

ALBERTA PINNOLA

University of Pavia
Department of Biology and Biotechnology “L. Spallanzani”
via Adolfo Ferrata, 9 – 27100 Pavia
e-mail: alberta.pinnola@unipv.it
phone: +39-0382-985524



Education

- 2011-2014 Ph.D. in Biotechnology at the University of Verona with R. Bassi (PhD program in “Molecular, Industrial and Environmental Biotechnologies” - XXVI Cycle). Title of PhD Thesis: “*Physcomitrella patens* at the crossroad between algal and plant photosynthesis: a tool for studying the regulation of light harvesting”.
- 2006-2008 Master’s degree in Biology at University of Calabria (vote: 110/110 *summa cum laude*).
- 2003-2006 Bachelor’s degree in Biology at University of Calabria (vote: 110/110 *summa cum laude*).

Employment and Research Experience

- Since 2021 Associate Professor (BIO/04) at the University of Pavia, Department of Biology and Biotechnology.
- 2018-2021 Assistant Professor (RTD-B) at the University of Pavia, Department of Biology and Biotechnology.
- 2017-2018 Postdoctoral Fellow at the University of Verona, Department of Biotechnology. Project: “*Molecular mechanisms underlying the activities of LHCSR proteins in the activation of thermal dissipation of light absorbed in photosynthetic organisms*”.
- 2016-2017 Research Fellowship “Valeria & Vincenzo Landi” awarded by the Accademia dei Lincei. University of Verona, Department of Biotechnology. Project: “*Modulation of resistance to environmental stress and concentration of aromatic substances in Solanum lycopersicum through CRISPR/CAS9-mediated mutagenesis of the psbs gene*”.
- 2014-2016 Postdoctoral Fellow at the University of Verona, Department of Biotechnology. Project: “*Isolation, functional and structural characterization of LHCSR protein, essential for the control of light use efficiency in unicellular algae and mosses*”.
- 2009-2010 Scholarship at the University of Verona, Department of Neurological and Visual Sciences.

International Research Experiences

- 2017 Institute of Biophysics “Chinese Academy of Sciences”, Beijing, China. Advisors: Professors Mei Li and Wenrui Chang. From May to August 2017.
- 2017 University of California, Berkeley, Department of Chemistry. Advisor: Professor Graham R. Fleming. From April to May 2017.
- 2016 Institute of Biophysics “Chinese Academy of Sciences”, Beijing, China. Advisors: Professors Mei Li and Wenrui Chang. From April to May 2016.
- 2015 University of South Bohemia, Institute of Physics and Biophysics, Centre of Ultrafast spectroscopy. Advisor: Professor Tomáš Polívka. March 2015
- 2012 Institute of Biophysics “Chinese Academy of Sciences”, Beijing, China. Advisors: Professors Liu Zhenfeng and Wenrui Chang. From August to December 2012.

Honors and Awards

- 2020 Woman Ambassador for the Scientific divulgation in Italy title awarded by *Fondazione Bracco*.
- 2020 Young Researcher Award; title awarded by *Gruppo 2003 - Scienza in Rete*.
- 2020 National scientific qualification (ASN) to become Associate Professor in Molecular Biology (SSD BIO/11).
- 2019 National scientific qualification (ASN) to become Associate Professor in Plant Physiology (SSD BIO/04).
- 2018 Young Plant Biologists Award awarded by *Italian Society of Plant Biology (SIBV)*
- 2018 FESBP Award for young researchers awarded by *Federation of European Societies of Plant Biology (FEBS)*.
- 2017 CAS President's International Fellowship Initiative (PIFI) awarded by *Chinese Academy of Sciences (CAS)*.
- 2016 Vincenza and Vittorio Landi fellowship for Post-Doctoral Research awarded by the *Accademia dei Lincei*.
- 2014 Best Poster Award awarded at the *International Symposium on the Regulation of Photosynthetic Function*. Guilin, China.

Summary of Research Interests and Plans

Since my PhD studies, my research has been centered on the molecular physiology of abiotic stress response in photosynthetic organisms, plants, mosses and algae, with the aim of identifying mechanisms counteracting adverse environmental conditions. I have focused on the model moss system *Physcomitrella patens* during my PhD studies; afterwards, I have expanded my investigations also to algae and higher plants.

