

List of Publications / Eva-Mari Aro

1. Publications in peer reviewed international journals:

2024

1. Grebe S, Porcar-Castell A, Riikonen A, Paakkanen V, Aro EM. 2024. Accounting for photosystem I photoinhibition sheds new light on seasonal acclimation strategies of boreal conifers. *J Exp Bot.* 75: 3973-3992.
2. Khosravi M, Allakhverdiev SI, Eaton-Rye JJ, Hołyńska M, Aro EM, Shen JR, Najafpour MM. 2024. Fundamental properties, characterization techniques, and applications for photo(electro) catalysis: from nanosized manganese oxides to manganese coordination compounds. *Coordination Chemistry Reviews.* in press.
3. Muth-Pawlak D, Kakko L, Kallio P, Aro EM. 2024. Interplay between photosynthetic electron flux and organic carbon sinks in sucrose-excreting *Synechocystis* sp. PCC 6803 revealed by omics approaches. *Microb Cell Fact.* 23: 188.
4. Tiwari A, Mamedov F, Fitzpatrick D, Gunell S, Tikkanen M, Aro EM. 2024. Differential FeS cluster photodamage plays a critical role in regulating excess electron flow through photosystem I. *Nature Plants*, 10: 1592–1603.

2023

5. Gollan PJ, Grebe S, Roling L, Grimm B, Spetea C, Aro EM. 2023. Photosynthetic and transcriptome responses to fluctuating light in *Arabidopsis* thylakoid ion transport triple mutant. *Plant Direct.* 7: e534.
6. Gunell S, Lempiäinen T, Rintamäki E, Aro EM, Tikkanen M. 2023. Enhanced function of non-photoinhibited photosystem II complexes upon PSII photoinhibition. *Biochim Biophys Acta Bioenerg.* 1864: 148978.
7. Kılıç M, Käpylä V, Gollan PJ, Aro EM, Rintamäki E. 2023. PSI photoinhibition and changing CO₂ levels initiate retrograde signals to modify nuclear gene expression. *Antioxidants (Basel).* 12: 1902.
8. Santana Sanchez A, Nikkanen L, Werner E, Toth G, Ermakova M, Kosourov S, Walter J, He M, Aro EM, Allahverdiyeva Y. 2023. Flv3A facilitates O₂ photoreduction and affects H₂ photoproduction independently of Flv1A in diazotrophic *Anabaena* filaments. *New Phytol.* 237: 126-139.

2022

9. Arshad R, Saccon F, Bag P, Biswas A, Calvaruso C, Bhatti A, Grebe S, Mascoli M, Mahub M, Muzzopappa F, Polyzois A, Schiphorst C, Sorrentino S, Streckaitė S, van Amerongen H, Aro EM, Bassi R, Boekema E, Croce R, Dekker J, van Grondelle R, Jansson S, Kirilovsky D, Kouril R, Michel S, Mullineaux C, Panzarová K, Robert B, Ruban A, van Stokkum I, Wientjes E and Büchel C. 2022. A kaleidoscope of photosynthetic antenna proteins and their emerging roles. *Plant Physiol.* 189: 1204-1219.

10. Dukic E, Gollan PJ, Grebe S, Paakkanen V, Herdean A, Aro EM, Spetea C. 2022. The Arabidopsis Thylakoid Chloride Channel ClCe Regulates ATP Availability for Light-harvesting Complex II Protein Phosphorylation. *Front. Plant Sci.* 13: 1-14
11. Fitzpatrick D, Aro EM, Tiwari A. 2022. True oxygen reduction capacity during photosynthetic electron transfer in thylakoids and intact leaves. *Plant Physiol.* 189: 112-128
12. Gerotto C, Trotta A, Bajwa AA, Morosinotto T, Aro EM. 2022. Role of serine/threonine protein kinase STN7 in the formation of two distinct photosystem I supercomplexes in *Physcomitrium patens*. *Plant physiol.* 190: 698-713
13. Kılıç M, Gollan PJ, Lepistö A, Isojärvi J, Sakurai I, Aro EM, Mulo P. 2022. Gene expression and organization of thylakoid protein complexes in the PSII-less mutant of *Synechocystis* sp. PCC 6803. *Plant Direct* 6: e409
14. Lempiäinen T, Rintamäki E, Aro EM, Tikkanen M. 2022. Plants acclimate to Photosystem I photoinhibition by readjusting the photosynthetic machinery. *Plant Cell Environ.* 45: 2954-2971
15. Muth-Pawlak D, Kreula S, Gollan PJ, Huokko T, Allahverdiyeva Y and Aro EM. 2022. Patterning of the autotrophic, mixotrophic and heterotrophic proteomes of oxygen evolving cyanobacterium *Synechocystis* sp. PCC 6803. *Frontiers in Microbiology.* 13: 891895
16. Tiwari A, Aro EM. 2022. Paradoxes in judging the inhibition of photosynthetic electron transfer chain using P700 oxidation and dark re-reduction analyses. *Biochim Biophys Acta Bioenerg.* 1863: 148581

2021

17. Allahverdiyeva Y, Aro EM, van Bavel B, Escudero C, Funk C, Heinonen J, Herfindal L, Lindblad P, Mäkinen S, Penttilä M, Sivonen K, Skogen Chauton M, Skomedal H and Skjermo J. 2021. NordAqua, a Nordic Center of Excellence to develop an algae-based photosynthetic production platform. *Physiol Plant.* 173: 507-513
18. Gollan PJ, Trotta A, Bajwa AA, Mancini I, Aro EM. 2021. Characterization of the free and membrane-associated fractions of the thylakoid lumen proteome in *Arabidopsis thaliana*. *International Journal of Molecular Sciences* 22: 8126
19. Lima-Melo Y, Kılıç M, Aro EM, Gollan PJ. 2021. Photosystem I Inhibition, Protection and Signalling: Knowns and Unknowns. *Front. Plant Sci.* 12: 791124
20. Mustila H, Muth-Pawlak D, Aro EM, Allahverdiyeva Y. 2021. Global proteomic response of unicellular cyanobacterium *Synechocystis* sp. PCC 6803 to fluctuating light upon CO₂ step-down. *Physiol Plant.* 173: 305-320
21. Nagy C, Thiel K, Mulaku E, Mustila H, Tamagnini P, Aro EM, Pacheco CC, Kallio P. 2021. Comparison of alternative integration sites in the chromosome and the native plasmids of the cyanobacterium *Synechocystis* sp. PCC 6803 in respect to expression efficiency and copy number. *Microb Cell Fact.* 20: 130
22. Tikkanen M, Nurmi M, Kangasjärvi S, Aro EM. 2021. Corrigendum to "Core protein phosphorylation facilitates the repair of photodamaged photosystem II at high light" [*Biochim Biophys Acta.* 1777(2008):1432-1437]. *Biochim Biophys Acta Bioenerg.* 862: 148381

23. Vuorio E, Thiel K, Fitzpatrick D, Huokko T, Kämäräinen J, Dandapani H, Aro EM, Kallio P. 2021. Hydrocarbon desaturation in cyanobacterial thylakoid membranes is linked with acclimation to suboptimal growth temperatures. *Frontiers in Microbiology*, 12: 781864

2020

24. Barbato R, Tadini L, Cannata R, Peracchio C, Jeran N, Alboresi A, Morosinotto T, Bajwa AA, Paakkari V, Suorsa M, Aro EM, Pesaresi P. 2020. Higher order photoprotection mutants reveal the importance of Δ pH-dependent photosynthesis-control in preventing light induced damage to both photosystem II and photosystem I. *Scientific Reports* 10: 6770
25. Calvaruso C, Rokka A, Aro EM, Büchel C. 2020. Specific Lhc proteins are bound to PSI or PSII supercomplexes in the diatom *Thalassiosira pseudonana*. *Plant Physiology* 183: 67-79
26. Che Y, Kusama S, Matsui S, Suorsa M, Nakano M, Aro EM, Ifuku K. 2020. Arabidopsis PsbP-like protein 1 facilitates the assembly of the photosystem II supercomplexes and optimizes plant fitness under fluctuating light. *Plant Cell Physiol.* 61: 1168-1180
27. Durian G, Jeschke V, Rahikainen M, Vuorinen K, Gollan PJ, Brosché M, Salojärvi J, Glawischnig E, Winter Z, Li S, Noctor G, Aro EM, Kangasjärvi J, Overmyer K, Burow M, Kangasjärvi S. 2020. PROTEIN PHOSPHATASE 2A-B γ controls botrytis cinerea resistance and developmental leaf senescence. *Plant Physiology* 182: 1161-1181
28. Fitzpatrick D, Aro EM, Tiwari A. 2020. A commonly used photosynthetic inhibitor fails to block electron flow to photosystem I in intact systems. *Frontiers in Plant Science-Plant Physiology* 11: 382
29. Gollan PJ, Aro EM. 2020. Photosynthetic signalling during high light stress and recovery; targets and dynamics. *Philosophical Transactions of the Royal Society B* 375: 20190406
30. Gollan PJ, Muth-Pawlak D, Aro EM. 2020. Rapid transcriptional reprogramming triggered by alteration of the carbon/nitrogen balance has an impact on energy metabolism in *Nostoc* sp. PCC 7120. *Life* 10, 0297
31. Grabsztunowicz M, Rokka A, Farooq I, Aro EM, Mulo P. 2020. Gel-based proteomic map of *Arabidopsis thaliana* root plastids and mitochondria. *BMC Plant Biol.* 20: 413
32. Grebe S, Trotta A, Bajwa AA, Mancini I, Bag P, Jansson S, Tikkanen M, Aro EM. 2020. Specific thylakoid protein phosphorylations are prerequisites for overwintering of Norway spruce (*Picea abies*) photosynthesis. *Proceedings of the National Academy of Sciences* 117: 17499-17509
33. Grieco M, Roustan V, Dermendjiev G, Rantala S, Jain A, Leonardelli M, Neumann K, Berger V, Engelmeier D, Bachmann G, Ebersberger I, Aro EM, Weckwerth W, Teige M. 2020. Adjustment of photosynthetic activity to drought and fluctuating light in wheat. *Plant, Cell & Environment* 43: 1484-1500
34. Nilsson AK, Pěnčík A, Johansson ON, Bänkestad D, Fristedt R, Suorsa M, Trotta A, Novák O, Mamedov F, Aro EM, Lundin B. 2020. PSB33 protein sustains Photosystem II in plant chloroplasts under UVA light. *J. Experimental Botany* 71: 7210-7223
35. Rantala M, Rantala S, Aro EM. 2020. Composition, phosphorylation and dynamic organization of photosynthetic protein complexes in plant thylakoid membrane. *Photochemical & Photobiological Sciences* 19: 604-619

36. Rantala S, Järvi S, Aro EM. 2020. Photosystem II: Assembly and turnover of the reaction center D1 protein in plant chloroplasts. *Encyclopedia of Biological Chemistry*, 3rd Edition
37. Rantala S, Lempiäinen T, Gerotto C, Tiwari A, Aro EM, Tikkanen M. 2020. PGR5 and NDH-1 systems do not function as protective electron acceptors but mitigate the consequences of PSI inhibition. *Biochimica et Biophysica Acta – Bioenergetics* 1861: 148154
38. Shapiguzov A, Nikkanen L, Fitzpatrick D, Vainonen J, Gossens R, Alseekh S, Aarabi F, Tiwari A, Blokhina O, Panzarová K, Benedikty Z, Tyystjärvi E, Fernie A, Trtílek M, Aro EM, Rintamäki E, Kangasjärvi J. 2020. Dissecting the interaction of photosynthetic electron transfer with mitochondrial signalling and hypoxic response in the *Arabidopsis rcd1* mutant. *Philosophical Transactions of the Royal Society B* 375: 20190413
39. Tadini L, Peracchio C, Trotta A, Colombo M, Mancini I, Jeran N, Costa A, Faoro F, Marsoni M, Vannini C, Aro EM, Pesaresi P. 2019. GUN1 influences the accumulation of NEP-dependent transcripts and chloroplast protein import in *Arabidopsis* cotyledons upon perturbation of chloroplast protein homeostasis. *The Plant Journal* 101: 1198-1220
40. Walter J, Leganés F, Aro EM, Gollan P. 2020. The small Ca²⁺-binding protein CSE links Ca²⁺ signalling with nitrogen metabolism and filament integrity in *Anabaena* sp. PCC 7120. *BMC Microbiol.* 20: 57

2019

41. Angeleri M, Muth-Pawlak D, Wilde A, Aro EM, Battchikova N. 2019. Global proteome response of *Synechocystis* 6803 to extreme copper environments applied to control the activity of the inducible *petJ* promoter. *Journal of Applied Microbiology* 126: 826-841
42. Carbonell V, Vuorio E, Aro EM, Kallio P. 2019. Enhanced stable production of ethylene in photosynthetic cyanobacterium *Synechococcus elongatus* PCC 7942. *World J Microbiol. Biotechnol* 35: 77
43. Gerotto C, Trotta A, Bajawa AA, Mancini I, Morosinotto T, Aro EM. 2019. Thylakoid protein phosphorylation dynamics in a moss mutant lacking SERINE/THREONINE PROTEIN KINASE STN8. *Plant Physiology* 180: 1582-1597
44. Grebe S, Trotta A, Bajwa AA, Suorsa M, Gollan PJ, Jansson S, Tikkanen M and Aro EM. 2019. The unique photosynthetic apparatus of Pinaceae – Analysis of photosynthetic complexes in Norway spruce (*Picea abies*). *Journal of Experimental Botany* 70: 3211–3225
45. Huokko T, Muth-Pawlak D, Aro EM. 2019. Thylakoid Localized Type 2 NAD(P)H Dehydrogenase NdbA Optimizes Light-Activated Heterotrophic Growth of *Synechocystis* sp. PCC 6803. *Plant Cell Physiol.* 60: 1386–1399
46. Lima-Melo Y, Gollan P, Tikkanen M, Silveira J, Aro EM. 2019. Consequences of photosystem I damage and repair on photosynthesis and carbon assimilation in *Arabidopsis thaliana*. *The Plant Journal* 97: 1061-1072
47. Lima-Melo Y, Alencar V, Lobo A, Suosa R, Tikkanen M, Aro EM, Silveira J, Gollan P. 2019. Photoinhibition of photosystem I provides oxidative protection during imbalanced photosynthetic electron transport in *Arabidopsis thaliana*. *Frontiers in Plant Science* 10: 916

