

# Curriculum Vitae

## Prof. Matteo Ballottari

### SUMMARY:

Prof. Matteo Ballottari graduated in Biotechnology at the University of Verona in 2004. In 2008 he obtained his PhD in Molecular, Industrial and Environmental Biotechnology at the University of Verona, collaborating during his thesis with the University of California in Berkeley (USA). His PhD thesis was focused on the functional characterization of photosynthetic proteins in higher plants and received in 2009 the national award “Franca Rasi” for his PhD work. Since 2011 Matteo Ballottari was appointed as Assistant Professor, and then since 2014 Associate Professor, in Plant Physiology at the Department of Biotechnology of the University of Verona. He is member of the Italian society of Plant Biology (SIBV) and of the International Society of Photosynthesis Research (ISPR). Since 2016 Matteo Ballottari was selected as a member of the Young Academy of Europe. Matteo Ballottari is involved in many national and european projects financed by public and private funds about the exploitation of photosynthetic organisms to produce biomass, food and high value products, among which the H2020 projects ERC Starting Grant SOLENALGAE and the ERC Proof of Concept ASTAOMEGA.

### EDUCATION:

- 2008: PHD degree in Agricultural and Industrial Biotechnologies at the University of Verona
- 2004: Laurea cum Laude in Biotechnology at the University of Verona
- 1998: School leaving certificate awarded after five years at Scientific Liceum “Leonardo da Vinci” Cerea (VR), with full marks.

### LANGUAGES:

Italian, English

### SCIENTIFIC RESEARCH EXPERIENCE AND ACADEMIC POSITIONS:

- November 2014- today: Associate Professor in Plant Physiology at the Department of Biotechnology University of Verona.
- May 2011- October 2014: Assistant Professor in Plant Physiology at the Department of Biotechnology University of Verona.
- January 2008- May 2011: Post-doctoral activity at the Department of Biotechnology, University of Verona. Main subject of scientific research was the regulation of light harvesting and excess energy quenching functions in higher plants and algae antenna proteins. Scientific research also deals with the light harvesting regulation during chloroplasts - chromoplast transition on tomato fruits.
- January 2005- December 2008: PhD thesis in Agricultural and industrial Biotechnologies at the Department of Biotechnology, University of Verona. PhD thesis title: “The functional organization of Plant Photosystems: biochemical and spectroscopic analysis of the role of antenna proteins in photoprotection and acclimation to environmental conditions”.

- September-December 2004: fellowship at the Scientific and Technological Department, University of Verona. Scientific research was focused on acclimation of higher plants at different growth conditions.
- April 2003-July 2004: Master degree thesis at the Department of Biotechnology, University of Verona, under the supervision of prof. Roberto Bassi.

Achievement of ABILITAZIONE SCIENTIFICA NAZIONALE as Full Professor for the SSD 05 / A2 (Plant Physiology) starting from 11/09/2019

Achievement of ABILITAZIONE SCIENTIFICA NAZIONALE as Full Professor for the SSD 05 / E1 (General Biochemistry) starting from 05/12/2017

Achievement of ABILITAZIONE SCIENTIFICA NAZIONALE as Associate Professor for the SSD 05 / A2 (Plant Physiology) starting from 31/01/2014

Achievement of ABILITAZIONE SCIENTIFICA NAZIONALE as Associate Professor for the SSD 05 / E1 (General Biochemistry) starting from 16/06/2014