In my research, I implement a multi-disciplinary approach, which incorporates:

- *Genetics*: homologous transformation in the moss *P. patens*, CRISP-CAS9 technology in *A. thaliana*, *Nicotiana tabacum* and *Solanum lycopersicum*.
- *Biochemistry and molecular biology*: organelle purification; HPLC; denaturing and native electrophoresis and isoelectric focusing. Homologous and heterologous protein expression and purification.
- *Physiology*: steady state and time-resolved fluorescence/absorption spectroscopy *in vivo* and on isolated pigment-protein complexes.

Presently, I am currently establishing my independent research laboratory at the University of Pavia, called "BioPhotoLab". Research in my lab capitalizes on my multi-disciplinary background, focusing on environmental stress physiology and biotechnology using a combination of recombinant protein production, genetics and plant physiology studies.

Teaching Experience

- Since 2021** Teaching at University of Pavia, Department of Earth and Environmental Sciences. Program in Science and Technology for Nature, Bachelor's Course "Plant Physiology", 3° year. Cod. 502247; SSD BIO/04; 3 CFU.
- Since 2018** Teaching at University of Pavia, Department of Biology and Biotechnology. Program in Biotechnology, Bachelor's Course "Plant Cell Biology", 1° year. Cod. 500798; SSD BIO/04; 3+3 CFU.
- Since 2018** Teaching at University of Pavia, Department of Biology and Biotechnology. Program in Biotechnology, Bachelor's Course "Plant Cell Molecular Biology", 3° year. Cod. 501980; SSD BIO/04; 6 CFU.
- 2013-2014** Tutoring activity for students at University of Verona, Department of Biotechnology. Program in Biotechnology. Practical curricular course on "General and Cellular Biology", (74 hours).
- 2012-2013** Tutoring activity for students at University of Verona, Department of Biotechnology. Program in Biotechnology. Practical curricular course on "General and Cellular Biology", (60 hours).

Thesis Co-advisor/advisor

- 2022-2023 Supervisor of B.S. students Sophia AV Terzi, Francesco Marella, Chiara Tonella, Giorgia Vico.
- 2022-2023 Supervisor of M.S. students Chiara Colombo, Annalisa Tubia.
- 2021-2022 Supervisor of B.S. students Augugliaro Michele, Candito Angelo, Lorenzo Rinarelli, Carlo Milani, Simone Caridi.
- 2020-2021 Supervisor of B.S. students Carolina Pietranera, Annalisa Tubia, Chiara Colombo, Laura Sternativo.
- 2020-2021 Supervisor of M.S. students Gaia Veronesi and Alberto Spagnoli.
- 2015-2018 Co-supervisor of PhD Student Christo Schiphorst (University of Verona).
- 2016-2017 Co-supervisor of M.S. student Manuel Rigon (University of Verona).
- 2015-2016 Co-supervisor of M.S. student Alberto Marostica (University of Verona).

Institutional responsibilities

- Since 2019 Reference teacher (“docente di riferimento”) in the Bachelor course, program in Biotechnology, Department of Biology and Biotechnology, University of Pavia.
- Since 2018 Member of the Department council of the Department of Biology and Biotechnology, University of Pavia.

Commissions of Trust

- Since 2020 Member of the Italian REPRIZE council of reviewers.
- 2020 Chair of the Committee for the final exam for the PhD program in “Genetics, Molecular and Cellular Biology” (GBMC) of the University of Pavia.
- 2020 Member of the selection committee for a postdoctoral fellowship (“Assegno A”) funded by the Department of Biology and Biotechnology, University of Pavia.
- 2019 Member of the Scientific & Local Organizing Committee of the International Congress of “*Biophysics of Photosynthesis: from molecules to the field*”, Accademia Nazionale dei Lincei, Rome, Italy.
- 2018-2020 Guest Editor of Biochemical Journal, Special issue on Photosynthesis. Impact Factor, 4.331.
- Since 2018 Editorial Board & reviewer of Plants. Impact Factor, 2.632.

Membership to Scientific Societies

- Since 2019 Italian Society of Plant Biology
- Since 2019 International Society of Photosynthesis Research

