

CURRICULUM VITAE

Personal Information

Name: Stefano Cazzaniga

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Nationality: Italian

Place and date of birth: Carate Brianza (MI), Italy, 06/12/1978

Languages: Italian, English



Education

From 2012 to 2014: PhD in industrial environmental and molecular biotechnologies, Department of Biotechnology, University of Verona. Thesis title: “Photoprotection in oxygenic photosynthesis: A reverse genetic study”. Coordinator: Prof. Roberto Bassi

From 1997 to 2003: Master degree, in Industrial Biotechnology, University of Milano Bicocca. Thesis title: “Targeting of tumor vessels with INF γ , expression and characterization of mouse INF γ fused with CNGRC peptide”. Coordinator: Dr. Angelo Corti

Research activity

Achievement of ABILITAZIONE SCIENTIFICA NAZIONALE as Associate Professor for the SSD 05 / A2 (Plant Physiology) starting from 04/04/2018.

From 11/2021: Research Fellow (RTDB) of University of Verona, Department of Biotechnology.

From 01/2018: Research Fellow (RTDA) of University of Verona, Department of Biotechnology.

Main subjects of scientific research are:

- role of LHCSR, antenna proteins and carotenoids in light harvesting and excess energy quenching in *Chlamydomonas reinhardtii* and other microalgae.
- engineering of microalgae to express high value compounds.
- improving of microalgae performance inside photobioreactors.
- study of the mechanisms of adaptation of microalgae to different growth conditions.

2016-2017: Research activity on "Study of the physiological role of carotenoid astaxanthin and generation of high productivity mutants in *Haematococcus Pluvialis*" in Solar Energy Bioexploitation Lab of Prof. Ballottari, University of Verona, Department of Biotechnology.

2013-2016: Research activity on "Expression in plants and microalgae of genes coding for hyperthermophilic hydrolytic enzymes" in Photosynthesis Lab of Prof. Bassi, University of Verona, Department of Biotechnology.

2011-2013: Research activity on "Selection of mutant strains of *Chlorella vulgaris* with increased light use efficiency" in Photosynthesis Lab of Prof. Bassi, University of Verona, Department of Biotechnology.

2007-2010: Research activity on “Molecular aspects of Photosystem II response to abiotic stress” in Photosynthesis Lab of Prof. Bassi, University of Verona, Department of Biotechnology.

Participation in Research Projects

2011: MIPAAF BIOMASSVAL: “Improvement of use and digestibility of crop residues in relation to conversion into biofuels”. Coordinator Prof. Felice Cervone, Department of Plant Biology, Università La Sapienza, Rome.

2012: MIPAAF HYDROBIO: “Optimization of the production of Hydrogen from *Chlamydomonas*”. Coordinator Prof. Giorgio Giacometti, Department of Biology, University of Padova.

2012-2013: European Research Project SUNBIOPATH (Seventh Framework Programme FP7-KBBE, project ID 245070): “Towards a better sunlight to biomass conversion efficiency in microalgae”. International coordinator Prof. Clear Remacle, Universite de Liege.

2016-2021: European Research Project SOLENALGAE (project Horizon2020, ID: 679814): “Improving photosynthetic solar energy conversion in microalgae cultures for the production of biofuels and high value products”. Coordinator Prof. Matteo Ballottari, University of Verona.

From 2017: FARE 2016 (Framework per l’Attrazione e il Rafforzamento delle Eccellenze) MIGALGAE aimed at the development of an efficient system of genome editing in microalgae. Coordinator Prof. Matteo Ballottari, University of Verona.

2018-2020: ERC – Proof of Concept ASTAOMEGA (H2020-EU.1.1. ID 825936): “Implementation of a sustainable and competitive system to simultaneously produce astaxanthin and omega-3 fatty acids in microalgae for aquaculture and human nutrition”. Coordinator Prof. Matteo Ballottari, University di Verona.

2020-2021: ERC – Proof of Concept ASTEASY (H2020-EU.1.1. ID: 875429): “Innovative and efficient solution for production in microalgae of easily extractible and highly pure astaxanthin for added-value products”. Coordinator Prof. Matteo Ballottari, University di Verona.

From 2022: Habitat 2022 (Fondazione Cariverona): “Produzione di fertilizzanti e biostimolanti algali da digestati zootecnici per un sistema agricolo con ridotto impatto ambientale”. Coordinator Prof. Anita Zanboni, University di Verona.