48. Rungrat T, Almonte AA, Cheng R, Gollan P, Stuart T, Aro EM, Borevitz J, Pogson B, Wilson P. 2019. A genome-wide association study of non-photochemical quenching in response to local seasonal climates in *Arabidopsis thaliana*. *Plant Direct* 1-13
49. Santana-Sanchez A, Solymosi D, Mustila H, Bersanini L, Aro EM, Allahverdiyeva Y. 2019. Flavodiiron proteins 1-to-4 function in versatile combinations in O₂ photoreduction in cyanobacteria. *eLife*. 2019; 8: e45766
50. Shapiguzov A, Vainonen JP, Hunter K, Tossavainen H, Tiwari A, Järvi S, Hellman M, Aarabi F, Alseekh S, Wybouw B, Van Der Kelen K, Nikkanen L, Krasensky-Wrzaczek J, Sipari N, Keinänen M, Tyystjärvi E, Rintamäki E, De Rybel B, Salojärvi J, van Breusegem F, Fernie AR, Brosché M, Permi P, Aro EM, Wrzaczek M, Kangasjarvi J. 2019. *Arabidopsis* RCD1 coordinates chloroplast and mitochondrial functions through interaction with ANAC transcription factors. *Elife* 8. pii: e43284.
51. Storti M, Alboresi A, Gerotto C, Aro EM, Finazzi G, Morosinotto T. 2019. Role of cyclic and pseudo-cyclic electron transport in response to dynamic light changes in *Physcomitrella patens*. *Plant, Cell & Environment* 42: 1590-1602
52. Thiel K, Patrikainen P, Nagy C, Fitzpatrick D, Pope N, Aro EM, Kallio P. 2019. Redirecting photosynthetic electron flux in the cyanobacterium *Synechocystis* sp. PCC 6803 by the deletion of flavodiiron protein Flv3. *Microbial Cell Factories* 18: 189
53. Trotta A, Bajwa AA, Mancini I, Paakkanen V, Pribil M, Aro EM. 2019. The role of phosphorylation dynamics of CURT1B in plant thylakoid membranes. *Plant Physiol.* 181: 1615-1613
54. Walter J, Selim KA, Leganés F, Fernández-Piñas F, Vothknecht UC, Forchhammer K, Aro EM, Gollan P. 2019. A novel Ca²⁺-binding protein influences photosynthetic electron transport in *Anabaena* sp. PCC 7120. *BBA – Bioenergetics* 1860: 519-532

2018

55. Angeleri M, Zorina A, Aro EM, Battchikova N. 2018. Interplay of SpkG kinase and the Slr0151 protein in phosphorylation of Ferredoxin 5 in *Synechocystis* sp. strain PCC 6803. *FEBS Lett.* 592: 411-421
56. Battchikova N, Muth-Pawlak D, Aro EM. 2018. Proteomics of cyanobacteria: current horizons. *Current Opinion in Biotechnology* 54: 65-71
57. Ferroni L, Cucuzza S, Angeleri M, Aro EM, Pagliano C, Giovanardi M, Baldisserotto C, Pancaldi S. 2018. In the lycophyte *Selaginella martensii* is the “extra-qT” related to energy spillover? Insights into photoprotection in ancestral vascular plants. *Environmental and Experimental Botany* 154: 110-122
58. Jokel M, Johnson X, Peltier G, Aro EM, Allahverdiyeva Y. 2018. Hunting the main player enabling *Chlamydomonas reinhardtii* growth under fluctuating light. *The Plant Journal* 94: 822-835
59. Järvi S, Rantala M, Aro EM. 2018. Chapter 11: Oxygenic photosynthesis — Light reactions within the frame of thylakoid architecture and evolution. *Photosynthesis and Bioenergetics*. ISBN: 978-981-3230-29-3
60. Kosourov S, Jokel M, Aro EM, Allahverdiyeva Y. 2018. New approach for sustained and efficient H₂ photoproduction by *Chlamydomonas reinhardtii*. *Energy and Environmental Science* 11: 1431-1436
61. Kämäräinen J, Nylund M, Aro EM, Kallio P. 2018. Comparison of ethanol tolerance between potential cyanobacterial production hosts. *J Biotechnol* 283: 140-145

62. Li L, Aro EM, Millar H. 2018. Mechanisms of photodamage and protein turnover in photoinhibition. *Trends in Plant Science* 23: 667-676
63. Nikkanen L, Toivola J, Trotta A, Guinea Diaz M, Tikkanen M, Aro EM, Rintamäki E. 2018. Regulation of cyclic electron flow by chloroplast NADPH-dependent thioredoxin system. *Plant Direct* 1-24
64. Pinnola A, Alboresi A, Nosek L, Semchonok D, Rameez A, Trotta A, Barozzi F, Kouril R, Dall'Osto L, Aro EM, Boekema EJ, Bassi R. 2018. A LHCB9-dependent photosystem I megacomplex induced under low light in *Physcomitrella patens*. *Nature plants* 4:99910-919
65. Rantala M, Paakkarinen V, Aro EM. 2018. Separation of Thylakoid Protein Complexes with Two-dimensional Native-PAGE. *Bio-protocol* 8: e2899
66. Rantala M., Paakkarinen V, Aro EM. 2018. Analysis of Thylakoid Membrane Protein Complexes by Blue Native Gel Electrophoresis. *J. Vis. Exp.* (139) e58369
67. Saar KL, Bombelli P, Lea-Smith DJ, Call T, Aro EM, Müller T, Howe CJ, Knowles TPJ. 2018. Enhancing power density of biophotovoltaics by decoupling storage and power delivery. *Nature Energy* 3: 75–81
68. Thiel K, Mulaku E, Dandapani H, Nagy C, Aro EM, Kallio P. 2018. Translation efficiency of heterologous proteins is significantly affected by the genetic context of RBS sequences in engineered cyanobacterium *Synechocystis* sp. PCC 6803. *Microbial Cell Factories* 17: 34
69. Yodsang P, Raksajit W, Aro EM, Mäenpää P, Incharoensakdi A. 2018. Factors affecting photobiological hydrogen production in five filamentous cyanobacteria from Thailand. *Photosynthetica* 56: 334-341

2017

70. Bersanini L, Allahverdiyeva Y, Battchikova N, Heinz S, Lespinasse M, Ruohisto E, Mustila H, Nickelsen J, Vass I, Aro EM. 2017. Dissecting the photoprotective mechanism encoded by the *flv4-2* operon: a distinct contribution of *Sll0218* in photosystem II stabilization. *Plant Cell Environ.* 40: 378-389
71. Fristedt R, Trotta A, Suorsa M, Nilsson AK, Croce R, Aro EM, Lundin B. 2017. PSB33 sustains photosystem II D1 protein under fluctuating light conditions. *J Exp Bot.* 68: 4281-4293
72. Georg J, Kostova G, Vuorijoki L, Schön V, Kadowaki T, Huokko T, Baumgartner D, Müller M, Klähn S, Allahverdiyeva Y, Hihara Y, Futschik ME, Aro EM, Hess WR. 2017. Acclimation of oxygenic photosynthesis to iron starvation is controlled by the sRNA *IsaR1*. *Curr Biol.* 27: 1425-1439
73. Giovanardi M, Poggioli M, Ferroni L, Lespinasse M, Baldisserotto C, Aro EM, Pancaldi S. 2017. Higher packing of thylakoid complexes ensures a preserved Photosystem II activity in mixotrophic *Neochloris oleoabundans*. *Algal research* 25: 255-265
74. Gollan PJ, Lima-Melo Y, Tiwari A, Aro EM. 2017. Interaction between photosynthetic electron transport and chloroplast sinks triggers protection and signalling important for plant productivity. *Phil Trans R Soc B.* 372(1730) pii: 20160390
75. Huokko T, Muth-Pawlak D, Battchikova N, Allahverdiyeva Y, Aro EM. 2017. Role of type 2 NAD(P)H dehydrogenase *NdbC* in regulation of carbon allocation in *Synechocystis* 6803. *Plant Phys* 174: 1863-1880

76. Ilík P, Pavlovič A, Kouřil R, Alborese A, Morosinotto T, Allahverdiyeva Y, Aro EM, Yamamoto H, Shikanai T. 2017. Alternative electron transport mediated by flavodiiron proteins is operational in organisms from cyanobacteria up to gymnosperms. *New Phytol.* 214: 967-972
77. Kämäräinen J, Huokko T, Kreula S, Jones PR, Aro EM, Kallio P. 2017. Pyridine nucleotide transhydrogenase PntAB is essential for optimal growth and photosynthetic integrity under low-light mixotrophic conditions in *Synechocystis* sp. PCC 6803. *New Phytol.* 214: 194-204
78. Niemi M, Aro EM. 2017. Koulu-uudistuksen käyntiinpanon unohdetut arkkitehdit. *Tieteessä Tapahtuu* 35: 9-16
79. Patrikainen P, Carbonell V, Thiel K, Aro EM, Kallio P. 2017. Comparison of orthologous cyanobacterial aldehyde deformylating oxygenases in the production of volatile C3-C7 alkanes in engineered *E. coli*. *Metabolic Engineering Communications* 5: 9-18
80. Ramos-León F, Mariscal V, Battchikova N, Aro EM, Flores E. 2017. Septal protein SepJ from the heterocyst-forming cyanobacterium *Anabaena* forms multimers and interacts with peptidoglycan. *FEBS openbio.* 7: 1515-1526
81. Rantala M, Tikkanen M, Aro EM. 2017. Proteomic characterization of hierarchical megacomplex formation in *Arabidopsis* thylakoid membrane. *Plant J.* 5: 951-962
82. Thiel K, Vuorio E, Aro EM, Kallio PT. 2017. The effect of enhanced acetate influx on *Synechocystis* sp. PCC 6803 metabolism. *Microbial Cell Factories* 16: 1-12
83. Tikkanen M, Rantala S, Grieco M, Aro EM. 2017. Comparative analysis of mutant plants impaired in the main regulatory mechanisms of photosynthetic light reactions - From biophysical measurements to molecular mechanisms. *Plant Phys Biochem.* 112: 290-301
84. Vuorijoki L, Kallio P, Aro EM. 2017. SRM dataset of the proteome of inactivated iron-sulfur cluster biogenesis regulator SufR in *Synechocystis* sp. PCC 6803. *Data in Brief* 11: 572-575
85. Vuorijoki L, Tiwari A, Kallio P, Aro EM. 2017. Inactivation of iron-sulfur cluster biogenesis regulator SufR in *Synechocystis* sp. PCC 6803 induces unique iron-dependent protein-level responses. *Biochim Biophys Acta.* 1861: 1085-1098
86. Wittenberg G, Järvi S, Hojka M, Tóth SZ, Meyer EH, Aro EM, Schöttler MA, Bock R. 2017. Identification and characterization of a stable intermediate in photosystem I assembly in tobacco. *Plant J.* 90: 478-490

2016

87. Angeleri M, Muth-Pawlak D, Aro EM, Battchikova N. 2016. Study of O-phosphorylation sites in proteins involved in photosynthesis-related processes in *Synechocystis* sp. strain PCC 6803: Application of the SRM approach. *J Proteome Res.* 15: 4638-4652
88. Aro EM. 2016. From first generation biofuels to advanced solar biofuels. *Ambio* 45: S24-S31
89. Carbonell V, Vuorio E, Aro EM, Kallio P. 2016. Sequence optimization of *efe* gene from *P. syringae* is not required for stable ethylene production in recombinant *Synechocystis* sp. PCC6803. *IJIRTS* 4: 30-35
90. Ferroni L, Suorsa M, Aro EM, Baldisserotto C, Pancaldi S. 2016. Light acclimation in the lycophyte *Selaginella martensii* depends on changes in the amount of photosystems and on the