Research Grants Applications and Funding Record

- 2023 PNRR 2022. NODES - Nord Ovest Digitale E Sostenibile. Academic Proof of Concept (PoC) – Spoke 2. Project “*Riciclo biotecnologico di terreni di coltura esausti attraverso le microalghe*”.
- 2023 PNRR 2022. Project “NODES - Nord Ovest Digitale E Sostenibile; Spoke2: *Green technologies and sustainable industries*”.
- 2023 PRIN PNRR 2022. Project “*From stem cells to algae and back: circular biotechnology for cellular agriculture and biomass production*”.
- 2022 PRIN 2022. Project “*Molecular Control of Photoprotection in Photosynthetic Organisms*”.
- 2021 Beneficiary of the Award “Lombardia è Ricerca”. Project “*Enhancing Photosynthesis*”.
- 2021 Research Projects of National Interest (not funded). Project: “*A journey through evolution to improve plant photosynthetic efficiency and productivity under dynamically changing light quality and intensity*”.
- 2021 Human Frontier Science Program (not funded). Project: “*Lessons from moss ancestors to improve modern plant productivity under light stressing conditions*”.
- 2020 2021-22 AAUW Research Publication Grant in Engineering, Medicine, and Science (pending). Project: “*Elucidating the molecular mechanisms of plant photoprotection through in vitro mutagenesis analysis*”.

- 2020 Pavia-Boston Grant funded by University of Pavia (Awarded). Project: " *Study of the molecular basis of photoprotection in plants through mutation analysis in vitro*".
- 2020 Human Frontier Science Program, Research Grants (not funded). Project: " *Improving photosynthetic efficiency in plants: the case of LHCSR protein*".
- 2020 H2020-MSCA-ITN-2020 (Marie Skłodowska-Curie Innovative Training Network (not funded). Project: " *Photosynthetic Optimisation of Plant and Alga Strains for Biotechnology – Advanced phenotyping and functional analysis*".
- 2019 ERC-2020-STG (ERC Starting Grant, not funded). Project: " *Archaeology of stress-resistance genes for improving crop photosynthetic efficiency*".
- 2019 H2020-NMBP-TR-IND-2018-2020 (Transforming European Industry, not funded), RIA. Project: " *Biodiversity informed improvements of photosynthesis for enhanced algae and higher plants*".
- 2019 Human Frontier Science Program, Young Investigators' Grants (not funded). Project: " *The molecular basis of photoprotection: a structural study of Photosystem II-LHCSR complex*".
- 2019 H2020-LC-SC3-2018-2019-2020 (Building A Low-Carbon, Climate Resilient Future: Secure, Clean And Efficient Energy, not funded). Project: " *Lipid biofuels with thermoenzymes in algal biofactory*".
- 2018 CooperInt project funded by University of Verona (Awarded). Project: " *Structural analysis of LHCSR protein from the heterologous system N. tabacum*".

Invited presentations at International Conferences

- February 2020: **Invited speaker**. "Archaeology of stress-resistance genes for improving crop photosynthetic efficiency" Life Science 2020. 3rd Joint Annual Symposium. Pavia, Italy, February 19-21, 2020.
- September 2018: **Selected talk**. "Archeology of stress-resistance genes: a novel strategy to improve photosynthesis and productivity in crops". XV FISV Congress. Sapienza University of Rome, Italy, September 18-21, 2018.
- June 2018: **Invited lecturer**. "A molecular switch for regulation of photosynthetic light use efficiency in mosses and green algae, named LHCSR". Plant Biology Europe (PBE). Copenhagen, Denmark, June 18-21, 2018.
- June 2016: **Invited speaker**. "Binding of the second messenger Zeaxanthin upon high light stress changes the functional properties of the LHCSR1 protein from *Physcomitrella patens*". 4th International Symposium on Plant Signaling and Behavior, Saint Petersburg, Russia, June 19-23, 2016.
- June 2015: **Invited speaker**. "Heterologous expression of moss LHCSR1: the Chlorophyll a-xanthophyll pigment-protein complex catalyzing Non-Photochemical Quenching, in *Nicotiana sp.*". Photosynthesis Gordon Research Seminar, Beyond Steady-State Photosynthesis: Emerging Model Organisms and Technologies, Boston, USA, June 27-28, 2015.
- September 2014. **Selected talk**. "The triggers of excess energy dissipation, PSBS and LHCSR proteins, are localized in distinct thylakoid protein domains in *Physcomitrella patens*". 16th International Congress on Photobiology. Cordoba, Argentina, September 10-12, 2014.