From 2023: ERC – Transition 2022 ASTEASIER (HORIZON-EIC-2022-TRANSITION-01): “Novel and sustainable biotechnological approaches for astaxanthin and ketocarotenoids production.” Coordinator Prof. Matteo Ballottari, University di Verona.

Responsibility for Scientific Studies

2014: Scholarship CooperInt (programma di internazionalizzazione di ateneo, Università di Verona) in collaboration with the National Laboratory of Biomacromolecules of Prof. Mei Li, Institute of Biophysics, Chinese Academy of Sciences, Beijing. Research concerning the “Purification and crystallization of the CP29-zeaxanthina complex from engineered *Arabidopsis* plants”.

2019: Research project “Optimization of cultivation parameters in Vertical Farming” in collaboration with MBN SEEING S.r.l.s. Co-responsible.

Research visits abroad

07-08/2014: Visiting researcher in the “National Laboratory of Biomacromolecules” of Prof. Mei Li, Institute of Biophysics, Chinese Academy of Sciences, Beijing. Research activity on “Purification and crystallization of the CP29-zeaxanthin complex from *Arabidopsis thaliana* engineered plants” Research grant Scholarship CooperInt 2014 (programma di internazionalizzazione di ateneo, Università di Verona).

11/2016: Visiting researcher in the “Membrane Physiology and Molecular Biology of the Chloroplast”, of Prof. Francis-Andre Wollman, IBPC (Institut de Biologie Physico-Chimique), Paris. Research activity on “Analysis of state transitions in mutants of *Chlamydomonas reinhardtii* depleted of different antenna proteins”. Research grant from the French Photosynthesis Society (Sfphi).

Collaborations with national/international institutes

- Dipartimento di Biologia, Università di Padova, (Prof. Tomas Morosinotto)
- Laboratoire de Genetique et Biophysique des Plantes, Universite' Aix-Marseille II, France (Prof. Stefano Caffarri)
- Institute of Basic Biological Problems (RAS), Pushchino, Russia (Dr. Maria M Borisova-Mubarakshina)
- Institut de Biologie de l'Ecole Normale Superieure, Section de Genomique Environnementale et Evolutive, CNRS, Paris, France (Prof. Chris Bowler)
- Institute of Structural and Molecular Biology, University College London, UK (Prof. Saul Purton)

- Dipartimento di Scienze Chimiche, Università di Padova (Prof. Donatella Carbonera)
- Department of Life Science, Hanyang University, Seoul, South Korea (Prof. EonSeon Jin)
- Dipartimento di Scienze Biomolecolari, Università degli Studi di Urbino (Dr. Andrea Pompa)
- Department of Biology, Kyushu University, Fukuoka, Japan (Prof. Masamitsu Wada)
- Department of Plant and Microbial Biology, University of California, USA (Prof. Krishna Niyogi)
- Laboratory of Biophysics, Wageningen University, Netherlands (Prof. Herbert van Amerongen)
- Dipartimento di Scienze della Vita e Biologia dei Sistemi, Unità di Fisiologia Vegetale, Università di Torino, (Prof. Massimo Maffei)
- Department of Chemistry, University of California, USA (Prof. Graham Fleming)
- Department of Chemical Physics, Lund University, Sweden (Prof. Donatas Zigmantas)
- Ente per le Nuove Tecnologie, l'Energia e l'Ambiente, Dipartimento Biotecnologie, Roma (Dr. Giovanni Giuliano)
- Laboratoire d'Ecophysiologie Moleculaire des Plantes, Université Aix-Marseille, France (Prof. Michel Havaux)
- Institut Jean-Pierre Bourgin, Université Paris-Saclay, France (Prof. Helen North)
- Center for NanoScience and Technology, Istituto Italiano di Tecnologia, Milano (Prof. Cosimo D'Andrea)
- Politecnico di Milano, Department of Physics (Prof. Giulio Cerullo)

- Center for Biotechnology, Bielefeld University, Germany, (Prof. Olaf Kruse)
- Electron Microscopy Unit, Weizmann Institute of Science, Rehovot, Israel (Prof. Ziv Reich)
- Laboratoire de Physiologie Cellulaire et Végétale. Univ. Grenoble Alpes, France (Prof. Giovanni Finazzi)
- National Laboratory of Biomacromolecules, Institute of Biophysics, Chinese Academy of Sciences, Beijing (Prof. Zenfeng Liu and Prof. Mei Li)

Awards

2015: Best Poster award at the joint congress SIBV (Società Italiana Biologia Vegetale) -SIGA 2015, Milan. Title of the poster: “Improving ROS resistance in *Chlorella vulgaris* to increase biomass production”.

