fellowship sponsored by Goho Life Science Foundation.

Memberships:

Japanese Society of Plant Physiology.
Russian Society of Plant Physiology
International Society of Photosynthesis Research

Publications:

1. Khorobrykh S.A. and Tyystjärvi E. (2018) Plastoquinol generates and scavenges reactive oxygen species in organic solvent: Potential relevance for thylakoids. Biochim. Biophys. Acta. 1859 (10), 1119-1131.
2. Heta Mattila, Dimitar Valev, Vesa Havurinne, Sergey Khorobrykh, Olli Virtanen, Mikko Antinluoma, Kumud B. Mishra, Esa Tyystjärvi. (2018) Degradation of chlorophyll and synthesis of flavonols during autumn senescence - the story told by individual leaves. AoB PLANTS, Volume 10, Issue 3, 1 May 2018, ply028, https://doi.org/10.1093/aobpla/ply028.
3. Vetoshkina D.V. Ivanov B.N. Khorobrykh S.A., Proskuryakov I.I., Borisova-Mubarakshina M.M. (2017) Involvement of the chloroplast plastoquinone pool in the Mehler reaction. Physiol. Plant. 161(1), 45-55.
4. Khorobrykh S.A., Karonen M., Tyystjärvi E. (2015) Experimental evidence suggesting that H_2O_2 is produced within the thylakoid membrane in a reaction between plastoquinol and singlet oxygen. FEBS Lett., 12, 589(6), 779-786.
5. Mattila H., Khorobrykh S., Havurinne V., Tyystjärvi E. (2015) Reactive oxygen species: Reactions and detection from photosynthetic tissues. J Photochem Photobiol B., 152 (Pt B), 176-214.
6. Konert G., Rahikainen M., Trotta A., Durian G., Salojärvi J., Khorobrykh S., Tyystjärvi E., Kangasjärvi S.(2015) Subunits B'γ and B'ζ of protein phosphatase 2A regulate photo-oxidative stress responses and growth in Arabidopsis thaliana. Plant Cell Environ. 38 (12), 2641-2651.
7. Jun'ichi Mano, Sergey Khorobrykh, Kenji Matsui, Yoko Iijima, Nozomu Sakurai, Hideyuki Suzuki, Daisuke Shibata (2014) Acrolein is formed from trienoic fatty acids in chloroplast: A targeted metabolomics approach. Plant Biotechnology 31, 535–543.
8. Yanykin DV, Khorobrykh AA, Khorobrykh SA, Pshybytko NL, Klimov VV. (2013) Flash-induced consumption of molecular oxygen on the donor side of photosystem II in Mn-depleted subchloroplast membrane fragments: specific effects of manganese and calcium ions. *Photosynth Res*. 117(1-3),367-74.
9. Khorobrykh S. A., Khorobrykh A. A., Yanykin D. V., Ivanov B. N., Klimov V. V. and Mano J. (2011) Photoproduction of catalase-insensitive peroxides on the donor side of manganese-depleted photosystem II: evidence with a specific fluorescent probe. *Biochemistry* 50(49):10658-65.
10. Jun'ichi Mano, Kenji Tokushige, Hirotoshi Mizoguchi, Hiroyuki Fujii, Sergey Khorobrykh (2010) Accumulation of lipid peroxide-derived, toxic α,β-unsaturated aldehydes (E)-2-pentanal, acrolein and (E)-2-hexenal in leaves under photoinhibitory illumination. *Plant Biotechnology*, 27, 193-197.
11. Yanykin DV, Khorobrykh AA, Khorobrykh SA**,** Klimov VV. (2010) Photoconsumption of molecular oxygen on both donor and acceptor sides of photosystem II in Mn-depleted subchloroplast membrane fragments. *Biochim Biophys Acta*, 1797(4), 516-523.
12. Jun'ichi Mano, Khorobrykh Sergey, Katsumi Amako (2009) Reactive Oxygen Species and Antioxidants Associated with Photosynthesis. Low Temperature Science, 67, 179.
13. Matsui K, Sugimoto K, Kakumyan P, Khorobrykh SA, Mano J. (2009) Volatile oxylipins and related compounds formed under stress in plants. *Methods Mol Biol.*, 580, 17.
14. Ivanov B.N., Mubarakshina M.M. and Khorobrykh S.A. **(**2007) Kinetics of the plastoquinone pool oxidation following illumination Oxygen incorporation into photosynthetic electron transport chain. *FEBS Letters*, 581, 1342–1346.
15. Maria Mubarakshina, Sergey Khorobrykh, Boris Ivanov (2006) Oxygen reduction in chloroplasts thylakoids results in production of hydrogen peroxide inside the membrane. *Biochim. Biophys. Acta*., 1757, 1496-1503.

16. Mubarakshina MM, Khorobrykh SA, Kozulyova MA & Ivanov BN. (2006) Intramembrane hydrogen peroxide production in the course of oxygen reduction in higher plant thylakoids. *Doklady Biochem and Biophys*., 408(1), 118-121.
17. Sergey Khorobrykh, Maria Mubarakshina, Boris Ivanov (2004) Photosystem I is not solely responsible for oxygen reduction in isolated thylakoids. *Biochim. Biophys. Acta*, 1657, 164-167.
18. Ivanov B. and Khorobrykh S**.** (2003) Participation of photosynthetic electron transport in production and scavenging of reactive oxygen species. *Antioxid Redox Signal.*, 5(1), 43-53.
19. Ivanov B.N., Ignat'ev A.R., Khorobrykh S.A**.** (2002) Maleimides stimulate oxygen reduction in illuminated thylakoids. *FEBS Letters*, 532, 193-197.
20. Khorobrykh S.A**.**, Khorobrykh A.A., Klimov V.V. and Ivanov B.N. Photoconsumption of oxygen in PS2 particles due to water-oxidation complex damaging at alkaline pH. (2002) *Biochemistry (Moscow)*, 67, 683-688.
21. Khorobrykh S.A. and Ivanov B.N. (2002) Oxygen reduction in plastoquinone pool of isolated pea thylakoids. *Photosynthesis Research*, 71, 209-219.
22. Ignat'ev A.R., Khorobrykh S.A., Ivanov B.N. (2001) Effect of high concentration of magnesium ions on electron transport and proton exchange in the thylakoid membranes of higher plants. Biophysics (Moscow), 46, 1022-1027.
23. Ivanov B.N., Ignatova L.K., Ovchinnikova V.I. and Khorobrykh S.A**.** (1997) Photoreduction of acceptor generated in an ascorbate peroxidase reaction in pea thylakoids. *Biochemistry (Moscow)*, 62, 1082-1088.