- flexibility of the light-harvesting complex II antenna association with both photosystems. *New Phytol.* 211: 554-568
91. Gao F, Zhao F, Chen L, Battchikova N, Ran Z, Aro EM, Ogawa T, Ma W. 2016. The NDH-1L-CpcG2-Phycobilisome-Photosystem I Supercomplex Is Important for Efficient Cyclic Electron Transport in *Synechocystis* sp. Strain PCC 6803. *Plant Physiol.* 172: 1451-1464
 92. Gerotto C, Alboresi A, Meneghesso A, Jokel M, Suorsa M, Aro EM, Morosinotto T. 2016. Flavodiiron proteins act as safety valve for electrons in *Physcomitrella patens*. *Proc Natl Acad Sci.* 113: 12322-12327
 93. Grouneva I, Muth-Pawlak D, Battchikova N, Aro EM. 2016. Changes in relative thylakoid protein abundance induced by fluctuating light in the diatom *Thalassiosira pseudonana*. *J Proteome Res.* 15: 1649-1658
 94. Järvi S, Isojärvi J, Kangasjärvi S, Salojärvi J, Mamedov F, Suorsa M and Aro EM. 2016. Photosystem II repair and plant immunity: Lessons learned from *Arabidopsis* mutant lacking the THYLAKOID LUMEN PROTEIN 18.3. *Front Plant Sci.* 7: 1-13
 95. Järvi S, Suorsa M, Tadini L, Ivanauskaite A, Rantala S, Allahverdiyeva Y, Leister D, Aro EM. 2016. FtsH is required for biosynthesis of photosystem I in *Arabidopsis thaliana*. *Plant Physiol.* 171: 1333-1343
 96. Mustila H, Paananen P, Battchikova N, Santana-Sánchez A, Muth-Pawlak D, Hagemann M, Aro EM, Allahverdiyeva Y. 2016. The Flavodiiron Protein Flv3 functions as a homo-oligomer during stress acclimation and is distinct from the Flv1/Flv3 hetero-oligomer specific to the O₂ photoreduction pathway. *Plant Cell Physiol.* 57: 1468-1483
 97. Najafpour M, Renger G, Holyńska M, Moghaddam AN, Aro EM, Carpentier R, Nishihara H, Eaton-Rye J, Shen JR, Allakhverdiev SI. 2016. Manganese compounds as water-oxidizing catalysts: From the natural water-oxidizing complex to nanosized manganese oxide structures. *Chem Rev.* 116: 2886-2936
 98. Peltier G, Aro EM, Shikanai T. 2016. NDH-1 and NDH-2 plastoquinone reductases in oxygenic photosynthesis. *Annu Rev Plant Biol.* 67: 55-80
 99. Plöschinger M, Torabi S, Rantala M, Tikkanen M, Suorsa M, Jensen PE, Aro EM, Meurer J. 2016. The low molecular weight protein PsaI stabilizes the light-harvesting complex II docking site of Photosystem I. *Plant Physiol.* 172: 450-463
 100. Raleiras P, Khanna N, Miranda H, Mészáros LS, Krassen H, Ho F, Battchikova N, Aro EM, Magnuson A, Lindblad P, Styring S. 2016. Turning around the electron flow in an uptake hydrogenase. EPR spectroscopy and in vivo activity of a designed mutant in HupSL from *Nostoc punctiforme*. *Energy Environ Sci.* 9: 581-594
 101. Rantala M, Lehtimäki N, Aro EM, Suorsa M. 2016. Downregulation of TAP38/PPH1 enables LHCII hyperphosphorylation in *Arabidopsis* mutant lacking LHCII docking site in PSI. *FEBS Lett.* 590: 787-794
 102. Shikanai T, Aro EM. 2016. Evolution of Photosynthetic NDH-1: Structure and Physiological Function. In: Cramer WA. and Kallas T (eds.) *Advances in Photosynthesis and Respiration*. Springer Link. Vol 41 pp 51-70
 103. Suorsa M, Rossi F, Tadini L, Labs M, Colombo, M, Jahns P, Kater M, Leister D, Finazzi G, Aro EM, Barbato R, Pesaresi P. 2016. PGR5-PGRL1-dependent cyclic electron transport modulates linear electron transport rate in *Arabidopsis thaliana*. *Mol Plant.* 9: 271-288

104. Tiwari A, Mamedov F, Grieco M, Suorsa M, Jajoo A, Styring S, Tikkanen M, Aro EM. 2016. Photodamage of iron-sulphur clusters in photosystem I induces non-photochemical energy dissipation. *Nat Plants*. 2: 1-9
105. Trotta A, Suorsa M, Rantala M, Lundin B, Aro EM. 2016. Serine and threonine residues of plant STN7 kinase are differentially phosphorylated upon changing light conditions and specifically influence the activity and stability of the kinase. *Plant J*. 87: 484-494
106. Vuorijoki L, Isojärvi J, Kallio P, Kouvonon P, Aro EM, Corthals G, Jones PR, Muth-Pawlak D. 2016. Development of a quantitative SRM-based proteomics method to study iron metabolism of *Synechocystis* sp. PCC 6803. *J Proteome Res*. 15: 266-279
- 107.** Walter J, Lynch F, Battchikova N, Aro EM, Gollan PJ. 2016. Calcium impacts carbon and nitrogen balance in the filamentous cyanobacterium *Anabaena* sp. PCC 7120. *J Exp Bot*. 67: 3997-4008

2015

108. Allahverdiyeva Y, Isojärvi J, Zhang P, Aro EM. 2015. Cyanobacterial oxygenic photosynthesis is protected by flavodiiron proteins. *Life (Basel)*. 5: 716-743
109. Allahverdiyeva Y, Suorsa M, Tikkanen M, Aro EM. 2015. Photoprotection of photosystems in fluctuating light intensities. *J Exp Bot*. 66: 2427-36
110. Battchikova N, Angeleri M, Aro EM. 2015. Proteomic approaches in research of cyanobacterial photosynthesis. *Photosynth Res*. 126: 47-70
111. Chukhutsina V, Bersanini L, Aro EM, van Amerongen H. 2015. Cyanobacterial flv4-2 operon-encoded proteins optimize light harvesting and charge separation in photosystem II. *Mol Plant*. 8: 747-761
112. Chukhutsina V, Bersanini L, Aro EM, van Amerongen H. 2015. Cyanobacterial light-harvesting phycobilisomes uncouple from photosystem I during dark-to-light transitions. *Sci Rep*. 5: 14193
113. Gollan PJ, Tikkanen M, Aro EM. 2015. Photosynthetic light reactions; integral to chloroplast retrograde signaling. *Curr Opin Plant Biol*. 27: 180-191.
114. Grieco M, Suorsa M, Jajoo A, Tikkanen M, Aro EM. 2015. Light-harvesting II antenna trimers connect energetically the entire photosynthetic machinery - including both photosystems II and I. *Biochim Biophys Acta – Bioenerg*. 1847: 607-619
115. Isojärvi J, Shunmugam S, Sivonen K, Allahverdiyeva Y, Aro EM, Battchikova N. 2015. Draft genome sequence of *Calothrix* strain 336/3, a novel H₂-producing cyanobacterium isolated from a Finnish lake. *Genome Announcements*. 3: e01474-14
116. Jokel M, Kosourov S, Battchikova N, Tsygankov AA, Aro EM, Allahverdiyeva Y. 2015. *Chlamydomonas* flavodiiron proteins facilitate acclimation to anoxia during hydrogen production. *Plant Cell Physiol*. 56: 1598-1607
117. Järvi S, Suorsa M, Aro EM. 2015. Photosystem II repair in plant chloroplasts – regulation, assisting proteins and shared components with photosystem II biogenesis. *Biochim Biophys Acta – Bioenerg*. 1847: 900-909

118. Lynch F, Santana-Sanchez A, Jämsä M, Sivonen K, Aro EM, Allahverdiyeva Y. 2015. Screening native isolates of cyanobacteria and a green alga for integrated wastewater treatment, biomass accumulation and neutral lipid production. *Algal research* 11: 411-420
119. Martinez DE, Borniego ML, Battchikova N, Aro EM, Tyystjärvi E, Guiamét JJ. 2015. SASP, a Senescence-Associated Subtilisin Protease, is involved in reproductive development and determination of silique number in *Arabidopsis*. *J Exp Bot.* 66: 161-174
120. Mekala NR, Suorsa M, Rantala M, Aro EM, Tikkanen M. 2015. Plants actively avoid state-transitions upon changes in light intensity - role of light-harvesting complex II protein dephosphorylation in high light. *Plant Physiol.* 168: 721-734
121. Najafpour MM, Fekete M, Sedigh DJ, Aro EM, Carpentier R, Eaton-Rye JJ, Nishihara H, Shen JR, Allahverdiev S, Spiccia L. 2015. Damage management in water-oxidizing catalysts: From Photosystem II to nano-sized metal oxides. *ACS Catalysis.* 5: 1499-1512
122. Suorsa M, Rantala M, Mamedov F, Lespinasse M, Trotta A, Grieco M, Vuorio E, Tikkanen M, Järvi S, Aro EM. 2015. Light acclimation involves dynamic re-organisation of the pigment-protein megacomplexes in non-appressed thylakoid domains. *Plant J.* 84: 360-373
123. Teikari J, Österholm J, Kopf M, Battchikova N, Wahlsten M, Aro EM, Hess WR, Sivonen K. 2015. Transcriptomics and proteomics profiling of *Anabaena* sp. strain 90 under inorganic phosphorus stress. *Appl Environ Microbiol.* 81: 5212-5222
124. Tikkanen M, Rantala S, Aro EM. 2015. Electron flow from PSII to PSI under high light is controlled by PGR5 but not by PSBS. *Front Plant Sci.* 6: 521

2014

125. Allahverdiyeva Y, Aro EM, Kosourov S. 2014. Recent Developments on cyanobacteria and green algae for Biohydrogen Photoproduction and Its Importance in CO₂ Reduction. In: Gupta V., Tuohy M., Kubicek C.P., Saddler J. and Xu F. (eds.) *Bioenergy Research: Advances and Applications*, 1st Edition. Elsevier: 367-387
126. Battchikova N, Aro EM. 2014. Proteomics in revealing the composition, acclimation and biogenesis of thylakoid membranes. In: Flores E. and Herrero A. (eds.) *The Cell Biology of Cyanobacteria*. Caister Academic press Norfolk UK pp: 89-121
127. Bersanini L, Battchikova N, Jokel M, Rehman A, Vass I, Allahverdiyeva Y, Aro EM. 2014. Flavodiiron protein Flv2/Flv4-related photoprotective mechanism dissipates excitation pressure of photosystem II in co-operation with phycobilisomes in cyanobacteria. *Plant Physiol.* 164: 805-818
128. Ermakova M, Battchikova N, Richaud P, Leino H., Kosourov S, Isojärvi J, Peltier G, Flores E, Cournac L, Allahverdiyeva Y, Aro EM. 2014. Heterocyst-specific flavodiiron protein Flv3B enables oxic diazotrophic growth of the filamentous cyanobacterium *Anabaena* sp. PCC 7120. *Proc Natl Acad Sci USA.* 111: 11205-11210
129. Fears R, Aro EM, Pais MS, ter Meulen V. 2014. How should we tackle the global risks to plant health? *Trends Plant Sci.* 19: 206-208
130. Ferroni L, Angeleri M, Pantaleoni L, Pagliano C, Longoni P, Marsano F, Aro EM, Suorsa M, Baldisserotto C, Giovanardi M, Cella R, Pancaldi S. 2014. Light-dependent reversible phosphorylation of the minor photosystem II antenna Lhcb6 (CP24) occurs in lycophytes. *Plant J.* 77: 893-905

131. Jada B, Soitamo AJ, Siddiqui SA, Murukesan G, Aro EM, Salakoski T, Lehto K. 2014. Multiple different defense mechanisms are activated in the young transgenic tobacco plants which express the full length genome of the Tobacco mosaic virus and are resistant against this virus. *Plos One*. 9: e107778
132. Jajoo A, Mekala NR, Tomar RS, Grieco M, Tikkanen M, Aro EM. 2014. Inhibitory effects of polycyclic aromatic hydrocarbons (PAHs) on photosynthetic performance are not related to their aromaticity. *J Photochem Photobiol B*. 137: 151-155
133. Jajoo A, Mekala NR, Tongra T, Tiwari A, Grieco M, Tikkanen M, Aro EM. 2014. Low pH-induced regulation of excitation energy between the two photosystems. *FEBS Lett*. 588: 970-974
134. Kangasjärvi S, Tikkanen M, Durian G, Aro EM. 2014. Photosynthetic light reactions – An adjustable hub in basic production and plant immunity signaling. *Plant Physiol Biochem*. 81: 128-134
135. Kosourov S, Leino H, Murukesan G, Lynch F, Sivonen K, Tsygankov AA, Aro EM, Allahverdiyeva Y. 2014. Hydrogen photoproduction by immobilized N₂-fixing cyanobacteria: understanding the role of the uptake hydrogenase in the long-term process. *Appl Environ Microbiol*. 80: 5807- 5817
136. Leino H, Shunmugam S, Isojärvi J, Oliveira P, Mulo P, Saari L, Battchikova N, Sivonen K, Lindblad P, Aro EM, Allahverdiyeva Y. 2014. Characterization of ten H₂ producing cyanobacteria isolated from the Baltic Sea and Finnish lakes. *Int J Hydrog energy*. 39: 8983-8991
137. Mustila H, Allahverdiyeva Y, Isojärvi J, Aro EM, Eisenhut M. 2014. The bacterial-type [4Fe-4S] ferredoxin 7 has a regulatory function under photooxidative stress conditions in the cyanobacterium *Synechocystis* sp. PCC 6803. *Biochim Biophys acta – Bioenerg*. 1837: 1293-1304
138. Pietrzykowska M, Suorsa M, Semchonok DA, Tikkanen M, Boekema EJ, Aro EM, Jansson S. 2014. The light-harvesting chlorophyll a/b binding proteins Lhcb1 and Lhcb2 play complementary roles during state transitions in *Arabidopsis*. *Plant Cell*. 26: 3646-3660
139. Shunmugam S, Jokela J, Wahlsten M, Battchikova N, ur Rehman A, Vass I, Karonen M, Sinkkonen J, Permi P, Sivonen K, Aro EM, Allahverdiyeva Y. 2014. Secondary metabolite from *Nostoc* XPORK14A inhibits photosynthesis and growth of *Synechocystis* PCC 6803. *Plant Cell Environ* 37: 1371-1381
140. Suorsa M, Rantala M, Danielsson R, Järvi S, Paakkarinen V, Schröder WP, Styring S, Mamedov F, Aro EM. 2014. Dark-adapted spinach thylakoid protein heterogeneity offers insights into the Photosystem II repair cycle. *Biochim Biophys Acta – Bioenerg*. 1837: 1463-1471
141. Tikkanen M, Aro EM. 2014. Integrative regulatory network of plant thylakoid energy transduction. *Trends Plant Sci*. 19: 10-17
142. Tikkanen M, Gollan PJ, Mekala NR, Isojärvi J, Aro EM. 2014. Light-harvesting mutants show differential gene expression upon shift to high light as a consequence of photosynthetic redox and reactive oxygen species metabolism. *Philos Trans R Soc Lond B Biol Sci*. 369: 20130229
143. Tikkanen M, Mekala NR, Aro EM. 2014. Photosystem II photoinhibition-repair cycle protects Photosystem I from irreversible damage. *Biochim Biophys Acta – Bioenerg*. 1837: 210-215