Poster presentations

- July 2015: **Pinnola A**, Cazzaniga S, Alboresi A, Nevo R, Levin-Zaidman S, Reich Z and Bassi R. "LHCSR proteins catalyze Excess Energy Dissipation in both Photosystems of *Physcomitrella patens*". Gordon Research Conference, Bentley University, Waltham, MA, June 28-July 3, 2015.
- September 2014: **Pinnola A**, Alboresi A, Bassi R. "The triggers of excess energy dissipation, PSBS and LHCSR proteins, are localized in distinct thylakoid protein domains in *Physcomitrella patens*". Proceedings of the 16th International Congress on Photobiology. Cordoba, Argentina, September 8-12, 2014.
- August 2014: **Pinnola A**, Gecchele E, Capaldi S, Ballottari M, Pezzotti M and Bassi R. "Properties of the LHCSR1 protein, essential for excess energy dissipation in *Physcomitrella patens* overexpressed in *Nicotiana tabacum*". Proceedings of the International Symposium on the Regulation of Photosynthetic Function, Guilin, China, August 16-20, 2014.
- August 2013: **Pinnola A**, Gerotto C, Morosinotto T, Dall'Osto L, Bassi R and Alboresi A. "A new unrecognized binding site on LHCSR proteins explains Enhanced Zeaxanthin-dependence of excess energy dissipation in *Physcomitrella*".

patens". St. Louis: Proceedings of 16th International Congress on Photosynthesis Research, St. Louis, MO, USA, August 11-16, 2013.

- October 2012: Pinnola A, Gerotto C, Morosinotto T, Dall'Osto L, Bassi R and Alboresi A. "A new Binding Site on LHCSR Proteins Enhances Zeaxanthin-dependence of Excess Energy Dissipation in *Physcomitrella patens*". 10th International Plant Molecular Biology Congress, Jeju, South Korea, October 21-26, 2012.

Research codes and indexes

- ORCID: 0000-0001-8373-7638
- In SCOPUS (Author ID: 55390962500), current h-index: 16
- Google Scholar profile: https://scholar.google.com/citations?user=bN_NkxcAAAAJ

Publications

I have published a total of 20 articles in international ISI journals. Eight papers are first authored. Three papers are last authored (corresponding author). I also wrote 3 book chapters.

a - international Journals

(*) co-first-authorship; (S) co-corresponding-authorship

1. Mattoteia D, Chiapparino A, Fumagalli M, De Marco M, De Giorgi F, Negro L, **Pinnola A**, Faravelli S, Roscioli T, Scietti L, Forneris F. Identification of Regulatory Molecular "Hot Spots" for LH/PLOD Collagen Glycosyltransferase Activity (2023). *Int J Mol Sci* Jul 7;24(13):11213. doi: 10.3390/ijms241311213. Impact Factor: 5.6
2. Bernardotto S, Frasson I, Faravelli S, Morelli A, Schiavon E, Moscatiello GY, Violatto MB, **Pinnola A**, Canciani A, Mattarei A, Rossi G, Brini M, Pasetto L, Bonetto V, Bigini P, Forneris F, Richter SN, Morpurgo M. Efficient SARS-CoV-2 infection antagonization by rhACE2 ectodomain multimerized onto the Avidin-Nucleic-Acid-NanoASsembly (2023). *Biomaterials*. Dec; 303:122394. doi: 10.1016/j.biomaterials.2023.122394. Impact Factor: 14.
3. Son M, Moya R, **Pinnola A**, Bassi R, Schlau-Cohen G. Protein-Protein Interactions Induce pH-Dependent and Zeaxanthin-Independent Photoprotection in the Plant Light-Harvesting Complex, LHCII (2021). *JACS*. 2021 Oct 27;143(42):17577-17586. doi: 10.1021/jacs.1c07385. Impact Factor: 15.419.
4. Gao S, Pinnola A, Zhou L, Zheng Z, Li Z, Bassi R, Wang G. Light-harvesting complex stress-related proteins play crucial roles in the acclimation of *Physcomitrella patens* under fluctuating light conditions (2021). *Photosynthesis Research*. doi: 10.1007/s11120-021-00874-8. Online ahead of print. Impact Factor: 3.573.
5. Son M, **Pinnola A**^S and Schlau-Cohen^S G (2020). Zeaxanthin independence of photophysics in light-harvesting complex II in a physiological environment. *BBA-Bioenergetic*. Jun 1; 1861(5-6):148115. doi: 10.1016/j.bbabi.2019.148115. Impact Factor: 4.441.
6. Son M, **Pinnola A**, Bassi R and Schlau-Cohen G (2020). Observation of dissipative chlorophyll-to-carotenoid energy transfer in light-harvesting complex II in membrane nanodiscs. *Nature Communications*. Mar 10; 11(1):1295. doi: 10.1038/s41467-020-15074-6. Impact Factor: 11.880.
7. **Pinnola A** (2019). Rise and fall of Light Harvesting Stress Related proteins (LHCSR) as photoprotection agents during evolution. *Journ. Exp. Botany*. Invited Expert Review. Oct 24;70(20):5527-5535. doi: 10.1093/jxb/erz317. Impact Factor: 5.360.
8. Dikaios I, Schiphorst C, Dall'Osto L, Alboresi A, Bassi R and **Pinnola A** (2019). Functional analysis of LHCSR1, a protein catalyzing NPQ in mosses, by heterologous expression in *Arabidopsis thaliana*. *Photosynthesis Research*. Dec;142(3):249-264. doi: 10.1007/s11120-019-00656-3. Impact Factor: 3.057.
9. Kondo T, Gordon JB, **Pinnola A**, Dall'Osto L, Bassi R, Schlau-Cohen GS (2019). Microsecond and millisecond dynamics in the photosynthetic protein LHCSR1 observed by single-molecule correlation spectroscopy. *PNAS*. May 17; DOI: 10.1073/pnas.1821207116. Impact Factor: 9.504.
10. Son M, **Pinnola A**, Bassi R, Schlau-Cohen GS (2019). The electronic structure of Lutein 2 is optimized for light harvesting in plants. *Chem*. March 14; 5(3): 575-584. DOI: 10.1016/j.chempr.2018.12.016; Impact Factor: 14.104.
11. Girolomoni L, Cazzaniga S, **Pinnola A**, Perozeni F, Ballottari M and Bassi R (2019). LHCSR3 is a nonphotochemical quencher of both photosystems in *Chlamydomonas reinhardtii*. *PNAS*. March 5; 116 (10) 4212-4217. DOI: 10.1073/pnas.1809812116; Impact Factor: 9.504.