#### **GRANTS:**

- FSE 2012 (European Social Funds) grant financed by Regione Veneto in collaboration with the company Algain Energy srl for training your researcher on microalgae cultivation. Principal Investigator
- FSE 2013 (European Social Funds) grant financed by Regione Veneto in collaboration with the company Algain Energy srl for training your researcher on production of high value products from microalgae. Principal Investigator
- PRIN 2012 grant financed by MIUR (Ministero dell'istruzione, dell'università e della ricerca) as local PI in a research project entitled: "Improving biofuels and high added value molecules production from microalgae". Responsible of Research unit.
- JOINT PROJECT 2013 grant financed by the University of Verona (50%) and Algain Energy (50%) for pigments and omega-3 production in microalgae. Principal Investigator
- JOINT PROJECT with the company ALGAE-TECH (NL) for a research project entirely financed by the company on biofuels production from microalgae. Principal Investigator
- JOINT PROJECT with the company SISWAT (Barbados) for a research project entirely financed by the company for lipid production from microalgae. Principal Investigator
- ERC STARTING GRANT 2015, title of the project: "Improving photosynthetic Solar Energy conversion in microalgal cultures for the production of biofuels and high value products (SOLENALGAE)". Principal Investigator
- JOINT PROJECT with the company JOA VENTURES (NL) for a research project entirely financed by the company focused to improve the production of astaxanthin in green algae. Principal Investigator
- JOINT PROJECT 2016 grant financed by the University of Verona (50%) and ALGAE-TECH (NL) (50%) for omega-3 production in microalgae. Principal Investigator

- FARE 2016 grant financed by MIUR (Ministero dell'istruzione, dell'università e della ricerca) focused on the development of genome editing technologies in microalgae. Principal Investigator.
- ERC POC 2018, title of the project: “IMPLEMENTATION OF A SUSTAINABLE AND COMPETITIVE SYSTEM TO SIMULTANEOUSLY PRODUCE ASTAXANTHIN AND OMEGA-3 FATTY ACIDS IN MICROALGAE FOR ACQUACULTURE AND HUMAN NUTRITION (ASTAOMEGA)”. Principal Investigator
- FSE 2018 (European Social Funds) grant financed by Regione Veneto in collaboration with the company TOR.MEC AMBROSI srl, Algain Energy srl and the University of Trieste for the implementation of innovative vertical farming cultivation systems. Principal Investigator
- CARIVERONA FOUNDATION “Ricerca e Sviluppo 2019”. Research project: “Implementation of an innovative vertical farming system for Agriculture 4.0” in collaboration with the company Ono Exponential Farming srl. Principal Investigator
- ERC POC 2019, title of the project: “Innovative and efficient production in microalgae of easily extractible and highly pure Astaxanthin for added-value products (ASTEASY)”. Principal Investigator

#### **AWARDS:**

- SIGA-AGI-SIBV Joint Meeting Award for the best poster presented at the Joint Meeting for Italian societies of Plant Biology, Genetic and Plant Genetics 2011, Assisi 19-22 September 2011.
- “Franca Rasi Caldogno” 2009 National Award for the best PHD thesis in Plant Physiology, given by the Italian Society of Plant Biology.
- SEB-WILEY-TPJ annual awards to the most outstanding authored resource article published in “The Plant Journal” in 2019 for the paper “Chlorella vulgaris genome assembly and annotation reveals the molecular basis for metabolic acclimation to high light conditions”. Published in THE PLANT JOURNAL Volume 100, Issue 6, Pages 1289-1305.

#### **ACCADEMIC TEACHING EXPERIENCE:**

**2019-**“Metabolic Engineering for the production of high value products” 48 CFU, Master's degree in Biotechnology for bioresources and sustainable development at the University of Verona, Department of Biotechnology

**2018-** “Laboratory of Molecular Biology”, 48 CFU, Degree course in Bioinformatics at the University of Verona, Department of Informatics

**2015-** “Bio-exploitation of Solar Light Energy” 52 CFU, degree course in Biotechnology at the University of Verona, Department of Biotechnology

**2015** Invited for a lecture at the Plant Biology Winter School 2015 organized by the Italian Society of Plant Biology (SIBV).

**2012-2018** “Principles of Biochemistry”, 48 CFU, degree course in Sciences and Technologies of Bio and Nanomaterials at the University of Venice Ca’ Foscari

**2010-2011** “Biology”, degree course in Biotechnology, University of Verona, Faculty of Sciences MM.FF.NN.

**2011 and 2018** Invited for lectures on “The Photosystems” at the Photosynthesis section at the European School for Photobiology (ESP)

**2008-2009** “Biology”, degree course in Bioinformatics, University of Verona, Faculty of Sciences MM.FF.NN.

Since 2011 Tutor for 5 PHD students, 8 Master thesis, 5 First Level thesis and co-tutor for 1 PHD thesis and 10 Master thesis at the Department of Biotechnology, University of Verona.