144. Allahverdiyeva Y, Mustila H, Ermakova M, Bersanini L, Richaud P, Ajlani G, Battchikova N, Cournac L, Aro EM. 2013. Flavodiiron proteins Flv1 and Flv3 enable cyanobacterial growth and photosynthesis under fluctuating light. *Proc Natl Acad Sci USA*. 110: 4111-4116
145. Allahverdiyeva Y, Suorsa M, Rossi F, Pavesi A, Kater M, Antonacci A, Tadini L, Pribil M, Schneider A, Wanner G, Leister D, Aro EM, Barbato R, Pesaresi P. 2013. Arabidopsis plants lacking PsbQ and PsbR subunits of the oxygen-evolving complex show altered PSII supercomplex organization and short-term adaptive mechanisms. *Plant J*. 75: 671-684
146. Carmel D, Dahlström KM, Holmström M, Allahverdiyeva Y, Battchikova N, Aro EM, Salminen TA, Mulo P. 2013. Structural model, physiology and regulation of Slr0006 in *Synechocystis* PCC 6803. *Arch Microbiol*. 195: 727-736
147. Ermakova M, Battchikova N, Allahverdiyeva Y, Aro EM. 2013. Novel heterocyst-specific flavodiiron proteins in *Anabaena* sp. PCC 7120. *FEBS Lett*. 587: 82-87
148. Ferroni L, Pantaleoni L, Baldisserotto C, Aro EM, Pancaldi S. 2013. Low photosynthetic activity is linked to changes in the organization of photosystem II in the fruit *Arum italicum*. *Plant Physiol Biochem*. 63: 140-150
149. Grouneva I, Gollan PJ, Kangasjärvi S, Suorsa M, Tikkanen M, Aro EM. 2013. Phylogenetic viewpoints on regulation of light harvesting and electron transport in eukaryotic photosynthetic organisms. *Planta*. 237: 399-412
150. Järvi S, Gollan P, Aro EM. 2013. Understanding the roles of the thylakoid lumen in photosynthesis regulation. *Front Plant Sci* 4: 1-14
151. Leoni C, Pietrzykowska M, Kiss A, Suorsa M, Ceci L, Aro EM, Jansson S. 2013. Very rapid phosphorylation kinetics suggest a unique role for Lhcb2 during state transitions in *Arabidopsis*. *Plant J*. 72: 236-246
152. Nath K, Jajoo A, Poudyala RS, Timilsina R, Park YS, Aro EM, Nam HG, Lee CH. 2013. Towards critical understanding of photosystem II repair mechanisms and its regulation during stress conditions. *FEBS Lett*. 587: 3372-3381
153. Shunmugam S, Hinttala R, Lehtimäki N, Miettinen M, Uusimaa J, Majamaa K, Sivonen K, Aro EM, Mulo P. 2013. *Nodularia spumigena* extract induces upregulation of mitochondrial respiratory chain complexes in spinach (*Spinacia oleracea* L.). *Acta Physiol Plant*. 35: 969-974
154. Sirpiö S, Kanervo E, Aro EM. 2013. Assembly and Turnover of the D1 Protein. In: Lennarz, WJ. and Lane MD. (eds.). *Encyclopedia of Biological Chemistry 2nd Edition*. Elsevier Inc Academic Press. 508-511.
155. Suorsa M, Grieco M, Järvi S, Gollan PJ, Kangasjärvi S, Tikkanen M, Aro EM. 2013. PGR5 ensures photosynthetic control to safeguard photosystem I under fluctuating light conditions. *Plant Signal Behav*. 8: 1-6.

2012

156. Eisenhut M, Georg J, Klähn S, Sakurai I, Silen H, Zhang P, Hess RW, Aro EM. 2012. The antisense RNA *As1_flv4* in the cyanobacterium *Synechocystis* sp. PCC6803 prevents premature expression of the *flv4-2* operon upon shift in inorganic carbon supply. *J Biol Chem*. 287: 33153-33162
157. Gollan PJ, Bhave M, Aro EM. 2012. The FKBP families of higher plants; exploring the structures and functions of protein interaction specialists. *FEBS Lett*. 586: 3539-3547

158. Grieco M, Tikkanen M, Paakkanen V, Kangasjärvi S, Aro EM. 2012. Steady-state phosphorylation of light-harvesting complex II proteins preserves Photosystem I under fluctuating white light. *Plant Physiol.* 160: 1896-1910
159. Hebbelmann I, Selinski J, Wehmeyer C, Goss T, Voss I, Mulo P, Kangasjärvi S, Aro EM, Oelze ML, Dietz KJ, Nunes-Nesi A, Do PT, Fernie AR, Talla SK, Raghavendra AS, Linke V, Scheibe R. 2012. Multiple strategies to prevent oxidative stress in Arabidopsis plants lacking the malate valve enzyme NADP-malate dehydrogenase. *J Exp Bot.* 63: 1445-1459
160. Kangasjärvi S, Neukerman J, Aro EM, Noctor G. 2012. Photosynthesis, photorespiration, and light signalling in defence responses. *J Exp Bot.* 63: 1619-1636
161. Kobayashi K, Baba S, Obayashi T, Sato M, Toyooka K, Keränen M, Aro EM, Fukaki H, Ohta H, Sugimoto K, Masuda T. 2012. Regulation of Root Greening by Light and Auxin/Cytokinin Signaling in Arabidopsis. *Plant Cell.* 24: 1081-1095
162. Kämäräinen J, Knoop H, Stanford NJ, Guerrero F, Akhtar MK, Aro EM, Steuer R, Jones PR. 2012. Physiological tolerance and stoichiometric potential of cyanobacteria for hydrocarbon fuel production. *J Biotechnol.* 162: 67-74
163. Leino H, Kosourov S, Saari S, Sivonen K, Tsygankov A, Aro EM, Allahverdiyeva Y. 2012. Extended H₂ photoproduction by N₂-fixing cyanobacteria immobilized in thin alginate films. *Int J Hydrog Energy.* 37: 151-161
164. Lintala M, Lehtimäki M, Benz JP, Jungfer A, Soll J, Aro EM, Bölter B, Mulo P. 2012. Depletion of the leaf-type ferredoxin-NADP⁺ oxidoreductase results in permanent induction of photoprotective mechanisms in Arabidopsis chloroplasts. *Plant J.* 70: 809-817
165. Mulo P, Sakurai I, Aro EM. 2012. Strategies for psbA gene expression in cyanobacteria, algae and higher plants. From transcription to PSII repair. *Biochim Biophys Acta – Bioenerg.* 1817: 247-257
166. Najafpour MM, Moghaddam AN, Yang YN, Aro EM, Carpentier R, Eaton-Rye JJ, Lee CH, Allakhverdiev SI. 2012. Biological water oxidizing complex: a nano-sized manganese-calcium oxide in a protein environment. *Photos Res* 114: 1-13
167. Najafpour MM, Rahimi F, Aro EM, Lee CH, Allakhverdiev SI. 2012. Nano-sized manganese oxides as biomimetic catalysts for water oxidation in artificial photosynthesis: a review. *J. R. Soc. Interface.* 9: 2383-2395
168. Sakurai I, Stazic D, Eisenhut M, Vuorio E, Steglich C, Hess RW, Aro EM. 2012. Positive regulation of psbA gene expression by cis encoded antisense RNAs in *Synechocystis* sp. PCC 6803. *Plant Physiol.* 160: 1000-1010
169. Suorsa M, Järvi S, Grieco M, Pietrzykowska M, Tikkanen M, Rantala M, Paakkanen V, Jansson S, Aro EM. 2012. PGR5 is essential for proper acclimation of Arabidopsis photosystem I to naturally and artificially fluctuating light conditions. *Plant Cell.* 24: 2934-2948
170. Tikkanen M, Aro EM. 2012. Thylakoid protein phosphorylation in dynamic regulation of photosystem II in higher plants. *Biochim Biophys Acta – Bioenerg.* 1817: 232-238
171. Tikkanen M, Gollan PJ, Suorsa M, Kangasjärvi S, Aro EM. 2012. STN7 operates in retrograde signalling through controlling redox balance in the electron transfer chain. *Front Plant Sci.* 3: 277

172. Tikkanen M, Grieco M, Nurmi M, Rantala M, Suorsa M, Aro EM. 2012. Regulation of the photosynthetic apparatus under fluctuating growth light. *Philos Trans R Soc Lond B Biol Sci.* 367: 3486-3493
173. Tikkanen M, Suorsa M, Gollan P, Aro EM. 2012. Post-genomic insight into thylakoid membrane lateral heterogeneity and redox balance. *FEBS Lett.* 586: 2911-2916
174. Zhang P, Eisenhut M, Brandt AM, Carmel D, Silén HM, Vass I, Allahverdiyeva Y, Salminen TA, Aro EM. 2012. Operon *flv4-flv2* provides cyanobacterial photosystem II with flexibility of electron transfer. *Plant Cell.* 24: 1952-1971

2011

175. Allahverdiyeva Y, Aro EM. 2011. Photosynthetic responses of plants to excess light: Mechanisms and conditions for photoinhibition, excess energy dissipation and repair. In: Eaton-Rye JJ., Tripathy BC. and Sharkey TD. (eds.) *Photosynthesis: A comprehensive Treatise Physiology, Biochemistry, Biophysics and Molecular Biology, Advances in Photosynthesis and Respiration series.* Springer, Netherlands. Vol 33 pp. 275-297
176. Allahverdiyeva Y, Ermakova M, Eisenhut M, Zhang P, Richaud P, Hagemann M, Cournac L, Aro EM. 2011. Interplay between flavodiiron proteins and photorespiration in *Synechocystis* sp. PCC 6803. *J Biol Chem.* 286: 24007-24014
177. Alperovitch-Lavy A, Sharon I, Rohwer F, Aro EM, Glaser F, Milo R, Nelson N, Béjà O. 2011. Reconstructing a puzzle: existence of cyanophages containing both photosystem-I and photosystem-II gene suites inferred from oceanic metagenomic datasets. *Environ Microbiol.* 13: 24-32
178. Battchikova N, Aro EM, Nixon PJ. 2011. Structure and physiological function of NDH-I complexes in cyanobacteria. In: Peschek GA., Obinger C. and Renger G. (eds.) *Bioenergetic Processes of Cyanobacteria - From Evolutionary Singularity to Ecological Diversity.* Berlin, Heidelberg, New York: Springer Verlag, pp. 445-467
179. Battchikova N, Eisenhut M, Aro EM. 2011. Cyanobacterial NDH-1 complexes: novel insights and remaining puzzles. *Biochim Biophys Acta – Bioenerg.* 1807: 935-944
180. Battchikova N, Wei L, Du L, Bersanini L, Aro EM, Ma W. 2011. Identification of a novel Ssl0352 Protein (NdhS), essential for efficient operation of cyclic electron transport around photosystem I, in NADPH:Plastoquinone oxidoreductase (NDH-1) complexes of *Synechocystis* sp. PCC 6803. *J Biol Chem.* 286: 36992-37001
181. Carmel D, Mulo P, Battchikova N, Aro EM. 2011. Membrane attachment of Slr0006 in *Synechocystis* sp. PCC 6803 is determined by divalent ions. *Photos Res.* 108: 241-245
182. Chen G, Allahverdiyeva Y, Aro EM, Styring S, Mamedov F. 2011. Electron paramagnetic resonance study of the electron transfer reactions in photosystem II membrane preparations from *Arabidopsis thaliana*. *Biochim Biophys Acta – Bioenerg.* 1807: 205-215
183. Chen KM, Piippo M, Holmström M, Nurmi M, Pakula E, Suorsa M, Aro EM. 2011. A chloroplast-targeted DnaJ protein AtJ8 is negatively regulated by light and has rapid turnover in darkness. *J Plant Physiol.* 168: 1780-1783
184. Grouneva I, Rokka A, Aro EM. 2011. The thylakoid membrane proteome of two marine diatoms outlines both diatom-specific and species-specific features of the photosynthetic machinery. *J Proteome Res.* 10: 5338-5353

185. Ifuku K, Endo T, Shikanai T, Aro EM. 2011. Structure of the chloroplast NADH dehydrogenase-like complex: nomenclature for nuclear-encoded subunits. *Plant Cell Physiol.* 52: 1560-8
186. Järvi S, Suorsa M, Paakkanen V, Aro EM. 2011. Optimized native gel systems for separation of thylakoid protein complexes: novel super- and megacomplexes. *Biochem J.* 439: 207-214
187. Lehtimäki N, Shunmugam S, Jokela J, Wahlsten M, Carmel D, Keränen M, Sivonen K, Aro EM, Allahverdiyeva Y, Mulo P. 2011. Nodularin uptake and induction of oxidative stress in spinach (*Spinachia oleracea*). *J Plant Physiol.* 168: 594-600
188. Filosof A, Battchikova N, Aro EM, Béjà O. 2011. Marine cyanophages: tinkering with the electron transport chain. *Isme J.* 5: 1568-1570
189. Rodina E, Vorobieva N, Kurilova S, Mikulovich J, Vainonen J, Aro EM, Nazarova T. 2011. Identification of new protein complexes of *Escherichia coli* inorganic pyrophosphatase using pull-down assay. *Biochimie.* 93: 1576-1583
190. Rokka A, Aro EM, Vener AV. 2011. Thylakoid phosphoproteins: identification of phosphorylation sites. In: Carpentier R (ed.) *Photosynthesis Research Protocols. Methods in Molecular Biology* 684:171-86. Humana Press, NY, Springer
191. Sharon I, Battchikova N, Aro EM, Giglione C, Meinel T, Glaser F, Pinter RY, Breitbart M, Rohwer F, Béjà O. 2011. Comparative metagenomics of microbial traits within oceanic viral communities. *Isme J.* 5: 1178-1190
192. Sirpiö S, Suorsa M, Aro EM. 2011. Analysis of thylakoid protein complexes by two dimensional electrophoretic systems. In: Jarvis RP. (ed.) *Chloroplast Research in Arabidopsis, Volume II: Methods and Protocols. Methods in Molecular Biology* 775: 19-30. Humana Press, NY, USA.
193. Tikkanen M, Grieco M, Aro EM. 2011. Novel insights into light-harvesting complex II phosphorylation and "state-transitions". *Trends Plant Sci.* 16: 126-31
194. Trotta A, Konert G, Rahikainen M, Aro EM, Kangasjärvi S. 2011. Knock-down of protein phosphatase 2A subunit B γ promotes phosphorylation of CALRETICULIN 1 in *Arabidopsis thaliana*. *Plant Signal Behav.* 6: 1665-1668
195. Trotta A, Wrzaczek M, Scharte J, Tikkanen M, Konert G, Rahikainen M, Holmström M, Hiltunen HM, Rips S, Sipari N, Mulo P, Weis E, von Schaewen A, Aro EM, Kangasjärvi S. 2011. Regulatory subunit B γ of protein phosphatase 2A prevents unnecessary defense reactions under low light in *Arabidopsis thaliana*. *Plant Physiol.* 156: 1464-1480

