

Silvia Mazzuca

Career and training.

Since 2013 she is the Responsible of the Laboratory of Plant Biology and Plant Proteomics (Lab.Bio.Pro.Ve. <https://www.unical.it/portale/portaltemplates/view/view.cfm?56109>) at the Department of Chemistry and Chemical Technologies, Università della Calabria, Italy.

2019- Visiting scientist at the LRSV-Laboratoire de Recherche en Sciences Végétales - UMR 556 UPS/CNRS, Toulouse, France . Research Topic: “ Plant cell wall proteomics of seagrasses”

2004 to 2010 she has been the National Coordinator of the Plant Biotechnology and Differentiation, Società Botanica Italiana;

Since 2002 Associate Professor in Plant Biology;

1996 -CNR Research Fellowship at the Plant Cell Biology laboratory, School of Pure and Applied Biology, University of Wales, Cardiff, UK;

1991 Permanent position as researcher at the Department of Ecology, Università della Calabria, Italy

Project responsibility and participation to projects

PI at three projects on “Interventi per la tutela e la conservazione di habitat acquatici e specie nel SIC Foce Neto, Dune di Marinella (IT9320095)”- POR 2014-2020, FESR, FSE, Programma di Azione 2014-2020

Partner of the project “HighGrass: High CO₂ effects on seagrass photosynthetic ecophysiology” founded by the FTC of the Ministry of Sciences and Technology of Portugal.

Partner at the “WG2. Genetics: Develop functional genetic and genomic tools to understand seagrass photosynthetic responses to environmental stressors”, COST Action ES0609 “Seagrass productivity: from genes to ecosystem management”. 2011-2014

PI for the project « An integrated approach to the study of the adaptive response of the seagrass *Posidonia oceanica* to variations in light regimes” PRIN program 2009

Partner of the task W1.A1 « Marine Ecotoxicology and Aquaculture » of the ME.MO.BIO.MAR. *Project*, "Marine Environment" Cluster, “Molecular and Cellular Methodologies for the Ecophysiology, Ecotoxicology and Biomonitoring of the Marine Environment”.2001-2005

Research activity

Elucidate the mechanisms of acclimation to depth and the stress responses of seagrasses species, particularly *Posidonia oceanica* by molecular and physiological approaches;

Elucidate the genetics of natural populations of *Posidonia oceanica* by the microsatellites, ISSR and SSR, giving new inside in the clonal diversity of this species along Calabria costlines;

Application of proteomics approach in *Posidonia* in natural populations as in aquaria cultures exposed to low light;

High-throughput proteomics and ecophysiology coupled with the transcriptome RNAseq technology to elucidate acclimation to depth;

Application of molecular approaches to *Cymodocea nodosa* under salt stress and ocean acidification;

Sub-cellular proteome and ultrastructure of chloroplasts of *Posidonia oceanica* under different light stress conditions.

Editorial activity

Academic Editor at Frontiers in Plant Sciences, PlosOne, JOMICS, Series of Botany and Environmental Science, Plant Science, Open Journal of Marine Science

Teaching activity

Course in Seagrasses biology at Master Degree in « Biodiversity and Natural Systems-Marine Environment». Trainer on seagrass monitoring in master level course

Publications

1. Piro A., Bernardo L., Serra IA, Barrote I, Olivé I, Costa MM, Lucini L, Santos R., **Mazzuca S**, Silva J. 2020. Leaf proteome modulation and cytological features of seagrass *Cymodocea nodosa* in response to long-term high CO₂ exposure in volcanic vents. *Sci Rep* **10**, 22332. <https://doi.org/10.1038/s41598-020-78764-7>
2. Jahnke, M.; D'Esposito, Daniela; Orrù, Luigi; Lamontanara, Antonella; **Mazzuca, Silvia**; Procaccini Gabriele. 2018. Adaptive responses along a depth and a latitudinal gradient in the endemic seagrass *Posidonia oceanica*. HEREDITY DOI:10.5061/dryad.44s3k14.
3. Procaccini G., Miriam Ruocco, Lázaro Marín-Guirao, Emanuela Dattolo, Christophe Brunet, Daniela D'Esposito, Chiara Lauritano, **Mazzuca S**, et al (2017). Depth-specific fluctuations of gene expression and protein abundance modulate the photophysiology in the seagrass *Posidonia oceanica*. SCIENTIFIC REPORTS, vol. 7, 42890, ISSN: 2045-232, doi: 10.1038/srep42890 2016