### **INSTITUTIONAL RESPONSIBILITIES**

2018- Coordinator for the PHD program “Biotechnology” at the University of Verona  
2017- Faculty Member of the PHD program “Biotechnology” at the University of Verona  
2011 – Faculty member, Department of Biotechnology, University of Verona  
2011 – 2017 Faculty Member of the PHD program “Molecular, Industrial and Environmental Biotechnology at the University of Verona

### **REVIEWER /EDITORIAL DUTIES**

2017- Editorial Board member and Guest Editor for “International Journal of Molecular Sciences”  
2016- Review panel member for The Netherlands Organization for Scientific Research (NWO)  
2015 - Review panel member for Human Science Frontier Program  
2013 – Review panel member for Czech Science Foundation,  
2011 – Review panel member, Italian Ministry for Ministry for Education, University and Research  
2014 - Editorial Board member for “International Journal of Biotechnology & Bioengineering”

### **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

2010 – Associated Member of International Society of Photosynthesis  
2012 – Associated Member of Italian Society of Plant Biology  
2016 – Member of the Young Academy of Science  
2019- Member of the Italian Association for the Study and Application of Microalgae (AISAM).

### **PARTICIPATION TO INTERNATIONAL MEETINGS**

#### Invited talks:

- European Research Council Conference “Frontier Research: Creating Pathways to Sustainability” 2-3 December 2019. Invited talk:” Improving photosynthetic solar energy conversion in microalgal cultures for the production of biofuels and high value products”
- Participation at the Joint Congress SIBV-SBI, Padua, 4-6 September 2019. Invited talk: "Effect of CO2 concentration on photosynthetic and respiratory pathways in different green algal species".
- Participation at the "Plant Biology 2019" congress, San Jose, CA, USA, 3-7 August 2019. Invited talk: "Turning a green alga red: engineering astaxanthin biosynthesis by intragenic pseudogene revival in *Chlamydomonas reinhardtii*".
- 9th International Conference on Algal Biomass, Biofuels & Bioproducts, Boulder, CO, USA, 9-12 June 2019. Invited talk: "Effect of CO2 concentration on photosynthetic and respiratory pathways in different green algal species"
- 32<sup>nd</sup> Annual meeting of the Korean Society of Phycology, October 25-26, 2018, Gangwon-do, South Korea. Invited talk: “Biotechnological manipulation of carotenoid biosynthetic pathway to induce astaxanthin accumulation in *Chlamydomonas reinhardtii*”