2010

196. Allahverdiyeva Y, Leino H, Saari L, Fewer DP, Shunmugam S, Sivonen K, Aro EM. 2010. Screening for biohydrogen production by cyanobacteria isolated from the Baltic Sea and Finnish lakes. *Int J Hydrog Energy.* 35: 1111-1127
197. Battchikova N, Vainonen J, Vorontsova N, Keränen M, Carmel D, Aro EM. 2010. Dynamic changes in the proteome of *Synechocystis* 6803 in response to CO₂ limitation revealed by quantitative proteomics. *J Proteome Res.* 9: 5896-5912
198. Birungi M, Folea M, Battchikova N, Xu M, Mi H, Ogawa T, Aro EM, Boekema EJ. 2010. Possibilities of subunit localization with fluorescent protein tags and electron microscopy exemplified by a cyanobacterial NDH-1 study. *Biochim Biophys Acta – Bioenerg.* 1797: 1681-1686

199. Chen KM, Holmström M, Raksajit W, Suorsa M, Piippo M, Aro EM. 2010. Small chloroplast-targeted DnaJ proteins are involved in optimization of photosynthetic reactions in *Arabidopsis thaliana*. *BMC Plant Biol.* 10: 43
200. Kubota H, Sakurai I, Katayama K, Mizusawa N, Ohashi S, Kobayashi M, Zhang P, Aro EM, Wada H. 2010. Purification and characterization of photosystem I complex from *Synechocystis* sp. PCC 6803 by expressing histidine-tagged subunits. *Biochim Biophys Acta – Bioenerg.* 1797: 98-105
201. Lehtimäki N, Lintala M, Allahverdiyeva Y, Aro EM, Mulo P. 2010. Drought stress -induced upregulation of components involved in ferredoxin-dependent cyclic electron transfer. *J Plant Physiol* 167: 1018-22
202. Suorsa M, Sirpiö S, Paakkarinen V, Kumari N, Holmström M, Aro EM. 2010. Two proteins homologous to PsbQ are novel subunits of the chloroplast NAD(P)H dehydrogenase. *Plant Cell Physiol.* 51: 877-83
203. Tikkanen M, Grieco M, Kangasjärvi S, Aro EM. 2010. Thylakoid protein phosphorylation in higher plant chloroplasts optimises electron transfer under fluctuating light. *Plant Physiol.* 152: 723-735
204. Yin L, Lundin B, Bertrand M, Nurmi M, Solymosi K, Kangasjärvi S, Aro EM, Schoefs B, Spetea C. 2010. Role of thylakoid ATP/ADP carrier in photoinhibition and photoprotection of photosystem II in *Arabidopsis*. *Plant Physiol.* 153: 666-77

2009

205. Allahverdiyeva Y, Mamedov F, Holmström M, Nurmi M, Lundin B, Styring S, Spetea C, Aro EM. 2009. Comparison of the electron transport properties of the psbo1 and psbo2 mutants of *Arabidopsis thaliana*. *Biochim Biophys Acta – Bioenerg.* 1787: 1230-1237
206. Boehm M, Nield J, Zhang P, Aro EM, Komenda J, Nixon PJ. 2009. Structural and mutational analysis of band 7 proteins in the cyanobacterium *Synechocystis* sp. strain PCC 6803. *J Bacteriol.* 1797: 566-75
207. Cardona T, Battchikova N, Zhang PP, Stensjö K, Aro EM, Lindblad P, Magnuson A. 2009. Electron transfer protein complexes in the thylakoid membranes of heterocysts from the cyanobacterium *Nostoc punctiforme*. *Biochim Biophys Acta – Bioenerg.* 1787: 252-263
208. Fristedt R, Carlberg I, Zygadlo A, Piippo M, Nurmi M, Aro EM, Scheller HV, Vener A. 2009. Intrinsically unstructured phosphoprotein TSP9 regulates light harvesting in *Arabidopsis thaliana*. *Biochemistry* 48: 499-509
209. Kangasjärvi S, Nurmi M, Tikkanen M, Aro EM. 2009. Cell-specific mechanisms and systemic signalling as emerging themes in light acclimation of C3 plants. *Plant Cell Environ.* 32: 1230-1240
210. Keränen M, Aro EM, Nevalainen O, Tyystjärvi E. 2009. Toxic and non-toxic *Nodularia* strains can be distinguished from each other and from eukaryotic algae with chlorophyll fluorescence fingerprinting. *Harmful Algae* 8: 817-822
211. Lintala M, Allahverdiyeva Y, Kangasjärvi S, Lehtimäki N, Keränen M, Rintamäki E, Aro EM, Mulo P. 2009. Comparative analysis of leaf-type ferredoxin-NADP⁺-oxidoreductase isoforms in *Arabidopsis thaliana*. *Plant J.* 57: 1103-1115
212. Mulo P, Sicora C, Aro EM. 2009. Cyanobacterial psbA gene family: optimization of oxygenic photosynthesis. *Cell Mol Life Sci.* 66: 3697-710

213. Pantaleoni L, Ferroni L, Baldisserotto C, Aro EM, Pancaldi S. 2009. Photosystem II organisation in chloroplasts of *Arum italicum* leaf depends on tissue location. *Planta* 230: 1019-1031
214. Sicora CI, Ho F, Salminen T, Styring S, Aro EM. 2009. Transcription of a "silent" cyanobacterial *psbA* gene is induced by microaerobic conditions. *Biochim Biophys Acta – Bioenerg.* 1787: 105-112
215. Sirpiö S, Allahverdiyeva Y, Holmström M, Khrouchtchova A, Haldrup A, Battchikova N, Aro EM. 2009. Novel nuclear-encoded subunits of the chloroplast NAD(P)H dehydrogenase complex. *J Biol Chem.* 284: 905-912
216. Sirpiö S, Holmström M, Battchikova N, Aro EM. 2009. AtCYP20-2 is an auxiliary protein of the chloroplast NAD(P)H dehydrogenase complex. *FEBS Lett.* 583: 2355-2358
217. Suorsa M, Sirpiö S, Aro EM. 2009. Towards Characterization of the Chloroplast NAD(P)H Dehydrogenase Complex. *Mol Plant.* 2: 1127-1140
218. Tikkanen M, Suorsa M, Aro EM. 2009. The flow of solar energy to biofuel feedstock via photosynthesis. *Int Sugar J.* 111: 156-163
219. Vainonen JP, Vener AV, Aro EM. 2009. Determination of in vivo Protein Phosphorylation in Photosynthetic Membranes. In: Pflanschmidt T. (ed.) *Plant signal transduction - Methods in Molecular Biology* 479: 133-146, Humana Press, NY.
220. Zhang P, Allahverdiyeva Y, Eisenhut M, Aro EM. 2009. Flavodiiron proteins in oxygenic photosynthetic organisms: Photoprotection of photosystem II by Flv2 and Flv4 in *Synechocystis* sp. PCC 6803. *PLoS ONE.* 2009;4(4):e5331

2008

221. Allahverdiyeva Y, Sairanen I, Stensjö K, Lindblad P, Aro EM. 2008. Photosynthetic electron transport properties in *Nostoc punctiforme* PCC 73102. In: Allen JF., Gantt E., Goldbeck JH. and Osmond B. (eds.) *Photosynthesis. Energy from the sun.* 14th International Congress of Photosynthesis. Springer, Heidelberg, pp. 3-5. ISBN: 978-1-4020-6707-5
222. Folea IM, Zhang P, Aro EM, Boekema EJ. 2008. Domain organization of photosystem II in membranes of the cyanobacterium *Synechocystis* PCC6803 investigated by electron microscopy. *FEBS Lett.* 582:1749-54
223. Folea IM, Zhang P, Nowaczyk MM, Ogawa T, Aro EM, Boekema EJ. 2008. Single particle analysis of thylakoid proteins from *Thermosynechococcus elongatus* and *Synechocystis* 6803: Localization of the CupA subunit of NDH-1. *FEBS Lett.* 582: 249-254
224. Kanervo E, Singh M, Suorsa M, Paakkarinen V, Aro E, Battchikova N, Aro EM. 2008. Expression of protein complexes and individual proteins upon transition of etioplasts to chloroplasts in pea (*Pisum sativum*). *Plant Cell Physiol.* 49: 396-410
225. Kangasjärvi S, Lepistö A, Hänninen K, Aro EM, Rintamäki E. 2008. Diverse roles for chloroplast stromal and thylakoid-bound ascorbate peroxidases in plant stress responses. *Biochem J.* 412: 275-85
226. Lintala M, Allahverdiyeva Y, Kangasjärvi S, Lehtimäki N, Keränen M, Rintamäki E, Aro EM, Mulo P. 2008. Comparative analysis of leaf-type ferredoxin-NADP⁺-oxidoreductase isoforms in *Arabidopsis thaliana*. *Plant J.* 57: 1103-1115

227. Lintala M, Allahverdiyeva Y, Lehtimäki N, Aro EM, Mulo P. (2008) Structural and Functional Characterization of Leaf-Type Ferredoxin-NADP⁺-Oxidoreductase Isoforms in *Arabidopsis thaliana*. In: Allen JF., Gantt E., Golbeck JH., Osmond B. (eds.) *Photosynthesis. Energy from the Sun*. 14th International Congress of Photosynthesis. Springer, Dordrecht, pp 933-936. ISBN: 978-1-4020-6707-5
228. Lundin B, Nurmi M, Rojas-Stuetz M, Aro EM, Adamska I, Spetea C. 2008. Towards understanding the functional difference between the two PsbO isoforms in *Arabidopsis thaliana*-insights from phenotypic analyses of psbo knockout mutants. *Photos Res.* 98: 405-14
229. Mulo P, Sirpiö S, Suorsa M, Aro EM. 2008. Auxiliary proteins involved in the assembly and sustenance of photosystem II. *Photos Res.* 98: 489-501
230. Sicora CI, Aro EM. 2008. Differential Expression of hoxY Gene, Encoding the Small Subunit of Bidirectional Hydrogenase, Under Ar-Induced Microaerobic Conditions in *Synechocystis* sp. PCC6803 and *Anabaena* sp. PCC7120. In: Allen JF., Gantt E., Goldbeck JH. and Osmond B. (eds.) *Photosynthesis. Energy from the sun*. 14th International Congress of Photosynthesis. Springer, Heidelberg, ISBN: 978-1-4020-6707-5, pp. 19-22. ISBN: 978-1-4020-6707-5
231. Singh M, Satoh K, Yamamoto Y, Kanervo E, Aro EM. 2008. In vivo quality control of photosystem II in cyanobacteria *Synechocystis* sp. PCC 6803: D1 protein degradation and repair under the influence of light, heat and darkness. *Indian J Biochem Biophys.* 45:237-243
232. Sirpiö S, Khrouchtchova A, Allahverdiyeva Y, Hansson M, Fristedt R, Vener A, Scheller HV, Jensen P, Haldrup A, Aro EM. 2008. AtCYP38 ensures early biogenesis, correct assembly and sustenance of photosystem II. *Plant J.* 55: 639-51
233. Soitamo A, Piippo M, Allahverdiyeva Y, Battchikova N, Aro EM. 2008. Light has a specific role in modulating *Arabidopsis* gene expression at low temperature. *BMC Plant Biology.* 8: 13
234. Suorsa M, Tikkanen M, Aro EM. 2008. Mikrobien valjastaminen energiantuottoon - fotosynteesitutkimuksen uusia ulottuvuuksia. *Luonnontutkija* 4: 112-119
235. Tikkanen M, Nurmi MJ, Kangasjärvi S, Aro EM. 2008. Core protein phosphorylation facilitates the repair of photodamaged Photosystem II at High Light. *Biochim Biophys Acta – Bioenerg.* 1777: 1432-1437
236. Tikkanen M, Nurmi M, Kangasjärvi S, Aro EM. 2021. Corrigendum to “Core protein phosphorylation facilitates the repair of photodamaged photosystem II at high light” [*Biochim Biophys Acta.* 1777(2008):1432–1437]. *Biochim Biophys Acta – Bioenerg.* 1862: 148381
237. Tikkanen M, Nurmi M, Suorsa M, Danielsson R, Mamedov F, Styring S, Aro EM. 2008. Phosphorylation-dependent regulation of excitation energy distribution between the two photosystems in higher plants. *Biochim Biophys Acta – Bioenerg.* 1777: 425-432
238. Vainonen JP, Sakuragi Y, Stael S, Tikkanen M, Allahverdiyeva Y, Paakkarinen V, Aro E, Suorsa M, Scheller HV, Vener AV, Aro EM. 2008. Light regulation of CaS, a novel phosphoprotein in the thylakoid membrane of *Arabidopsis thaliana*. *FEBS J.* 275: 1767-77
239. Vass I, Aro EM. 2008. Photoinhibition of Photosystem II electron transport. In: Regner G. (ed.) *Primary Processes of Photosynthesis: Basic Principles and Apparatus*, *Comprehensive Series in Photochemical and Photobiological Sciences*. Publ Roy Soc Chem, Cambridge. Volume 8 pp. 393-411 ISBN 978-0-85404-364-9
240. Zhang PP, Sicora CI, Vorontsova N, Allahverdiyeva Y, Battchikova N, Nixon PJ, Aro EM. 2008. Expression of inducible inorganic carbon acquisition complexes is under the control of the FtsH

protease in *Synechocystis* sp. PCC 6803 In: Allen JF., Gantt E., Goldbeck JH. and Osmond B. (eds.) Photosynthesis. Energy from the sun. 14th International Congress of Photosynthesis. Springer, Heidelberg, ISBN: 978-1-4020-6707-5, pp. 829-833