2016: Mario Bonsembiante award for the best PhD thesis on animal science and/or agricultural biotechnology for years 2014-2015 conferred by Istituto Veneto di Scienze Lettere ed Arti. Title of the thesis: “Photoprotection in Oxygenic Photosynthesis: a Reverse Genetic Study”

2017: Best young plant physiologist at the Joint congress SIBV (Società Italiana Biologia Vegetale) -SIGA, 2017, Pisa.

Academic Teaching

From 2021: Biotechnology for circular bioeconomy, degree course in Biotechnology (L2), Department of Biotechnology, University of Verona.

From 2020: Cell Biology Laboratory, degree course in Biotechnology (L2), Department of Biotechnology, University of Verona.

From 2020: Lecture on “Engineering photosynthesis to enhance productivity” for the PHD school in molecular, industrial and environmental Biotechnologies, University of Verona.

2016/2017: Lecturer for Plant physiology and photosynthetic stress, degree course in Biotechnology (L2), Department of Biotechnology, University of Verona. Responsible of the course: Prof. Roberto Bassi.

2016/2017: Laboratory of Plant physiology and photosynthetic stress, degree course in Biotechnology (L2), Department of Biotechnology, University of Verona. Responsible of the course: Prof. Roberto Bassi.

Institutional Responsibilities

From 2022: Member of the Scientific Board of the PhD in Nanoscience and Advanced Technologies, University of Verona

From 2022: Spin-off commission, Department of Biotechnology, University of Verona

From 2020: Member of the Quality Assurance (AQ) commission for the degree course in Biotechnology (L2), Department of Biotechnology, University of Verona

From 2020: Teaching Committee, Department of Biotechnology, University of Verona

From 2019: Equipment commission, Department of Biotechnology, University of Verona

2019: Member of the commission for the proposal of a new master's degree in "Agricultural Sciences and Technologies" (LM69), Department of Biotechnology, University of Verona

From 2018: Faculty member, Department of Biotechnology, University of Verona

Reviewer /Editorial Duties

2020: Guest Editor for International Journal of Molecular Sciences

From 2018: Reviewer for scientific journals as Algal Research, Biochemical Journal, Biomass & Bioenergy, Diatom Research, Frontiers Plant Science, Journal of Photochemistry and Photobiology and Journal of Plant Interactions.

2017: Review panel member for Estonian Research Council (ETAg)

Participation to national and international Conference

Oral presentations:

- Meeting of the French Photosynthesis Society (Sfphi 2017). Selected for oral presentation: “Two mechanisms for dissipation of excess light in monomeric and trimeric light-harvesting complexes”. 01-02/06/2017, Paris, France.
- Natural Products seminar - University of Verona. Seminar: “Selection of microalgae strains with increased carotenoids production”. 14/06/2017, Verona.
- Chloroplast Metabolism and Photosynthesis Meeting, University of Neuchâtel. Selected for oral presentation: “Dissipative response to excess light is catalyzed in monomeric and trimeric light-harvesting complexes by two distinct mechanisms”. 26-28/06/2017, Neuchâtel, Switzerland.
- AISAM 2020 Conference (Associazione Italiana per lo Studio e le Applicazioni delle Microalghe). Selected for oral presentation:

“Photoactive molecules enhance photosynthesis in diatom microalga”.
07/09/2020, Padova.

- Algaeurope 2020 Conference (European Algae Biomass Association)
Selected for oral presentation: “Turning a green alga red: engineering astaxanthin biosynthesis by intragenic pseudogene revival in *Chlamydomonas reinhardtii*”. 01-04/12/2020, Rome (On line).
- I-BE-C 2021 (1st International Bioenergy and Environment Conference)
From Photosynthesis to Biotechnology. Selected for oral presentation: “Photosystem II antenna complexes CP26 and CP29 regulate non-photochemical quenching in *Chlamydomonas reinhardtii*”. 16-18/02/2021, Marseille, France (On line).
- ICRC 2021 (International CeBiTec Research Conference 2021) Advances in industrial biotechnology: Prospects and challenges for the development of algal biotechnology. Selected for oral presentation: “Monomeric antennae CP26 and CP29 reveal distinct roles in light harvesting and excess light energy dissipation in *Chlamydomonas*”. 13-15/09/2021, Bielefeld, Germany