12. **Pinnola A**, Alboresi A, Nosek L, Rameez A, Trotta A, Barozzi F, Kouřil 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 plant*. Nov; 4(11):910-919. DOI: 10.1038/s41477-018-0270-2; Impact Factor: 11.471.
13. **Pinnola A** and Bassi R (2018). Molecular Mechanisms Involved In Plant Photoprotection. *Biochem Soc Trans*. Apr 17;46(2):467-482. Review. DOI: 10.1042/BST20170307; Impact Factor: 3.394.
14. **Pinnola A**, Ballottari M, Bargigia I, Alcocer M, D'Andrea C, Cerullo G and Bassi R (2017). Functional modulation of LHCSR1 protein from *Physcomitrella patens* by zeaxanthin binding and low pH. *Scientific Reports* 7, article number: 11158. DOI: 10.1038/s41598-017-11101-7; Impact Factor: 4.122.
15. Kondo T, **Pinnola A**, Chen WJ, Dall'Osto L, Bassi R and Schlau-Cohen G (2017). Single-molecule spectroscopy of LHCSR1 protein dynamics identifies two distinct states responsible for multi-time scale photosynthetic photoprotection. *Nature Chemistry* 9(8):772-778. DOI: 10.1038/NCHEM.2818; Impact Factor: 26.201.
16. **Pinnola A**, Staleva-Musto H, Capaldi S, Ballottari M, Bassi R and Polívka T (2016) Electron transfer between carotenoid and chlorophyll contributes to quenching in the LHCSR1 protein from *Physcomitrella patens*. *Biochim Biophys Acta* 1857(12):1870-1878. DOI: 10.1016/j.bbabi.2016.09.001; Impact Factor: 4.702.
17. **Pinnola A**, Ghin L, Gecchele E, Merlin M, Alboresi A, Avesani L, Pezzotti M, Capaldi S, Cazzaniga S, Bassi R. (2015). 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.* *J Biol Chem* 290(40):24340-54. DOI: 10.1074/jbc.M115.668798; Impact Factor: 4.258.
18. **Pinnola A**, Cazzaniga S, Alboresi A, Nevo R, Levin-Zaidman S, Reich Z, Bassi R. (2015). Light-Harvesting Complex Stress-Related Proteins Catalyze Excess Energy Dissipation in Both Photosystems of *Physcomitrella patens*. *Plant Cell* 27(11):3213-27. DOI: 10.1105/tpc.15.00443; Impact Factor: 8.538.
19. **Pinnola A**, Dall'Osto L, Gerotto C, Morosinotto T, Bassi R, Alboresi A. (2013) Zeaxanthin Binds to Light-Harvesting Complex Stress-Related Protein to Enhance Non-photochemical Quenching in *Physcomitrella patens*. *Plant Cell*. 25(9): 3519-3. DOI: 10.1105/tpc.113.114538; Impact Factor: 9.251.
20. Azzabi G, **Pinnola A***, Betterle N, Bassi R and Alboresi A. (2012). Enhancement of Non-Photochemical Quenching in the Bryophyte *Physcomitrella patens* during Acclimation to Salt and Osmotic stress. *Plant Cell Physiol* 53(10):1815-25. DOI: 10.1093/pcp/pcs124; Impact Factor: 4.134.