2007

241. Allahverdiyeva Y, Mamedov F, Suorsa M, Styring S, Vass I, Aro EM. 2007. Insights into the function of PsbR protein in *Arabidopsis thaliana*. *Biochim Biophys Acta – Bioenerg.* 1767: 677-685
242. Battchikova N, Aro EM. 2007. Cyanobacterial NDH-1 complexes: multiplicity in function and subunit composition. *Physiol Plant.* 131: 22-32
243. Bishop CL, Ulas S, Baena-Gonzalez E, Aro EM, Purton S, Nugent JHA, Mäenpää P. 2007. The PsbZ subunit of Photosystem II in *Synechocystis* sp. PCC 6803 modulates electron flow through the photosynthetic electron transfer chain. *Photos Res.* 93: 139-147
244. Cardona T, Battchikova N, Agervald Å, Zhang P, Nagel E, Styring S, Aro EM, Lindblad P, Magnusson A. 2007. Isolation and characterization of thylakoid membranes from the filamentous cyanobacterium *Nostoc punctiforme*. *Physiol Plant.* 131: 622-34
245. De Groot H, Aro EM, Bassani D, Cogdell R, Van Grondelle R, Hammarstrom L, Holzwarth A, Kruse O, Sundstrom V. 2007. The European Solar Fuel initiative. *Photos Res* 91. (pdf missing)
246. Hoffman A, Milde S, Desel C, Hümpel A, Kaiser H, Hammes E, Piippo M, Soitamo A, Aro EM, Gerendas J, Sattelmacher B, Hansen UP. 2007. N form-dependent growth retardation of *Arabidopsis thaliana* seedlings as revealed from physiological and microarray studies. *J Plant Nutr Soil Sci.* 170:1-11
247. Kanervo E, Suorsa M, Aro EM. 2007. Assembly of protein complexes in plastids. In: Bock R (ed.). *Topics in Current Genetics: Cell and Molecular Biology of Plastids.* SpringerLink, Vol. 19, pp. 283-313 ISBN: 978-3-540-75375-9.
248. Lintala M, Allahverdiyeva Y, Kidron H, Piippo M, Battchikova N, Suorsa M, Rintamäki E, Salminen TA, Aro EM, Mulo P. 2007. Structural and functional characterization of ferredoxin-NADP⁺-oxidoreductase using knock-out mutants of *Arabidopsis*. *Plant J.* 49: 1041-52
249. Sirpiö S, Allahverdiyeva Y, Suorsa M, Paakkarinen V, Vainonen J, Battchikova N, Aro EM. 2007. TLP18.3, a novel thylakoid lumen protein regulating Photosystem II repair cycle. *Biochem J.* 406: 415-425
250. Suorsa M, Aro EM. 2007. Expression, assembly and auxiliary functions of photosystem II oxygen-evolving proteins in higher plants. *Photos Res* 93: 89-100
251. Zhang PP, Sicora CI, Vorontsova N, Allahverdiyeva Y, Battchikova N, Nixon PJ, Aro EM. 2007. FtsH protease is required for induction of inorganic carbon acquisition complexes in *Synechocystis* sp. PCC 6803. *Mol Microbiol.* 65: 728-740

2006 and earlier publications

252. Andaluz S, Lopez-Millan AF, De Las Rivas J, Aro EM, Abadia J, Abadia A. 2006. Proteomic profiles of thylakoid membranes and changes in response to iron deficiency. *Photos Res* 89: 141-155

253. Arteni AA, Zhang P, Battchikova N, Ogawa T, Aro EM, Boekema E. 2006. Structural characterisation of NDH-1 complexes of *Thermosynechococcus elongatus* by single particle electron microscopy. *Biochim Biophys Acta – Bioenerg.* 1757: 1469-1475
254. Danielsson R, Suorsa M, Paakkanen V, Albertsson PÅ, Styring S, Aro EM, Mamedov F. 2006. Dimeric and monomeric organization of photosystem II: Distribution of five distinct complexes in the different domains of the thylakoid membrane. *J Biol Chem* 281: 14241-14249
255. Piippo M, Allahverdiyeva Y, Paakkanen V, Suoranta UM, Battchikova N, Aro EM. 2006. Chloroplast-mediated regulation of nuclear genes in *Arabidopsis thaliana* in the absence of light stress. *Physiol Genomics.* 25: 142-152
256. Srivastava R, Battchikova N, Norling B, Aro EM. 2006. Plasma membrane of *Synechocystis* PCC 6803: A heterogeneous distribution of membrane proteins. *Arch Microbiol.* 185: 238-243
257. Suorsa M, Sirpiö S, Allahverdiyeva Y, Paakkanen V, Mamedov F, Styring S, Aro EM. 2006. PsbR – a missing link in the assembly of the oxygen evolving complex of plant photosystem II. *J Biol Chem.* 281: 145-150
258. Tikkanen M, Piippo M, Suorsa M, Sirpiö S, Mulo P, Vainonen J, Vener AV, Allahverdiyeva Y, Aro EM. 2006. State transitions revisited - a buffering system for dynamic low light acclimation of *Arabidopsis*. *Plant Mol Biol.* 62: 779-793
259. Allahverdiyeva Y, Mamedov F, Mäenpää P, Vass I, Aro EM. 2005. Modulation of photosynthetic electron transport in the absence of terminal electron acceptors. Characterisation of the *rbcl* deletion mutant of tobacco. *Biochim Biophys Acta – Bioenerg.* 1709: 69-83
260. Aro EM, Suorsa M, Rokka A, Allahverdiyeva Y, Paakkanen V, Saleem A, Battchikova N, Rintamäki E. 2005. Dynamics of Photosystem II – a proteomic approach to thylakoid protein complexes. *J Exp Bot.* 56: 347-356
261. Battchikova N, Zhang PP, Rudd S, Ogawa T, Aro EM. 2005. Identification of NdhL and Ssl1690 (NdhO) in NDH-1L and NDH-1M complexes of *Synechocystis* sp. PCC 6803. *J Biol Chem.* 280: 2587-2595
262. Chow WS, Aro EM. 2005. The photoinactivation of photosystem II and mechanisms of recovery. In: Wydrzynski T. and Satoh K. (eds.). *Photosystem II – The light-driven water plastoquinone oxidoreductase. Advances in photosynthesis and respiration*, chapter 68, pp. 628-643
263. Herranen M, Tyystjärvi T, Aro EM. 2005. Regulation of Photosystem I Reaction Center Genes in *Synechocystis* sp. Strain PCC6803 during Light Acclimation. *Plant Cell Physiol.* 46: 1484-1493
264. Kanervo E, Suorsa M, Aro EM. 2005. Functional flexibility and acclimation of the thylakoid membrane. *Photochem Photobiol Sci.* 4: 1072-1080.
265. Khrouchtchova A, Hansson M, Paakkanen V, Vainonen J, Janssen PE, Scheller HV, Aro EM, Haldrup A. 2005. A previously found thylakoid membrane protein of 14 kDa (TMP14) is a novel subunit of plant photosystem I and is designated as PSI-P. *FEBS Lett.* 579: 4808-4812
266. Rokka A, Suorsa M, Saleem A, Battchikova N, Aro EM. 2005. Synthesis and assembly of thylakoid protein complexes. Multiple assembly intermediates of photosystem II. *Biochem J.* 388: 159-168

267. Singh M, Yamamoto Y, Satoh K, Aro EM, Kanervo E. 2005. Post-illumination-related loss of photochemical efficiency of photosystem II and degradation of the D1 protein are temperature-dependent. *J Plant Physiol.* 162: 1246-1253
268. Zhang PP, Battchikova N, Paakkanen V, Katoh H, Iwai M, Ikeuchi M, Pakrasi HB, Ogawa T, Aro EM. 2005. Isolation, subunit composition and interaction of the NDH-1 complexes from *Thermosynechococcus elongatus* BP-1. *Biochem J.* 390: 513-520
269. Aro EM, Rokka A, Vener AV. 2004. Determination of phosphoproteins in higher plant thylakoids. In: Carpentier R. (ed.) *Photosynthesis Research Protocols. Methods Mol Biol.* 274: 271-285. Humana Press, NY. ISBN: 1-58829-232-0, 1-59259-799-8
270. Aro EM, Suorsa M, Rokka A, Allahverdiyeva Y, Battchikova N. 2004. Subunit turnover, repair and biogenesis of photosystem II complexes. *Cell Mol Biol Lett Suppl.* 9: 8-11
271. Herranen M, Battchikova N, Zhang P, Graf A, Sirpiö S, Paakkanen V, Aro EM. 2004. Towards functional proteomics of membrane protein complexes in *Synechocystis* sp. PCC 6803. *Plant Physiol.* 134: 470-481
272. Kanervo E, Aro EM. 2004. Photosystem II assembly and turnover of the D1 protein. In: Lennarz W. and Lane MD. (eds.) *Encyclopedia of Biological Chemistry, Vol 3*, Elsevier, Oxford, ISBN: 0-12-443710-9, pp. 363-366
273. Suorsa M, Regal RE, Paakkanen V, Battchikova N, Herrmann RG, Aro EM. 2004. Protein assembly of photosystem II and accumulation of subcomplexes in the absence of low molecular weight subunits PsbL and PsbJ. *Eur J Biochem.* 271: 96-107
274. Tyystjärvi T, Sirpiö S, Aro EM. 2004. Post-translational regulation of the psbA gene family in the cyanobacterium *Synechocystis* sp. PCC 7942. *FEBS Lett* 576: 211-215
275. Zhang PP, Battchikova N, Jansen T, Appel J, Ogawa T, Aro EM. 2004. Expression and functional roles of the two distinct NDH-1 complexes and the carbon acquisition complex NdhD3/NdhF3/CupA/Sll1735 in *Synechocystis* sp. PCC 6803. *Plant Cell* 16: 3326-3340
276. Aro EM, Ohad I. 2003. Redox regulation of thylakoid protein phosphorylation. *Antioxid Redox Signal.* 5: 55-67
277. Baena-Gonzalez E, Allahverdiyeva Y, Svab Z, Maliga P, Josse EM, Kuntz M, Mäenpää P, Aro EM. 2003. Deletion of the tobacco plastid psbA gene triggers an up-regulation of the thylakoid-associated NAD(P)H complex and the plastid terminal oxidase (PTOX). *Plant J.* 35: 704-716
278. Hiriart JB, Aro EM, Lehto K. 2003. Dynamics of the VIGS-mediated chimeric silencing of the *Nicotiana benthamiana* ChlH gene and of the tobacco mosaic virus. *Mol Plant Microbe Int.* 16: 99-106
279. Hou XC, Rintamäki E, Aro EM. 2003. Ascorbate-mediated LHCII protein phosphorylation - LHCII kinase regulation in light and in darkness. *Biochemistry* 42: 5828-5836
280. Kanervo E, Spetea C, Nishiyama Y, Murata N, Andersson B, Aro EM. 2003. Dissecting a cyanobacterial proteolytic system: Efficiency in inducing degradation of the D1 protein of photosystem II in cyanobacteria and plants. *Biochim Biophys Acta – Bioenerg.* 1607: 131-140
281. Keränen M, Aro EM, Tyystjärvi E. 2003. Automatic plant identification with chlorophyll fluorescence fingerprinting. *Precis Agric.* 4: 53-67

282. Lehto K, Tikkanen M, Hiriart JB, Paakkanen V, Aro EM. 2003. Depletion of the photosystem II complex in mature tobacco leaves infected by the Flavum strain of Tobacco mosaic virus. *Mol Plant Microbe Int.* 16: 1135-1144
283. Martinsuo P, Pursiheimo S, Aro EM, Rintamäki E. 2003. Dithiol oxidant and disulfide reductant dynamically regulate the phosphorylation of light-harvesting complex II proteins in thylakoid membranes. *Plant Physiol.* 133: 37-46
284. Mulo P, Pursiheimo S, Hou CX, Tyystjärvi T, Aro EM. 2003. Multiple effects of antibiotics on chloroplast and nuclear gene expression. *Funct Plant Biol.* 30: 1097-1103
285. Pursiheimo S, Martinsuo P, Rintamäki E, Aro EM. 2003. Photosystem II protein phosphorylation follows four different regulatory patterns induced by environmental cues. *Plant Cell Environ.* 26: 1995-2003
286. Sakurai I, Hagio M, Gombos Z, Tyystjärvi T, Paakkanen V, Aro EM, Wada H. 2003. Requirement of phosphatidylglycerol for maintenance of photosynthetic machinery. *Plant Physiol.* 133: 1376-1384
287. Baena-Gonzalez E, Aro EM. 2002. Biogenesis, assembly and turnover of photosystem II units. *Philos Trans Roy Soc B.* 357: 1439-1440
288. Bergo E, Pursiheimo S, Paakkanen V, Giagometti GM, Donella-Deana A, Andreucci F, Barbato R, Aro EM. 2002. Rapid and highly specific monitoring of reversible thylakoid protein phosphorylation by polyclonal antibody to phosphothreonine-containing proteins. *J Plant Physiol.* 159: 371-377
289. Hiriart JB, Lehto K, Tyystjärvi E, Juntila T, Aro EM. 2002. Suppression of a key enzyme involved in chlorophyll biosynthesis using virus-inducing gene silencing. *Plant Mol Biol.* 50: 213-224
290. Hou CX, Rintamäki E, Aro EM. 2002. Environmental and metabolic control of PHCII protein phosphorylation: revealing the mechanisms for dual regulation of the LHCII kinase. *Plant Cell Environ.* 25: 1515-1525
291. Jansen T, Kanervo E, Aro EM, Mäenpää P. 2002. Localisation and processing of the precursor form of photosystem II protein D1 in *Synechocystis* 6803. *J Plant Physiol.* 159: 1205-1211
292. Mamedov F, Rintamäki E, Aro EM, Andersson B, Styring S. 2002. Influence of protein phosphorylation on the electron-transfer properties of Photosystem II. *Photos Res.* 74: 61-72
293. Pätsikkä E, Kairavuo M, Sersen F, Aro EM, Tyystjärvi E. 2002. Excess copper predisposes photosystem II to photoinhibition in vivo by outcompeting iron and causing decrease in leaf chlorophyll. *Plant Physiol.* 129: 1359-1367
294. Tyystjärvi T, Tuominen I, Herranen M, Aro EM, Tyystjärvi E. 2002. Action spectrum of psbA gene transcription is similar to that of photoinhibition in *Synechocystis* sp. PCC 6803. *FEBS Lett.* 516: 167-171
295. Zhang L, Aro EM. 2002. Synthesis, membrane insertion and assembly of the chloroplast-encoded D1 protein into Photosystem II. *FEBS Lett.* 512: 13-18
296. Aro EM, Andersson B. 2001. Photodamage and D1 protein turnover in photosystem II. In: Aro EM, and Andersson B (eds.) *Regulation on Photosynthesis*. Kluwer Academic Publishers, Dordrecht, Netherlands. pp. 377-393