Other Conference Communications:

- 16th International Congress in Photosynthesis. Antenna Satellite meeting, poster presentation: “Regulation of excited state concentration in *Arabidopsis thaliana* mutants affecting PSBS, xanthophyll cycle and/or chloroplast movement”, 08-10/08/2013 St. Louis, Missouri, USA.
- 16th International Congress on Photosynthesis Research (PS16), poster presentation: “Interactions between Chloroplast relocation and Xanthophyll cycle in photoprotection against excess irradiance in *Arabidopsis thaliana*”. 11-16/08/2013 St. Louis, Missouri, USA.

- Joint congress SIBV (Società Italiana Biologia Vegetale) -SIGA 2015, poster presentation: “Improving ROS resistance in *Chlorella vulgaris* to increase biomass production”. 08-11/09/2015, Milan.
- Joint congress SIBV (Società Italiana Biologia Vegetale) -SIGA 2017, poster presentation: “Improving light-use-efficiency and biomass yield of plants by modulating photoprotection”. 19-22/09/2015, Pisa.
- First European Congress on Photosynthesis Research (ePS-1), poster presentation: “Functional analysis of photosynthetic pigment binding complexes in the green alga *Haematococcus pluvialis* reveals distribution of astaxanthin in Photosystems”. 25-28/06/2018, Uppsala, Sweden.
- Algae Tech Conference, poster presentation. “*Chlamydomonas reinhardtii* as a bio-factory for natural astaxanthin”. 19-20/09/2018, Munich, Germany.
- ISRP (International Society of Photosynthesis Research) 2022 Congress, poster presentation. “Photosystem II monomeric antenna CP26 has a key role in regulating Non-Photochemical Quenching in *Chlamydomonas reinhardtii*”. 31/07-05/08/2022, Dunedin, New Zealand.
- XVI FISV (Italian Federation of Life Sciences) Congress, poster presentation. “Turning a green alga red: astaxanthin biosynthetic pathway in *Chlamydomonas reinhardtii* improves resistance to light stress and biomass productivity at high irradiances”. 14-16/09/2022, Portici.
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Patents

- Patent application extended at international level (PCT/IB2021/059969): “Mutant strain of the seaweed *Nannochloropsis* and method of production of the same, its use in the production of astaxanthin and omega-3 and related compositions”

- Patent application extended at international level (PCT/IB2022/060381):
“Modified β -carotene ketolase (bkt), corresponding nucleic acid and microalga strain including it”

Scientific publications

H-index: 24

Sum of Times Cited: 2046

- 1) The *Arabidopsis* aba4-1 mutant reveals a specific function for neoxanthin in protection against photooxidative stress.
Dall'Osto L, **Cazzaniga S**, North H, Marion-Poll A, Bassi R.
Plant Cell. 2007 Mar;19(3):1048-64.
- 2) Different roles of alpha- and beta-branch xanthophylls in photosystem assembly and photoprotection
Dall'Osto L, Fiore A, **Cazzaniga S**, Giuliano G, Bassi R.
J Biol Chem. 2007 Nov 30;282(48):35056-68
- 3) The Occurrence of the psbS Gene Product in *Chlamydomonas reinhardtii* and in Other Photosynthetic Organisms and Its Correlation with Energy Quenching
Bonente G., Passarini F., **Cazzaniga S.**, Mancone C., Buia M.C., Tripodi M., Bassi R., Caffarri S.
Photochem Photobiol. 2008 Nov-Dec;84(6):1359-70.
- 4) Light-induced dissociation of an antenna hetero-oligomer is needed for non-photochemical quenching induction.

Betterle N, Ballottari M, Zorzan S, de Bianchi S, **Cazzaniga S**, Dall'osto L, Morosinotto T, Bassi R.

J Biol Chem. 2009 May 29;284(22):15255-66.

- 5) Enhanced photoprotection by protein-bound vs free xanthophyll pools: a comparative analysis of chlorophyll b and xanthophyll biosynthesis mutants.

Dall'Osto L, **Cazzaniga S**, Havaux M, Bassi R.

Mol Plant. 2010 May;3(3):576-93.

- 6) The conserved factor DE-ETIOLATED 1 cooperates with CUL4-DDB1DDB2 to maintain genome integrity upon UV stress.