- 1st European Congress on Photosynthesis Research ePS-1. June 25-28, 2018, Uppsala, Sweden. Invited talk: “Molecular basis of autotrophic vs mixotrophic growth in *Chlorella sorokiniana*”
- 8th International Conference on Algal Biomass, Biofuels and Bioproducts, Seattle (USA), 10-14 June 2018. Invited talk: “Genome assembly and annotation of the green alga *Chlorella vulgaris*”
- STOA-ERC event “Investing in Young Researchers, Shaping Europe’s Future” at the European Parliament in Strasbourg, on 30-31 May. Invited talk at the exchange session “Modern energy solutions”
- ACQUAFARM, Fiera Pordenone, 15-16 February 2018. Invited talk: “Astaxanthin production in microalgae: limits and possible biotechnological solutions ”
- Research Night -Veneto Night 2017. 30/09/2017, invited talk: "Produzione di molecole ad alto valore aggiunto da microalghe"
- 7th Int. CeBiTec Research Conference Bielefeld (Germania), 24-27/09/2017. Invited talk: "Differential gene expression analysis of *Chlorella sorokiniana* cultivated in autotrophic vs. mixotrophic conditions reveals fine control of metabolism"
- The 7th International Conference on Algal Biomass, Biofuels and Bioproducts, Miami (USA) 18-21 June 2017, invited talk: "Constitutive LHCSR expression as a strategy to increase productivity in microalgae"
- Forum Italiano sulle Tecnologie Microalgali (FITEMI – 2017), Palermo 6-7 April 2017. Invited talk: "IMPROVING PHOTOSYNTHETIC SOLAR ENERGY CONVERSION IN MICROALGAL CULTURES FOR THE PRODUCTION OF BIOFUELS AND HIGH VALUE PRODUCTS"
- ACQUAFARM, Fiera Pordenone, 26-27 January 2017. Invited talk: " Increased biomass, biofuels and high value products production through improvement of photosynthetic efficiency in microalgae cultures: objectives and methodologies of the Solenalgae project "
- VENETONIGHT 2016, 30/09/2016, invited talk: "PRODUZIONE DI BIOCARBURANTI, INTEGRATORI ALIMENTARI E ANTIOSSIDANTI TRAMITE MICROALGHE"
- 17th International Congress on Photosynthesis Research” Maastricht: 7-12 August 2016; invited talk: “LIGHT HARVESTING STRESS RELATED (LHCSR) PROTEINS ARE EXCITATION ENERGY QUENCHERS FOR BOTH PHOTOSYSTEM I AND II IN *CHLAMYDOMONAS REINHARDTII*.”
- GALILEO FESTIVAL DELL'INNOVAZIONE, Padua 5-7 May 2016. Invited talk: "PRODUZIONE DI BIOCOMBUSTIBILI E PRODOTTI AD ELEVATO VALORE AGGIUNTO TRAMITE LA COLTIVAZIONE DI MICROALGHE"
- International meeting “Light Harvesting Satellite meeting”, Washington University ST. LOUIS (MO- USA): 7-11 August 2013; invited presentation: “Identification of a Zeaxanthin-Dependent Regulation of Antenna Size in Higher Plants PhotoSystem I”
- International meeting “Light-Harvesting Processes”, Banz manstery Germalny 7-11 April 2013, invited presentation: “Identification of a Zeaxanthin-Dependent Regulation of Antenna Size in Higher Plants PhotoSystem I”
- ALGAE –EUROPE, International Meeting on Algae-cultures, Rome 7 September 2012 in the framework of ZERO-EMISSION congress, invited presentation: “Engineering unicellular green algae for improved light use efficiency in closed photobioreactors”.
- International Workshop “Mechanisms of Non-Photochemical quenching”, April 6-10 2011, Passau, Germany, invited presentation: “Analysis of LhcSR3, a Protein Essential for Feedback De-Excitation in the Green Alga *Chlamydomonas reinhardtii*”.
- II Congress of Italian Society of Plant Biology, Rome 12-14 July 2010, invited presentation: “Biochemical, Proteomic and Physiological Analysis of Chloroplast-Chromoplast Transition In *Solanum Lycopersicum*

- Photosynthesis Workshop 11 Oct – 14 Oct 2009 Munich, Germany; invited presentation: “Proteomic and physiologic analysis of the chloroplast to chromoplast transition in tomato fruits”.
- I Congress of Italian Society of Plant Biology, Verona 30 Giugno-02 July 2009, invited presentation: “Dissipation of Excess Energy in Light Harvesting Plants”
- XLVII Congress of Italian Plant Physiology Society, Pisa, 30 June – 02 July 2008, invited presentation: “EXCITONIC TUNING OF A CHARGE-TRANSFER STATE REGULATES PHOTOSYNTHETIC LIGHT HARVESTING IN PLANTS”
- Invited during April 2007 at the University of California, Berkeley, Department of Plant and Microbial Biology, for a talk about “Acclimation of higher plants at different growth conditions”

Poster presentation:

- Proteine 2018, Verona, 28-30May 2018, poster presentation: “Light dependent redox catalysis by Photosystem I complexes encapsulated in organic nanoparticles”
- 1st Joint AgroSpace-MELiSSA Workshop, Rome, May 16-18, 2018, poster presentation: “Photosynthetic microalgae as a sustainable platform for the production of high quality edible biomass”
- Joint congress SIBV-SIGA, Milano 8-11 September 2015, poster presentation: “INCREASED BIOMASS PRODUCTIVITY IN GREEN ALGAE BY TUNING NON-PHOTOCHEMICAL-QUENCHING”
- “QualityFruit” Workshop, Verona 5-6 June 2015, poster presentation: “BIOCHEMICAL AND PHYSIOLOGICAL EFFECTS OF PSBS GENE SILENCING BY RNAI IN SOLANUM LYCOPERSICUM”
- International meeting “Light-Harvesting Processes”, Banz manstery Germalby 8-12 March 2015, poster presentation: “CAN LHCII SUBSTITUTE LHCI EFFICIENTLY AS PHOTOSYSTEM I ANTENNA SYSTEM?”
- VI Congress of Italian Society of Plant Biology, Pisa 24– 27th September, 2014, poster presentation: “PHOTOSYNTHETIC RESPONSE TO NITROGEN STARVATION AND HIGH LIGHT IN HAEMATOCOCCUS PLUVIALIS”
- V Congress of Italian Society of Plant Biology, Foggia 18– 20th September, 2013, poster presentation: “THE LHCBM9 SUBUNIT OF THE MAJOR LIGHT-HARVESTING COMPLEX LHCII HAS A UNIQUE PROTECTIVE ROLE WITHIN THE FAMILY OF LHC PROTEINS OF CHLAMYDOMONAS REINHARDTII UPON SULFUR STARVATION.”.
- “16th International Congress on Photosynthesis Research” ST. LOUIS (MO- USA): 11-16 August 2013; poster presentation: “BIOCHEMICAL AND PHYSIOLOGICAL EFFECTS OF PSBS GENE SILENCING BY RNAI IN SOLANUM LYCOPERSICUM”
- AGI-SIGA-SIBV Joint meeting for Italian societies of Plant Biology, Genetic and Plant Genetics, poster presentation: “BIOCHEMICAL AND PHYSIOLOGICAL EFFECTS OF PSBS GENE SILENCING BY RNAi IN SOLANUM LYCOPERSICUM”, Assisi 19-22 September 2011.
- 15th International Congress of Photosynthesis, Beijing 22-27 August 2010, poster presentation: “QUENCHING EFFICIENCY, ZEAXANTHIN DEPENDENCE AND MOLECULAR DETAILS OF AGGREGATION-DEPENDENT ENERGY QUENCHING IN MONOMERIC AND TRIMERIC ANTENNA PROTEINS OF PHOTOSYSTEM II
- I Congress of Italian Society of Plant Biology, Verona 30 June-02 July 2009, poster presentation: “MODULATION OF PHOTOSYNTHETIC ACTIVITY DURING CHLOROPLAST-CHROMOPLAST TRANSITION”.

Other abstract presented at national or international congresses:

- SOL2010, 7th Solanaceae conference, Dundee, Scotland, 5-9 September 2010, poster presentation: “CHLOROPLAST-CHROMOPLAST TRANSITION IN TOMATO FRUIT: PROTEOMIC AND RNAi APPROACHES”
- SIGA (Italian Society of Plant Genetics), 53° Congress, Turin 16-19 September 2009, poster presentation: “PROTEOMICS AND FUNCTIONAL GENOMICS APPROACHES TO EXPLORE CHLOROPLAST-CHROMOPLAST TRANSITION IN TOMATO FRUIT”
- 14° International Congress of Photosynthesis, Glasgow, 22-27 July 2007, poster presentation: “KINETIC ANALYSIS OF ENERGY AND ELECTRON TRANSFER PROCESSES IN PSI PARTICLES FROM ARABIDOPSIS THALIANA”
- 13° International Congress of Photosynthesis, Montreal 2004, poster presentation: “EFFECT OF XANTHOPHYLL COMPOSITION ON HIGHER PLANTS PHOTOSYSTEM I-LIGHT HARVESTING I COMPLEX.”