297. Aro EM, Zhang L, Suorsa M, Paakkarinen V, Battchikova N. 2001. Maintenance of functional Photosystem II by D1 protein turnover. In PS2001 Proceedings: 12th International Congress on Photosynthesis. CSIRO Publishing, Melbourne, Australia. CD-rom.
298. Baena-Gonzalez E, Baginsky S, Mulo P, Summer H, Aro EM, Link G. 2001. Chloroplast transcription at different light intensities: Glutathione-mediated phosphorylation of the major RNA polymerase involved in redox-regulated organellar gene expression. *Plant Physiol.* 127: 1044-1052
299. Baena-Gonzalez E, Gray JC, Tyystjärvi E, Aro EM, Mäenpää P. 2001. Abnormal regulation of photosynthetic electron transport in a chloroplast *ycf9* inactivation mutant. *J Biol Chem.* 276: 20795-20802
300. Baena-Gonzalez E, Gray JC, Tyystjärvi E, Battchikova N, Mäenpää P, Aro EM. 2001. The ORF62 protein of the thylakoid membrane is involved in regulation of photosynthetic electron transport. PS2001 Proceedings: 12th International Congress of Photosynthesis. CSIRO Publishing, Australia. CD-rom
301. Herranen M, Aro EM, Tyystjärvi T. 2001. Two distinct mechanisms regulate the transcription of photosystem II genes in *Synechocystis* sp. PCC 6803. *Physiol Plant.* 112: 531-539
302. Herranen M, Tyystjärvi T, Aro EM. 2001. Light-regulation of photosystem I reaction centre genes in the cyanobacterium *Synechocystis* sp. PCC 6803. PS2001 Proceedings: 12th International Congress of Photosynthesis. CSIRO Publishing, Australia. CD-rom
303. Pursiheimo S, Mulo P, Rintamäki E, Aro EM. 2001. Coregulation of light-harvesting complex II phosphorylation and *lhcb* mRNA accumulation in winter rye. *Plant J.* 26: 317-327
304. Pätsikkä E, Aro EM, Tyystjärvi E. 2001. Mechanism of copper-induced photoinhibition in thylakoid membranes. *Physiol Plant.* 113: 142-150
305. Rintamäki E, Aro EM. 2001. Phosphorylation of photosystem II proteins. In: Aro EM. and Andersson B. (eds.). *Regulation of Photosynthesis - Advances in Photosynthesis Vol. 11.* Kluwer Academic Publishers, Dordrecht. pp. 395-418
306. Rokka A, Zhang L, Aro EM. 2001. Rubisco activase, an enzyme with a temperature-dependent dual function. *Plant J.* 25: 463-471
307. Suorsa M, Zhang L, Battchikova N, Paakkarinen V, Regel E, Herrmann R, Aro EM. 2001. Assembly of photosystem II in chloroplast *psbEFLJ* operon mutants. PS2001 Proceedings: 12th International Congress of Photosynthesis. CSIRO Publishing, Australia. CD-rom
308. Tyystjärvi T, Herranen M, Aro EM. 2001. Regulation of translation elongation in cyanobacteria: membrane targeting of the ribosome nascent-chain complexes controls the synthesis of D1 protein. *Mol Microbiol.* 40: 467-484
309. Yang DH, Andersson B, Aro EM, Ohad I. 2001. The redox state of the plastoquinone pool controls the level of the light-harvesting chlorophyll *a/b* binding protein complex II (LHCII) during photoacclimation. *Photos Res.* 68: 163-174
310. Zhang L, Paakkarinen V, Suorsa M, Aro EM. 2001. A SecY homologue is involved in chloroplast-encoded D1 protein biogenesis. *J Biol Chem.* 276: 37809-37814
311. Mäenpää P, Baena-Gonzalez E, Chen L, Khan MS, Gray JC, Aro EM. 2000. The *ycf 9* [ofr 62] gene in the plant chloroplast genome encodes a hydrophobic protein of stromal thylakoid membranes. *J Exp Bot.* 51: 375-382

312. Rintamäki E, Martinsuo P, Pursiheimo S, Aro EM. 2000. Cooperative regulation of light-harvesting complex II phosphorylation via the plastoquinol and ferredoxin-thioredoxin system in chloroplasts. *Proc Natl Acad Sci USA*. 10: 11644-11649
313. Rokka A, Aro EM, Herrmann RG, Andersson B, Vener A. 2000. Dephosphorylation of photosystem II reaction center proteins in plant photosynthetic membranes as an immediate response to abrupt elevation of temperature. *Plant Physiol*. 123: 1525-1535
314. Sippola K, Aro EM. 2000. Expression of psbA genes is regulated at multiple levels in the cyanobacterium *Synechococcus* sp. PCC 7942. *Photochem Photobiol*. 71: 706-714
315. Zhang L, Paakkanen V, van Wijk KJ, Aro EM. 2000. Biogenesis of the chloroplast-encoded D1 protein: Regulation of translation elongation, insertion and assembly into photosystem II. *Plant Cell* 12: 1769-1782
316. Baena-Gonzalez E, Barbato R, Aro EM. 1999. Role of phosphorylation in the repair cycle and oligomeric structure of photosystem II. *Planta* 208: 196-204
317. Barbato R, Mulo P, Bergo E, Carbonera D, Mäenpää P, Giacometti GM, Barber J, Aro EM. 1999. Photoinduced cross-linking in Photosystem II as a possible mechanism for D1-protein degradation. *J Plant Physiol*. 154: 591-596
318. Carlberg I, Rintamäki E, Aro EM, Andersson B. 1999. Thylakoid protein phosphorylation and the thiol redox state. *Biochemistry* 38: 3197-3204
319. Keränen M, Aro EM, Tyystjärvi E. 1999. Excitation-emission map as a tool in studies of photosynthetic pigment-protein complexes. *Photosynthetica* 37: 225-237
320. Mulo P, Aro EM, Mäenpää P. 1999. N-terminus of the putative speA gene. *Plant Mol Biol* 39: 193
321. Sippola K, Aro EM. 1999. Thiol redox state regulates expression of psbA genes in *Synechococcus* sp. PCC 7942. *Plant Mol Biol*. 41: 425-433
322. Tyystjärvi E, King N, Hakala M, Aro EM. 1999. Artificial quenchers of chlorophyll fluorescence do not protect against photoinhibition. *J Photochem Photobiol B Biol*. 48: 142-147
323. Zhang L, Paakkanen V, van Wijk KJ, Aro EM. 1999. Co-translational assembly of the D1 protein into Photosystem II complex. *J Biol Chem*. 274: 16062-16067
324. Kanervo E, Murata N, Aro EM. 1998. Massive breakdown of the photosystem II polypeptides in a mutant of the cyanobacterium *Synechocystis* sp. PCC 6803. *Photos Res*. 57: 81-89
325. Mulo P, Eloranta T, Aro EM, Mäenpää P. 1998. Disruption of a spe-like open reading frame alters polyamine content and mRNA stability in *Synechocystis* sp. PCC 6803. *Bot Acta*. 111: 71-76
326. Mulo P, Laakso S, Mäenpää P, Aro EM. 1998. Stepwise photoinhibition of photosystem II. Studies with *Synechocystis* sp. PCC 6803 mutants with modified D-E loop of the reaction center polypeptide D1. *Plant Physiol*. 117: 483-490
327. Mäenpää P, Sippola K, Rokka A, and Aro EM. 1998. Substitution of Alanine 251 of the D1 reaction center polypeptide with a charged residue results in impaired function of photosystem II. *Plant Mol Biol*. 38: 1191-1200

328. Pursiheimo S, Rintamäki E, Baena-Gonzalez E, Aro EM. 1998. Thylakoid protein phosphorylation in evolutionally divergent species with oxygenic photosynthesis. *FEBS Lett.* 423: 178-182
329. Pätsikkä E, Aro EM, Tyystjärvi E. 1998. Increase in the quantum yield of photoinhibition contributes to copper toxicity in vivo. *Plant Physiol.* 117: 619-672
330. Salonen M, Aro EM, Rintamäki E. 1998. Reversible phosphorylation and turnover of the D1 protein under various redox states of Photosystem II induced by low temperature photoinhibition. *Photos Res.* 58: 143-151
331. Sippola K, Kanervo E, Murata N, Aro EM. 1998. Genetically engineered increase in fatty acid unsaturation in *Synechococcus* sp. PCC 7942 allows D1 protein form exchange and sustenance of Photosystem II activity at low temperature. *Eur J Biochem.* 251: 641-648
332. Soitamo AJ, Sippola K, Aro EM. 1998. Expression of *psbA* genes produces prominent 5' mRNA fragments in *Synechococcus* sp. PCC 7942. *Plant Mol Biol.* 37: 1023-1033
333. Tyystjärvi T, Tyystjärvi E, Ohad I, Aro EM. 1998. Exposure of *Synechocystis* 6803 cells to series of single turnover flashes increases the *psbA* transcript level by activating transcription and down-regulating *psbA* mRNA degradation. *FEBS Lett.* 436: 483-487
334. Vavilin D, Tyystjärvi E, Aro EM. 1998. Model for the fluorescence induction curve of photoinhibited thylakoids. *Biophysical J.* 75: 503-512
335. Andersson B, Aro E.-M. 1997. Proteolytic activities and proteases of plant chloroplasts. Invited review. *Physiol Plant.* 100: 780-793
336. Gombos Z, Kanervo E, Tsvetkova N, Sakamoto T, Aro EM, Murata N. 1997. Genetic enhancement to tolerate the low-temperature photoinhibition by introduction of unsaturated bonds into membrane lipids. *Plant Physiol.* 115: 551-559
337. Kanervo E, Tasaka Y, Murata N, Aro EM. 1997. Membrane lipid unsaturation modulates processing of photosystem II reaction-center protein D1 at low temperatures. *Plant Physiol.* 114: 841-849
338. Kettunen R, Pursiheimo S, Rintamäki E, van Wijk K, Aro EM. 1997. Transcriptional and translational adjustment of *psbA* gene expression in mature chloroplasts during photoinhibition and subsequent recovery. *Eur J Biochem.* 247: 441-448
339. Mulo P, Tyystjärvi T, Tyystjärvi E, Govindjee, Mäenpää P, Aro EM. 1997. Mutagenesis of the photosystem II reaction centre protein D1. Function and assembly of photosystem II. *Plant Mol Biol.* 33: 1059-1071
340. Rintamäki E, Salonen M, Suoranta UM, Carlberg I, Andersson B, Aro EM. 1997. Phosphorylation of light-harvesting complex II and Photosystem II core proteins shows different irradiance-dependent regulation in vivo. Application of phospho-threonine antibodies to analysis of thylakoid phosphoproteins. *J Biol Chem.* 272: 30476-30482
341. van Wijk KJ, Roobol-Boza M, Kettunen R, Andersson B, Aro EM. 1997. Synthesis and assembly of the D1 protein into Photosystem II: Processing of the C-terminus and identification of the initial assembly partners and complexes during Photosystem II repair. *Biochemistry* 36: 6178-6186

342. Kettunen R, Tyystjärvi E, Aro EM. 1996. Degradation pattern of Photosystem II reaction center protein D1 in intact leaves. The major photoinhibition-induced cleavage site is located N-terminally of DE-loop. *Plant Physiol.* 111: 1183-1190
343. Rintamäki E, Kettunen R, Aro EM. 1996. Differential D1 dephosphorylation in functional and photodamaged Photosystem II centers. Dephosphorylation is a prerequisite for degradation of damaged D1. *J Biol Chem.* 271: 14870-14875
344. Rintamäki E, Salo R, Koivuniemi A, Aro EM. 1996. Protein phosphorylation and magnesium status regulate the degradation of D1 reaction centre protein of Photosystem II. *Plant Sci.* 115: 175-182
345. Soitamo AJ, Zhou G, Clarke AK, Öquist G, Gustafsson P, Aro EM. 1996. Over-production of the D1:2 protein makes *Synechocystis* cells more tolerant to photoinhibition of photosystem II. *Plant Mol Biol.* 30: 467-478
346. Tyystjärvi E, Aro EM. 1996. The rate constant of photoinhibition, measured in lincomycin treated leaves, is directly proportional to light intensity. *Proc Natl Acad Sci USA.* 93: 2213-2218
347. Tyystjärvi T, Mulo P, Mäenpää P, Aro EM. 1996. D1 polypeptide degradation may regulate the *psbA* gene expression in *Synechocystis* sp. PCC 6803. *Photos Res.* 47: 111-120
348. van Wijk KJ, Andersson B, Aro EM. 1996. Kinetic resolution of the incorporation of the D1 protein into Photosystem II and localization of assembly intermediates in thylakoid membranes of spinach chloroplasts. *J Biol Chem.* 271: 9627-9636
349. Kanervo E, Aro EM, Murata N. 1995. Low unsaturation level of thylakoid membrane lipids limits turnover of the D1 protein of photosystem II at high irradiance. *FEBS Lett.* 364: 239-242
350. Kettunen R, Tyystjärvi E, Aro EM. 1995. Do grana margins of thylakoid membranes form functional domain during repair cycle of photosystem II? In: Mathis P (ed.). *Photosynthesis: from light to biosphere.* Kluwer Academic Publishers, Netherlands. Vol IV pp. 331-334
351. Koivuniemi A, Aro EM, Andersson B. 1995. Degradation of the D1- and D2-proteins of photosystem II in higher plants is regulated by reversible phosphorylation. *Biochemistry* 34: 16022-16029
352. Rintamäki E, Kettunen R, Tyystjärvi E, Aro EM. 1995. Light-dependent phosphorylation of D1 reaction centre protein of Photosystem II: hypothesis for a functional role in vivo. *Physiol Plant.* 93: 191-195
353. Rintamäki E, Salo R, Lehtonen E, Aro EM. 1995. Regulation of D1 protein degradation during photoinhibition of photosystem II in vivo. Phosphorylation of the D1 protein in various plant groups. *Planta* 195: 379-386
354. Vavilin DV, Tyystjärvi E, Aro EM. 1995. In search of a reversible stage of photoinhibition in a higher plant: no changes in the amount of functional photosystem II accompany relaxation of variable fluorescence after exposure of lincomycin-treated *Cucurbita pepo* leaves to high light. *Photos Res.* 45: 239-247
355. van Wijk KJ, Bingsmark S, Aro EM, Andersson B. 1995. In vitro synthesis and assembly of Photosystem II core proteins. The D1 protein can be incorporated into Photosystem II in isolated chloroplasts and thylakoids. *J Biol Chem.* 270: 25685-25695