Castells E, Molinier J, Benvenuto G, Bourbousse C, Zabulon G, Zalc A, **Cazzaniga S**, Genschik P, Barneche F, Bowler C.

EMBO J. 2011 Mar 16;30(6):1162-72.

- 7) A red-shifted antenna protein associated with photosystem II in *Physcomitrella patens*.

Alboresi A, Gerotto C, **Cazzaniga S**, Bassi R, Morosinotto T.

J Biol Chem. 2011 Aug 19;286(33):28978-87.

- 8) *Arabidopsis* mutants deleted in the light-harvesting protein Lhcb4 have a disrupted photosystem II macrostructure and are defective in photoprotection.

de Bianchi S, Betterle N, Kouril R, **Cazzaniga S**, Boekema E, Bassi R, Dall'Osto L.

Plant Cell. 2011 Jul;23(7):2659-79. Epub 2011 Jul 29.

- 9) A quadruple mutant of *Arabidopsis* reveals a beta-carotene hydroxylation activity for LUT1/CYP97C1 and a regulatory role of xanthophylls on determination of the PSI/PSII ratio.

Fiore A, Dall'osto L, **Cazzaniga S**, Diretto G, Giuliano G, Bassi R.

BMC Plant Biol. 2012 Apr 18;12(1):50

- 10) The *Arabidopsis* szl1 mutant reveals a critical role of β -carotene in photosystem I photoprotection.

Cazzaniga S, Li Z, Niyogi KK, Bassi R, Dall'Osto L.

Plant Physiol. 2012 Aug;159(4):1745-58.

- 11) Zeaxanthin protects plant photosynthesis by modulating chlorophyll triplet yield in specific light-harvesting antenna subunits.

Dall'Osto L, Holt NE, Kaligotla S, Fuciman M, **Cazzaniga S**, Carbonera D, Frank HA, Alric J, Bassi R.

J Biol Chem. 2012 Dec 7;287(50):41820-34.

- 12) Biogenesis of photosynthetic complexes in the chloroplast of *Chlamydomonas reinhardtii* requires ARSA1, a homolog of prokaryotic arsenite transporter and eukaryotic TRC40 for guided entry of tail-anchored proteins.

Formighieri C, **Cazzaniga S**, Kuras R, Bassi R.

Plant J. 2013 Mar;73(5):850-61.

- 13) The *Arabidopsis* nox mutant lacking carotene hydroxylase activity reveals a critical role for xanthophylls in photosystem I biogenesis.

Dall'Osto L, Piques M, Ronzani M, Molesini B, Alboresi A, **Cazzaniga S**, Bassi R.

Plant Cell. 2013 Feb;25(2):591-608.

- 14) Interaction between avoidance of photon absorption, excess energy dissipation and zeaxanthin synthesis against photooxidative stress in *Arabidopsis*.
Cazzaniga S, Dall' Osto L, Kong SG, Wada M, Bassi R.
Plant J. 2013 Nov;76(4):568-79.
- 15) On the origin of a slowly reversible fluorescence decay component in the *Arabidopsis* npq4 mutant.
Dall'osto L*, **Cazzaniga S***, Wada M, Bassi R.
Philos Trans R Soc Lond B Biol Sci. 2014 Mar 3;369(1640):20130221.
- 16) Disturbed excitation energy transfer in *Arabidopsis thaliana* mutants lacking minor antenna complexes of photosystem II.
Dall'Osto L, Ünlü C, **Cazzaniga S**, van Amerongen H.
Biochim Biophys Acta. 2014 Dec;1837(12):1981-8.
- 17) Domestication of the green alga *Chlorella sorokiniana*: reduction of antenna size improves light-use efficiency in a photobioreactor.
Cazzaniga S, Dall'Osto L, Szaub J, Scibilia L, Ballottari M, Purton S, Bassi R.
Biotechnol Biofuels. 2014 Oct 21;7(1):157.
- 18) Heterologous expression of moss light-harvesting complex stress-related 1 (LHCSR1), the chlorophyll a-xanthophyll pigment-protein complex catalyzing non-photochemical quenching, in *Nicotiana sp.*
Pinnola A, Ghin L, Gecchele E, Merlin M, Alboresi A, Avesani L, Pezzotti M, Capaldi S, **Cazzaniga S**, Bassi R.
J Biol Chem. 2015 Oct 2;290(40):24340-54.