4. D'Esposito D, Luigi Orrù, Emanuela Dattolo, Letizia Bernardo, Antonella Lamontara, Luisa Orsini, Ilia Serra, **Mazzuca S**, and Gabriele Procaccini (2016). Transcriptome characterisation and simple sequence repeat marker discovery in the seagrass *Posidonia oceanica*. SCIENTIFIC DATA, vol. 3, 160115, ISSN: 2052-4463, doi: 10.1038/sdata.2016.115 2016
5. Heazlewood JL, JV Jorrín-Novo, GK Agrawal, **Mazzuca S**, S Lühje. (2016). Editorial: International Plant Proteomics Organization (INPPO) World Congress 2014. . FRONTIERS IN PLANT SCIENCE, vol. 7, ISSN:1664-462X, doi: <https://doi.org/10.3389/fpls.2016.01190.2015>
6. Felisberto P, Sérgio M. Jesus, Friedrich Zabel, Rui Santos, João Silva, Sylvie Gobert, Sven Beer, Mats Björk, **Mazzuca S**, Gabriele Procaccini, John W. Runcie, Willy Champenois, Alberto V. Borges (2015). Acoustic monitoring of O₂ production of a seagrass meadow. JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY, vol. 464 , p. 75-87, ISSN: 0022-0981, doi: 10.1016/j.jembe.2014.12.013 2015
7. Piro A, Serra IA, Spadafora A, Cardilio M, Bianco L, Perrotta G, Rui S, **Mazzuca, Silvia** (2015). Purification of intact chloroplasts from marine plant *Posidonia oceanica* suitable for organelle proteomics. PROTEOMICS, vol. 15, p. 4159-4174, ISSN: 1615-9853, doi: 10.1002/pmic.201500246- 6 – 2015
8. Piro A, Lázaro Marín Guirao, Ilia Anna Serra, Antonia Spadafora, José Miguel Sandoval Gil, Jaime Bernardeau Esteller, Juan Manuel Ruiz_Fernandez, **Mazzuca, Silvia** (2015). The modulation of leaf metabolism plays a role in salt tolerance of *Cymodocea nodosa* exposed to hypersaline stress in mesocosms: a proteomic view. FRONTIERS IN PLANT SCIENCE, vol. 6, p. 1-12, ISSN: 1664-462X, doi:10.3389/fpls.2015.00464 2014
9. Dattolo E, M. Ruocco, C. Brunet, M. Lorenti, C. Lauritano, D. D'Esposito, P. De Luca, R. Sanges, **Mazzuca S**, G. Procaccini (2014). Response of the seagrass *Posidonia oceanica* to different light environments: Insights from a combined molecular and photo-physiological study. MARINE ENVIRONMENTAL RESEARCH, vol. 101, p. 225-236, ISSN: 0141-1136, doi: 10.1016/j.marenvres.2014.07.010
10. Dattolo, Emanuela; Gu, Jenny; Bayer, Philipp E; **Mazzuca, S**; Serra, Ilia A; Spadafora, Antonia; Bernardo, Letizia; Natali, Lucia; Cavallini, Andrea; Procaccini, Gabriele. (2013). Acclimation to different depths by the marine angiosperm *Posidonia oceanica*: transcriptomic and proteomic profiles. Frontiers in plant science 4: 1-15. DOI: 10.3389/fpls.2013.00195
11. **Mazzuca, S**; Bjork, M; Beer, S; Felisberto, P; Gobert, S; Procaccini, G; Runcie, J; Silva, J; Borges, A V; Brunet, C; et al. (2013). Establishing research strategies, methodologies and technologies to link genomics and proteomics to seagrass productivity, community metabolism, and ecosystem carbon fluxes. Frontiers in Plant Science. 4: 1-19. DOI: 10.3389/fpls.2013.00038