356. Anderson JM, Aro EM. 1994. Grana stacking and protection of photosystem II in thylakoid membranes of higher plant leaves under sustained high irradiance: a hypothesis. *Photos Res.* 41: 315-326
357. Andersson B, Ponticos M, Barber J, Koivuniemi A, Aro EM, Hagman A, Salter AH, Yang DH, Lindahl M. 1994. Light induced proteolysis of photosystem II reaction centre proteins and LHC II in isolated preparations. In: Baker NR. and Bowyer JR. (eds.). *Photoinhibition of photosynthesis, from molecular mechanism to the field.* BIOS scientific publishers LTD Oxford pp. 143-159
358. Aro EM, McCaffery S, Anderson JM. 1994. Recovery from photoinhibition in peas acclimated to varying growth irradiances: role of D1 protein turnover. *Plant Physiol.* 104: 1033-1041
359. Rintamäki E, Salo R, Aro EM. 1994. Rapid turnover of the D1 reaction center protein of photosystem II as a protection mechanism against photoinhibition in a moss, *Ceratodon purpureus* (Hedw.) Brid. *Planta* 193: 520-529
360. Soitamo AJ, Zhou G, Clarke AK, Öquist G, Aro EM, Gustafsson P. 1994. Overproduction of the D1 protein of photosystem II reaction centre in the cyanobacterium *Synechococcus* sp PCC 7942. *Plant Mol Biol.* 26: 709-721
361. Tyystjärvi E, Kettunen R, Aro EM. 1994. The rate constant of photoinhibition in vitro is independent of the antenna size of photosystem II but depends on temperature. *Biochim Biophys Acta – Bioenerg.* 1186: 177-185
362. Tyystjärvi E, Mäenpää P, Aro EM. 1994. Mathematical modeling of photoinhibition and PSII repair cycle. I. Photoinhibition and D1 protein degradation in vitro and in the absence of protein synthesis in vivo. *Photos Res.* 41: 439-449
363. Tyystjärvi T, Aro EM, Jansson C, Mäenpää P. 1994. The pest-like area and QEEET-motif affect the degradation rate of the D1 polypeptide in photosystem II. *Plant Mol Biol.* 25: 517-526
364. Aro EM, McCaffery S, Anderson JM. 1993. Photoinhibition and D1 protein degradation in peas acclimated to different growth irradiances. *Plant Physiol.* 103: 835-843
365. Aro EM, Virgin I, Andersson B. 1993. Photoinhibition of Photosystem II - inactivation, protein damage and turnover. *Biochim Biophys Acta – Bioenerg.* 1143: 113-134
366. Kanervo E, Mäenpää P, Aro EM. 1993. D1 protein degradation and psbA transcript levels in *Synechocystis* PCC 6803 during photoinhibition in vivo. *J Plant Physiol.* 142: 669-675
367. Koivuniemi A, Swiezewska E, Aro EM, Styring S, Andersson B. 1993. Reduced content of the quinone acceptor QA in photosystem II complexes isolated from thylakoid membranes after prolonged photoinhibition under anaerobic conditions. *FEBS Lett.* 327: 343-346
368. Mäenpää P, Kallio T, Mulo P, Salih G, Aro EM, Tyystjärvi E, Jansson C. 1993. Site-specific mutations in the D1 polypeptide affect the susceptibility of *Synechocystis* 6803 cells to photoinhibition. *Plant Mol Biol.* 22: 1-12
369. Aro EM, Kettunen R, Tyystjärvi E. 1992. ATP and light regulate D1 protein modification and degradation. Role of D1* in photoinhibition. *FEBS Lett.* 297: 29-33
370. Tyystjärvi E, Ali-Yrkkö K, Kettunen R, Aro EM. 1992. Slow degradation of the D1 protein is related to the susceptibility of low-light-grown pumpkin plants to photoinhibition. *Plant Physiol.* 100: 1310-1317

371. Vass I, Styring S, Hundal T, Koivuniemi A, Aro EM, Andersson B. 1992. Reversible and irreversible intermediates during photoinhibition of photosystem II: Stable reduced QA species promote chlorophyll triplet formation. *Proc Natl Acad Sci USA*. 89: 1408-1412
372. Kettunen R, Tyystjärvi E, Aro EM. 1991. D1 protein degradation during photoinhibition of intact leaves. A modification of the D1 protein precedes degradation. *FEBS Lett*. 290: 153-156
373. Tyystjärvi E, Koivuniemi A, Kettunen R, Aro EM. 1991. Small light-harvesting antenna does not protect from photoinhibition. *Plant Physiol*. 97: 477-483
374. Aro EM, Hundal T, Carlberg I, Andersson B. 1990. In vitro studies on light-induced inhibition of Photosystem II and D1-protein degradation at low temperature. *Biochim Biophys Acta – Bioenerg*. 1019: 269-275
375. Aro EM, Tyystjärvi E, Nurmi A. 1990. Temperature-dependent changes in Photosystem II heterogeneity of attached leaves under high light. *Physiol Plant*. 79: 585-592
376. Hundal T, Aro EM, Carlberg I, Andersson B. 1990. Restoration of light-induced photosystem II inhibition without de novo protein synthesis. *FEBS Lett*. 267: 203-206
377. Ovaska J, Mäenpää P, Nurmi A, Aro EM. 1990. Distribution of chlorophyll-protein complexes during chilling in the light compared with heat-induced modifications. *Plant Physiol*. 93: 48-54
378. Tyystjärvi E, Aro EM. 1990. Temperature-dependent changes in Photosystem II heterogeneity support a cycle of Photosystem II during photoinhibition. *Photos Res*. 26: 109-117
379. Tyystjärvi E, Ovaska J, Aro EM, Karunen P. 1989. Comparison of chill-induced and room temperature photoinhibition. In: Barber J. and Malkin R. (eds.) *Techniques and new developments in Photosynthesis research*. pp. 567-570
380. Tyystjärvi E, Ovaska J, Karunen P, Aro EM. 1989. The nature of light-induced inhibition of photosystem II in pumpkin (*Cucurbita pepo* L.) leaves depends on temperature. *Plant Physiol*. 91: 1069-1074
381. Aro EM, Karunen P. 1988. Effects of hardening and freezing stress on membrane lipids and CO₂ fixation of *Ceratodon purpureus* protonemata. *Physiol Plant*. 74: 45-52
382. Mäenpää P, Aro EM, Somersalo S, Tyystjärvi E. 1988. Rearrangement of the chloroplast thylakoid at chilling temperature in the light. *Plant Physiol*. 87: 762-766
383. Aro EM, Somersalo S, Karunen P. 1987. Membrane lipids in *Ceratodon purpureus* protonemata grown at high and low temperatures. *Physiol Plant*. 69: 65-72
384. Korhonen P, Aro EM. 1987. Seasonal courses of some characteristics of photosynthesis in plants growing in the wild: O₂ evolution, chlorophyll content and chloroplast ultrastructure. *Plant Physiol (Life Sci. Adv.)*. 6: 265-270
385. Somersalo S, Aro EM. 1987. Fluorescence induction in pea leaves of different ages. *Photosynthetica* 21: 29-35.
386. Aro EM, Rintamäki E, Korhonen P, Mäenpää P. 1986. Relationship between chloroplast structure and O₂ evolution rate of leaf discs in plants from different biotopes in South Finland. *Plant Cell Environ*. 9: 87-94

387. Aro EM. 1986. Chloroplast ultrastructure in relation to the chlorophyll-protein composition and the photosynthetic capacity. *J Ultrastruct Mol Struct Res.* 94: 279
388. Mäenpää P, Aro EM. 1986. Chlorophyll-protein complexes, chlorophyll a/b ratio and chloroplast ultrastructure in *Lemna minor* L. grown under different light conditions. *J Plant Physiol.* 123: 161-168 (pdf missing)
389. Somersalo S, Karunen P, Aro EM. 1986. The acyl lipid composition of wheat leaves and moss protonemata using a new, non-carcinogenic extraction solvent system. *Physiol Plant.* 68: 467-470
390. Aro EM, Korhonen P, Rintamäki E, Mäenpää P. 1985. Diel and seasonal changes in the chloroplast ultrastructure of *Deschampsia flexuosa* (L.) Trin. *New Phytol.* 100: 537-548
391. Mäenpää P, Aro EM. 1985. Chlorophyll-protein complexes, chlorophyll a/b ratio and chloroplast ultrastructure in *Lemna minor* L. grown under different light conditions. *J Plant Physiol* 123: 161-168
392. Rintamäki E, Aro EM. 1985. Photosynthetic and photorespiratory enzymes in widely divergent plant species with special reference to the moss *Ceratodon purpureus*: Properties of ribulose biphosphate carboxylase/oxygenase, phosphoenolpyruvate carboxylase and glycolate oxidase. *J Exp Bot.* 36:1677-1684
393. Aro EM, Gerbaud A, Andre M. 1984. CO₂ and O₂ exchange in two mosses, *Hypnum cupressiforme* and *Dicranum scoparium*. *Plant Physiol.* 76: 431-435
394. Rintamäki E, Aro EM. 1984. Stable high activity ribulose-1, 5-bisphosphate carboxylase/oxygenase from the moss *Ceratodon purpureus*. *Photosynthetica* 18: 357-364
395. Aro EM. 1982. A comparison of the chlorophyll-protein composition and chloroplast ultrastructure in two bryophytes and two higher plants. *Z Pflanzenphysiol.* 108: 97-105
396. Aro EM. 1982. Polypeptide patterns of the thylakoid membranes of bryophytes. *Plant Sci Lett.* 24: 335-345.
397. Valanne N, Aro EM, Niemi H. 1982. Photosynthetic apparatus of *Ceratodon purpureus*. *J Hattori Bot Lab.* 53: 13-21
398. Valanne N, Aro EM, Rintamäki E. 1982. Leaf and chloroplast structure of two aquatic *Ranunculus* species. *Aquat Bot.* 12: 13-22
399. Valanne N, Aro EM. 1982. Incorporation of 5-aminolevulinic acid and turnover rate of seven chlorophyll-protein complexes in the moss *Ceratodon purpureus*. *Photobiochem Photobiophys* 4: 53-61
400. Aro EM, Niemi H, Valanne N. 1981. Photosynthetic studies on two ecologically different bryophytes. In: Akoyunoglou G (ed.). *Photosynthesis III. Structure and molecular organisation of the photosynthetic apparatus.* Balaban International Science Services, Philadelphia, pp. 327-335
401. Valanne N, Valanne T, Niemi H, Aro EM. 1981. The Development of the photosynthetic apparatus during leaf opening in silver birch (*Betula pendula* roth). In: Akoyunoglou G. (ed.). *Photosynthesis V. Chloroplast Development.* Balaban International Science Services, Philadelphia, pp. 397-406
402. Aro EM, Karunen P. 1979. Effect of changed environmental conditions on glycolipids of the mosses *Pleurozium schreberi* and *Ceratodon purpureus*. *Physiol Plant.* 45: 201-206

403. Aro EM, Valanne N. 1979. Effect of continuous light on CO₂ fixation and chloroplast structure of mosses *Pleurozium schreberi* and *Ceratodon purpureus*. *Physiol Plant*. 45: 460-466
404. Karunen P, Aro EM. 1979. Fatty acid composition of polar lipids in *Ceratodon purpureus* and *Pleurozium schreberi*. *Physiol Plant*. 45: 265-269
405. Niemelä P, Aro EM, Haukioja E. 1979. Birch leaves as a resource for herbivores. Damage-induced increase in leaf phenols with trypsin-inhibiting effects. *Rep Kevo Subarctic Res Stat*. 15: 37-40 (pdf and print missing)
406. Aro EM, Valanne N. 1978. The effect of magnesium on chlorophyll-protein complexes. *Physiol Plant*. 43: 261-265
407. Haukioja E, Niemelä P, Iso-Iivari L, Ojala H, Aro EM. 1978. Birch leaves as a resource for herbivores. I. Variation in the suitability of leaves. *Rep Kevo Subarctic Res Stat*. 14: 5-12
408. Valanne N, Aro EM, Repo E. 1978. Changes in photosynthetic capacity and activity of RuBPC-ase and glycolate oxidase during the early growth of moss protonemata in continuous and rhythmic light. *Z Pflanzenphysiol*. 88: 123-131
409. Valanne N, Aro EM. 1976. Incorporation of 5-aminolevulinic acid in the chlorophyll-protein complexes of the moss *Ceratodon purpureus*. *Physiol Plant*. 37: 218-222

2. Editor of Books and Special Journal Issues

1. Aro, EM (ed.) (2012) Special Issues of *Biochim Biophys Acta - Bioenergetics* "Photosystem II"
2. Aro, EM (ed.) (2006) Special Issue of *Biochim Biophys Acta - Bioenergetics* "Photosynthesis"
3. Aro EM, Andersson B (eds.) (2001) *Regulation of Photosynthesis*. Kluwer Academic Publishers, The Netherlands (550 pages)

3. Peer-reviewed proceedings articles over 100 since 1980 (not listed)

4. Newspaper articles, radio and TV interviews: ca 50 during the last 7 years (not listed)