- 19) Long-term acclimatory response to excess excitation energy: evidence for a role of hydrogen peroxide in the regulation of photosystem II antenna size.

Borisova-Mubarakshina MM, Ivanov BN, Vetoshkina DV, Lubimov VY, Fedorchuk TP, Naydov IA, Kozuleva MA, Rudenko NN, Dall'Osto L, **Cazzaniga S**, Bassi R.

J Exp Bot. 2015 Aug 31. pii: erv410.

- 20) Light-harvesting complex stress-related proteins catalyze excess energy dissipation in Both Photosystems of *Physcomitrella patens*.

Pinnola A, **Cazzaniga S**, Alboresi A, Nevo R, Levin-Zaidman S, Reich Z, Bassi R.

Plant Cell. 2015 Nov;27(11):3213-27.

- 21) Differential Roles of Carotenes and Xanthophylls in Photosystem I Photoprotection.

Cazzaniga S, Bressan M, Carbonera D, Agostini A, Dall'Osto L.

Biochemistry. 2016 Jul 5;55(26):3636-49

- 22) Two mechanisms for dissipation of excess light in monomeric and trimeric light-harvesting complexes.

Dall'Osto L*, **Cazzaniga S***, Bressan M, Paleček D, Židek K, Niyogi KK, Fleming G, Zigmantas D, Bassi R.

Nat Plants. 2017 Apr 10;3:17033.

- 23) Functional analysis of photosynthetic pigment binding complexes in the green alga *Haematococcus pluvialis* reveals distribution of astaxanthin in Photosystems.
Mascia F, Girolomoni L, Alcocer MJP, Bargigia I, Perozeni F, **Cazzaniga S**, Cerullo G, D'Andrea C, Ballottari M.
Sci Rep. 2017 Nov 24;7(1):16319.
- 24) Molecular basis of autotrophic vs mixotrophic growth in *Chlorella sorokiniana*.
Cecchin M, Benfatto S, Griggio F, Mori A, **Cazzaniga S**, Vitulo N, Delledonne M, Ballottari M.
Sci Rep. 2018 Apr 24;8(1):6465.
- 25) LHCSR3 is a nonphotochemical quencher of both photosystems in *Chlamydomonas reinhardtii*.
Girolomoni L, **Cazzaniga S**, Pinnola A, Perozeni F, Ballottari M, Bassi R.
Proc Natl Acad Sci USA. 2019 Mar 5;116(10):4212-4217.
- 26) In vitro and in vivo investigation of chlorophyll binding sites involved in non-photochemical quenching in *Chlamydomonas reinhardtii*.
Perozeni F, **Cazzaniga S**, Ballottari M.
Plant Cell Environ. 2019 Aug;42(8):2522-2535.
- 27) Combined resistance to oxidative stress and reduced antenna size enhance light-to-biomass conversion efficiency in *Chlorella vulgaris* cultures.
Dall'Osto L*, **Cazzaniga S***, Guardini Z, Barera S, Benedetti M, Mannino G, Maffei M, Bassi R.
Biotechnol Biofuels. 2019 Sep 16;12:221.

- 28) Monomeric light harvesting complexes enhance excitation energy transfer from LHCII to PSII and control their lateral spacing in thylakoids.
Dall'Osto L*, **Cazzaniga S***, Zappone D, Bassi R.
Biochim Biophys Acta Bioenerg. 2020 Apr 1;1861(4):148035
- 29) Photosystem II antenna complexes CP26 and CP29 are essential for nonphotochemical quenching in *Chlamydomonas reinhardtii*.
Cazzaniga S, Kim M, Bellamoli F, Jeong J, Lee S, Perozeni F, Pompa A, Jin E, Ballottari M.
Plant Cell Environ. 2020 Feb;43(2):496-509.
- 30) Turning a green alga red: engineering astaxanthin biosynthesis by intragenic pseudogene revival in *Chlamydomonas reinhardtii*.
Perozeni F, **Cazzaniga S**, Baier T, Zanoni F, Zoccatelli G, Lauersen KJ, Lutz W, Ballottari M.
Plant Biotechnol J. 2020 Feb 25;18(10):2053-2067.
- 31) Evolutionary divergence of photoprotection in the green algal lineage: a plant-like violaxanthin de-epoxidase enzyme activates the xanthophyll cycle in the green alga *Chlorella vulgaris* modulating photoprotection.
Girolomoni L, Bellamoli F, de la Cruz Valbuena G, Perozeni F, D'Andrea C, Cerullo G, **Cazzaniga S**, Ballottari M.
New Phytol. 2020 May 22;228(1):136-150.
- 32) *Chlamydomonas reinhardtii* LHCSR1 and LHCSR3 proteins involved in photoprotective non-photochemical quenching have different quenching efficiency and different carotenoid affinity.