b - book Chapters

1. **Pinnola A** and Bassi R. (2019). Chapter 8: Fotosintesi in "BIOCHIMICA" textbook. Edi.Ermes publisher; ISBN 978-88-7051-536-7.
2. **Pinnola A**, Kirilovsky D and Bassi R (2018). Chapter 11: Photoprotective Excess Energy in Dissipation in Light-Harvesting in Photosynthesis book. Edited by Croce R, van Grondelle R, van Amerongen H, van Stokkum I. CRC Press publisher. DOI: 10.1201/9781351242899; eBook ISBN 9781351242899
3. **Pinnola A**, Formighieri C and Bassi R. (2017). Chapter: Algae, a New Biomass Resource in Encyclopedia of Sustainability Science and Technology. Springer publisher.

c - congress papers

1. **Pinnola A**. LHCSR: a molecular switch for regulation of photosynthetic light use efficiency in mosses and unicellular algae. Sfphi2018: Meeting of the French Photosynthesis Society. Paris, France, April 5-6, 2018.
2. Bassi R, **Pinnola A**, Cazzaniga S, Ballottari M, Dall'Osto L. A comparative analysis of Photosynthetic Light use efficiency Regulation Mechanisms from unicellular algae to higher plants through mosses. Light Harvesting Satellite Meeting of the 17th International Congress on Photosynthesis Research. Maastricht, The Netherlands, August 4-7, 2016.
3. **Pinnola A**, Ballottari M, Alcocer M, Cerullo G and Bassi R. Binding of the second messenger Zeaxanthin upon high light stress changes the functional properties of the LHCSR1 protein from *Physcomitrella patens*. 4th International Symposium on Plant Signaling and Behavior. Saint Petersburg, Russia, June 19-23, 2016.
4. **Pinnola A**, Cazzaniga S, Ballottari M, Dall'Osto L and Bassi R. A comparative analysis of Photosynthetic Light use efficiency Regulation Mechanisms from unicellular algae to higher plants through mosses. 4th International Symposium on Plant Signaling and Behavior Saint Petersburg, Russia, June 19-23, 2016.
5. **Pinnola A**, Alboresi A and Bassi R. The Triggers of Excess Energy Dissipation, PSBS and LHCSR Proteins, Are Localized in Distinct Thylakoid Protein Domains in *Physcomitrella patens*. Proceedings of the 16th International Congress on Photobiology. Cordoba, September 8-12, 2014.
6. Dall'Osto L, Cazzaniga S, **Pinnola A**, Alboresi A, and Bassi R. Photoprotection of the Chloroplast is Provided by

- both Photoreceptor-Dependent And -Independent Mechanisms. Proceedings of the 16th International Congress on Photobiology. Cordoba, September 8-12, 2014.
7. **Pinnola A**, Gecchele E, Capaldi S, Ballottari M, Pezzotti M and Bassi R. Properties of the LHCSR1 protein, essential for excess energy dissipation in *Physcomitrella patens* overexpressed in *Nicotiana tabacum*. Proceedings of the International Symposium on the Regulation of Photosynthetic Function. Guilin, China, August 16-20, 2014.
 8. **Pinnola A**, Gerotto C, Morosinotto T, Dall'Osto L, Bassi R and Alboresi A. A new unrecognized binding site on LHCSR proteins explains Enhanced Zeaxanthin-dependence of excess energy dissipation in *Physcomitrella patens*. St. Louis: Proceedings of 16th International Congress on Photosynthesis Research. St. Louis, MO, USA, August 11-16, 2013.

Date

Pavia, 15th May 2024

Signature



The final exam is a written test on the topics covered by the course. The test lasts 60 minutes and is performed using the University Kiro-testing platform in a computerized classroom. It involves a combination of multiple choice questions, true/false, matching, choosing the missing words, drag and drop on an image.

SCRITTO.

La prova finale è un test scritto sugli argomenti trattati dal corso. Il test ha una durata di 60 minuti e viene realizzato sulla piattaforma di Ateneo Kiro-testing in aula informatizzata. Prevede una combinazione di domande a risposta multipla, vero/falso, completare immagini, connessioni.