**RESEARCH EXPERIENCE ABROAD:**

- April 2012: visit at the Department of Chemistry and Department of Plant and Microbial Biology University of California, Berkeley, under the supervision of prof. G. Fleming.
- April 2009: visit at the Department of Chemistry e Department of Plant and Microbial Biology University of California, Berkeley, under the supervision of prof. G. Fleming..
- July 2008 : Laboratoire de Genetique et de Biophysique des Plantes, Faculte des Sciences de Luminy, UMR 6191 CNRS-CEA-Universite Aix-Marseille II, uder the supervision of prof. R. Heinerwadel.
- April 2007: Department of Chemistry and Department of Plant and Microbial Biology University of California, Berkeley, under the supervision of prof. G. Fleming.
- September 2006: National Laboratory of Biomacromolecules, Institute of Biophysics, Chinese Academy of Sciences, 15 Datun Road, Chaoyang District, Beijing 100101, People’s Republic of China, under the supervision of prof. Chang Wengrui.
- November 2004: Robert Hill Institute, Department of Molecular Biology and Biotechnology, University of Sheffield, FirthCourt, WesternBank, Sheffield S102TN,UK under the supervision of professor Peter Horton.
- Collaborations with the following national/international institutes (selected):
  - Department of Chemistry, University of California, Berkeley, CA 94720, USA, (prof. G. Fleming)
  - Department of Plant and Microbial Biology University of California, Berkeley, (prof. K. Nyogi)
  - Algae Biotechnology and Bioenergy Group, Department of Biology, Center for Biotechnology, Bielefeld University, D-33615 Bielefeld, Germany, (prof. O. Kruse).
  - CEA - CNRS - Université Aix Marseille, (Dr. Yonghua LI-BEISSON)
  - Department of Life Sciences, Institute of Botany, B22, 27, Bld du rectorat, University of Liège, B-4000 Liège, Belgium, (Prof.ssa Claire Remacle)
  - Hanyang University, Seul (Republic of Korea, Prof. Eonseon Jin)

- Department of Chemistry, MIT (Boston, USA) Prof. Gabriela Schlau-Cohen
- Politecnico di Milano, Department of Physics (Prof. Giulio Cerullo, Prof. Dario Polli)
- Istituto Italiano di Tecnologia, Milano (Prof. Cosimo D'Andrea, Prof. Guglielmo Lanzani)
- Dipartimento di Biologia, Università di Padova, (Prof. Tomas Morosinotto)
- Dipartimento di Ingegneria Industriale, Università di Padova, (Prof. Alberto Bertucco)
- Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università di Torino (Prof. Massimo Maffei)

## SPECIALIZATION COURSES:

- Specialization course on ADR regulations and disposal of waste materials management, organized by AMIA VERONA SPA, 25-29 September 2009
- School of Photochemistry, organized by the Italian Society of Photochemistry 3-7 September 2007
- Preparative Chromatography HPLC school, organized by Gilson Italy, Padua 3-05-2007

## SCIENTIFIC PUBLICATIONS:

Overall research activity lead to publication of 56 articles in peer reviewed journals and 1 book chapter, which were cited 3044 times by 1758 documents with an average of 51.59 citations for each publication and 171.13 average citations per year. The global H-index is 30 according to WOS (updated at 12/05/20).

### *Publications with peer-review:*

1. **Ballottari M**, Govoni C, Caffarri S, Morosinotto T. *Stoichiometry of LHCI antenna polypeptides and characterization of gap and linker pigments in higher plants Photosystem I.* **Eur J Biochem.** 2004 Dec;271(23-24):4659-65.
2. Hienerwadel R, Gourion-Arsiquaud S, **Ballottari M**, Bassi R, Diner BA, Berthomieu C. *Formate binding near the redox-active tyrosine D in photosystem II: consequences on the properties of tyrD.* **Photosynth Res.** 2005 Jun;84(1-3):139-44.
3. Morosinotto T, **Ballottari M**, Klimmek F, Jansson S, Bassi R. *The association of the antenna system to photosystem I in higher plants. Cooperative interactions stabilize the supramolecular complex and enhance red-shifted spectral forms.* **J Biol Chem.** 2005 Sep 2;280(35):31050-8.
4. **Ballottari M**, Dall'Osto L, Morosinotto T, Bassi R. *Contrasting behavior of higher plant photosystem I and II antenna systems during acclimation.* **J Biol Chem.** 2007 Mar 23;282(12):8947-58.
5. Avenson TJ, Ahn TK, Zigmantas D, Niyogi KK, Li Z, **Ballottari M**, Bassi R, Fleming GR. *Zeaxanthin radical cation formation in minor light-harvesting complexes of higher plant antenna.* **J Biol Chem.** 2008 Feb 8;283(6):3550-8.
6. Slavov C, **Ballottari M**, Morosinotto T, Bassi R, Holzwarth AR. *Trap-limited charge separation kinetics in higher plant photosystem I complexes.* **Biophys J.** 2008 May 1;94(9):3601-12.
7. Ahn TK, Avenson TJ, **Ballottari M**, Cheng YC, Niyogi KK, Bassi R, Fleming GR. *Architecture of a charge-transfer state regulating light harvesting in a plant antenna protein.* **Science.** 2008 May 9;320(5877):794-7.