Perozeni F, Beghini G, **Cazzaniga S**, Ballottari M.

Sci Rep. 2020 Dec 15;10(1):21957.

- 33) Identification of distinct pH- and zeaxanthin-dependent quenching in LHCSR3 from *Chlamydomonas reinhardtii*.

Troiano JM, Perozeni F, Moya R, Zuliani L, Baek K, Jin E, **Cazzaniga S**, Ballottari M, Schlau-Cohen GS.

Elife. 2021 Jan 15;10:e60383.

- 34) VviNAC33 promotes organ de-greening and represses vegetative growth during the vegetative-to-mature phase transition in grapevine.

D'Incà E, **Cazzaniga S**, Foresti C, Vitulo N, Bertini E, Galli M, Gallavotti A, Pezzotti M, Tornielli GB, Zenoni S.

New Phytol. 2021 Jul;231(2):726-746

- 35) Incorporating a molecular antenna in diatom microalgae cells enhances photosynthesis.

Leone G, Valbuena GDC, Cicco SR, Vona D, Altamura E, Ragni R, Molotokaite E, Cecchin M, **Cazzaniga S**, Ballottari M, D'Andrea C, Lanzani G, Farinola GM.

Sci Rep. 2021 Mar 4;11(1):5209.

- 36) Heterologous expression of cyanobacterial Orange Carotenoid Protein (OCP2) as a soluble carrier of ketocarotenoids in *Chlamydomonas reinhardtii*.

Pivato M, Perozeni F, Licausi F, **Cazzaniga S**, Ballottari M.

Algal Res. 2021 Mar 5;55:102255

- 37) CO₂ supply modulates lipid remodelling, photosynthetic and respiratory activities in *Chlorella* species.
Cecchin M, Paloschi M, Busnardo G, **Cazzaniga S**, Cuine S, Li-Beisson Y, Wobbe L, Ballottari M.
Plant Cell Environ. 2021 Sep;44(9):2987-3001.
- 38) High carotenoid mutants of *Chlorella vulgaris* show enhanced biomass yield under high irradiance.
Guardini Z, Dall'Osto L, Barera S, Jaber M, **Cazzaniga S**, Vitulo N, Bassi R.
Planta. 2021 May 1;10(5):911.
- 39) LPA2 protein is involved in photosystem II assembly in *Chlamydomonas reinhardtii*.
Cecchin M, Jeong J, Son W, Kim M, Park S, Zuliani L, **Cazzaniga S**, Pompa A, Kang CY, Bae S, Ballottari M, Jin E
Plant J. 2021 Sep;107(6):1648-1662.
- 40) A synthetic switch based on orange carotenoid protein to control blue-green light responses in chloroplasts.
Piccinini L, Iacopino S, **Cazzaniga S**, Ballottari M, Giuntoli B, Licausi F
Plant Physiol. 2022 Jun 1;189(2):1153-1168.
- 41) Astaxanthin and eicosapentaenoic acid production by S4, a new mutant strain of *Nannochloropsis gaditana*.
Piccinini L, Cecchin M, **Cazzaniga S**, Martini F, Paltrinieri S, Bossi S, Maffei EM, Ballottari M
Microb Cell Fact. 2022 Jun 16;21(1):117.

- 42) Engineering astaxanthin accumulation reduces photoinhibition and increases biomass productivity under high light in *Chlamydomonas reinhardtii*.

Cazzaniga S, Perozeni F, Baier T, Ballottari M

Biotechnol Biofuels Bioprod. 2022 Jul 11;15(1):77.

* Authors contributed equally to the work.

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE (art. 46 e 47 D.P.R. 445/2000)

Il sottoscritto Stefano Cazzaniga ai sensi e per gli effetti degli articoli 46 e 47 e consapevole delle sanzioni penali previste dall'articolo 76 del D.P.R. 28 dicembre 2000, n. 445 nelle ipotesi di falsità in atti e dichiarazioni mendaci, dichiara che le informazioni riportate nel presente curriculum vitae corrispondono a verità.