12. Serra, IA , Nicastro, S , **Mazzuca, S** , Natali, L , Cavallini, A , Innocenti, AM . (2013). Response to salt stress in seagrasses: PIP1;1 aquaporin antibody localization in *Posidonia oceanica* leaves. AQUATIC BOTANY, 104: 213-219. DOI: 10.1016/j.aquabot.2011.05.008
13. Procaccini, G, Beer, S , Bjork, M , Olsen, J , **Mazzuca, S**, Santos, R. (2012) Seagrass ecophysiology meets ecological genomics: are we ready? MARINE ECOLOGY- AN EVOLUTIONARY PERSPECTIVE, 33: 522-527 , DOI: 10.1111/j.1439-0485.2012.00518 x.
14. Serra I.A, **Mazzuca S** (2011). *Posidonia oceanica*: from ecological status to genetic and proteomic resources. In: (eds): ROBERT S. PIROG, Seagrass: Ecology, Uses and Threats. vol. 2, p. 71-116, Hauppauge, NY 11788 USA: Nova Science Publishers, Inc., ISBN: 978-1-61761-987 2010
15. Finiguerra, A, Spadafora, A, Filadoro, D , **Mazzuca, S** (2010). Surface-activated chemical ionization time-of-flight mass spectrometry and labeling-free approach: two powerful tools for the analysis of complex plant functional proteome profiles RAPID COMMUNICATIONS IN MASS SPECTROMETRY, 24: 1155-1160. DOI: 10.1002/rcm.4494
16. Procaccini G, E Dattolo, AM Innocenti, **S Mazzuca**, A Cavallini, L Natali, P Bayer (2010). Differential gene expression profiling under different light conditions in *Posidonia oceanica* (L.) Delile by SSH analysis. Rapp. Comm. Int. Mer Médit, 39: 641-642
17. **Mazzuca, S**, Spadafora, A , Filadoro, D , Vannini, C, Marsoni, M , Cozza, R , Bracale, M, Pangaro, T , Innocenti, AM (2009). Seagrass light acclimation: 2-DE protein analysis in *Posidonia* leaves grown in chronic low light conditions. JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY, 374 : 113-122 DOI: 10.1016/j.jembe.2009.04.010
18. Spadafora, A Filadoro, D , **Mazzuca, S**, Bracale, M , Marsoni, M, Cardilio, M , Innocenti, AM (2008). 2-

DE polypeptide mapping of *Posidonia oceanica* leaves, a molecular tool for marine environment studies
PLANT BIOSYSTEMS, 142: 213-218 , DOI: 10.1080/11263500802150316

19. Serra, IA ,Procaccini, G ,Intrieri, MC , Migliaccio, M, **Mazzuca, S** ,Innocenti, AM. (2007). Comparison of ISSR and SSR markers for analysis of genetic diversity in the seagrass *Posidonia oceanica*. MARINE ECOLOGY PROGRESS SERIES, 338: 71-79 DOI: 10.3354/meps338071

20. Innocenti A. M., Serra I. A., Procaccini G. , Intrieri M. C, Migliaccio M., **Mazzuca S.** (2006). Comparative analysis of genetic diversity in *Posidonia oceanica* (L.) Delile using ISSR and SRR markers". Biologia Marina Mediterranea, 13: 92-96.

Scientometric data: Google scholar citation index: 1783 (Scholar 4/02/2021); Google scholar H index: 19; Total publications: 56; Scopus H index :16 (4/02/2021)

ERC

8_8 Environmental and marine biology
8_5 Evolutionary biology: evolutionary ecology and genetics, co-evolution
2_3 Proteomics