8. Cheng, Y-C, Ahn, T.K. Avenson, T.J. Zigmantas, D, Niyogi, K.K. **Ballottari, M.** Bassi R. and Fleming G. R. (2008) *Kinetic modelling of charge-transfer quenching in the CP29 minor complex of Photosystem II. The Journal of Physical Chemistry B.* Oct 23;112(42):13418-23.
9. Avenson, T.J., Ahn, T.K., Niyogi, K.K., **Ballottari, M.**, Bassi, R., and Fleming, G.R. *Lutein Can Act as a Switchable Charge Transfer Quencher in the CP26 Light-harvesting Complex* **J Biol Chem.** 2009 Jan 30;284(5):2830-5.
10. **Ballottari M**, Mozzo M, Croce R, Morosinotto T and Bassi R. *Occupancy and functional architecture of the pigment binding sites of photosystem II antenna complex Lhcb5.* **J Biol Chem.** 2009 Mar 20;284(12):8103-8113.
11. Betterle N\*, **Ballottari M\***, Zorzan S, de Bianchi S, Cazzaniga S, Dall'Osto L, Morosinotto T and Bassi R. *Light-induced dissociation of an antenna hetero-oligomer is needed for non-photochemical quenching induction.* **J. Biol. Chem.** 2009 May 29;284(22):15255-66.
12. Alboresi A, **Ballottari M**, Hienerwadel R, Giacometti G., Morosinotto T., *Antenna complexes protect Photosystem I from Photoinhibition.* **BMC Plant Biol.** 2009 Jun 9;9:71.
13. Li Z., Ahn T.K., Avenson T.J., **Ballottari M.**, Cruz J.A., Kramer D.M., Bassi R. Fleming G.R., Keasling J.D., Niyogi K.K. *Lutein accumulation in the absence of zeaxanthin restores nonphotochemical quenching in the Arabidopsis thaliana npq1 mutant.* **Plant Cell.** 2009 Jun;21(6):1798-812.
14. Schlau-Cohen G.S., Calhoun T.R., Ginsberg N.S., Read E.L., **Ballottari M.**, Bassi R., van Grondelle Fleming G.R. *Pathways of Energy Flow in LHCII from Two-Dimensional Electronic Spectroscopy.* **The Journal of Physical Chemistry B** 2009 Nov 19;113(46):15352-63.
15. Calhoun T.R., Ginsberg N.S., Schlau-Cohen G.S., Cheng YC, **Ballottari M.**, Bassi R., Fleming G.R. *Quantum Coherence Enabled Determination of the Energy Landscape in light-harvesting complex II.* **The Journal of Physical Chemistry B** 2009 Dec 24;113(51):16291-5
16. Schlau-Cohen GS, Calhoun TR, Ginsberg NS, **Ballottari M**, Bassi R, Fleming GR. *Spectroscopic elucidation of uncoupled transition energies in the major photosynthetic light-harvesting complex, LHCII.* **Proc Natl Acad Sci U S A.** 2010 Jul 27;107(30):13276-81.
17. de Bianchi S., **Ballottari M.**, Dall'Osto L. Bassi R. *Regulation of plant light harvesting by thermal dissipation of excess energy.* **Biochemical Society Transactions** 2010. Biochem Soc Trans. 2010 Apr;38(2):651-60.
18. **Ballottari M.**, Girardon J., Betterle N., Morosinotto T. and Bassi R. *Identification Of The Chromophores Involved In Aggregation-Dependent Energy Quenching Of The Monomeric Photosystem II Antenna Protein Lhcb5.* **J. Biol. Chem.** 2010 Sep 3;285(36):28309-21.
19. Betterle N.\*, **Ballottari M.\***, Hienerwadel R., Dall'Osto L., Bassi R. *Dynamics of Zeaxanthin Binding to the Photosystem II Monomeric Antenna Protein Lhcb6 (CP24) and Modulation of its Photoprotection Properties.* **Arch Biochem Biophys.** 2010 Dec 1;504(1):67-77
20. Bonente G., **Ballottari M.**, Thuy BT., Morosinotto T., Ahn TK., Fleming GR. Niyogi KK. and Bassi R. *Analysis of LhcSR3, a protein essential for feed-back de-excitation in the green alga Chlamydomonas reinhardtii.* **PLoS Biology.** 2011 Jan 18;9(1):e1000577.
21. Ginsberg N., Davis J., **Ballottari M.**, Cheng Y.C., Bassi R., Fleming G. *Solving structure in the CP29 light harvesting complex with polarization-phased 2D electronic spectroscopy.* **Proc Natl Acad Sci U S A.** 2011 Mar 8;108(10):3848-53

22. **Ballottari M**, Girardon J, Dall'osto L, Bassi R. *Evolution and functional properties of Photosystem II light harvesting complexes in eukaryotes*. **Biochim Biophys Acta**. 2012 Jan;1817(1):143-57. Epub 2011 Jun 15.
23. Bonente G, Pippa S, Castellano S, Bassi R, **Ballottari M**. *Acclimation of Chlamydomonas reinhardtii to different growth irradiances*. **J Biol Chem**. 2012 Feb 17;287(8):5833-47.
24. Ferrante P., **Ballottari M.**, Bonente G., Giuliano G., Bassi R. *The LHCBM1 and LHCBM2/7 gene products, components of the major LHCII complex, have distinct functional roles in the photosynthetic antenna system of Chlamydomonas reinhardtii* **J Biol Chem**. 2012 May 11;287(20):16276-88.
25. Schlau-Cohen GS, Ishizaki A, Calhoun TR, Ginsberg NS, **Ballottari M**, Bassi R, Fleming GR. *Elucidation of the timescales and origins of quantum electronic coherence in LHCII*. **Nat Chem**. 2012 Mar 25;4(5):389-95. doi: 10.1038/nchem.1303.
26. **Ballottari M**, Mozzo M, Girardon J, Hienerwadel R, Bassi R. *Chlorophyll triplet quenching and photoprotection in the higher plant monomeric antenna protein Lhcb5*. **J Phys Chem B**. 2013 Sep 26;117(38):11337-48. doi: 10.1021/jp402977y. Epub 2013 Jul 8. PubMed PMID: 23786371.
27. Grewe S\*, **Ballottari M\***, Alcocer M, D'Andrea C, Hankamer B, Mussgnug J, Bassi R, Kruse O. *Light-harvesting complex protein LHCBM9 is critical for photosystem II activity and hydrogen production in Chlamydomonas reinhardtii*. **Plant Cell**. 2014 Apr 4;26(4):1598-1611.
28. **Ballottari M**, Alcocer M, D'Andrea C, Viola D, Ahn TK, Petrozza A, Polli D, Cerullo G, Bassi R *Regulation of Photosystem I light harvesting by zeaxanthin*. **Proc Natl Acad Sci U S A**. 2014 Jun 10;111(23):E2431-8. doi:10.1073/pnas.1404377111. Epub 2014 May 28.
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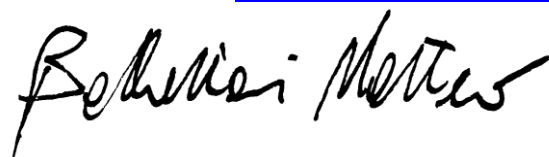
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A handwritten signature in black ink, reading "Ballottari Matteo". The signature is written in a cursive style with a large initial 'B'.