

## Alma Balestrazzi - Elenco pubblicazioni

### Selected Publications on “peer-review” journals (2010-2020)

1. Pagano A, L'Andolina C, Sabatini ME, de Sousa Araújo S, **Balestrazzi A**, Macovei A (2020) Sodium butyrate induces genotoxic stress in function of photoperiod variations and differentially modulates the expression of genes involved in chromatin modification and DNA repair in *Petunia hybrida* seedlings. *Planta* **2020** In press
2. Forti C, Ottobriano V, Bassolino L, Toppino L, Rotino GL, Pagano A, Macovei A, **Balestrazzi A**. Molecular dynamics of pre-germinative metabolism in primed eggplant (*Solanum melongena* L.) seeds. *Horticulture Research* **2020** In press. doi: 10.1038/s41438-020-0310-8.
3. Forti C, Shankar A, Singh A, Balestrazzi A, Prasad V, **Macovei A**. Seed priming improves germination on heavy-metal contaminated soil by inducing upregulation of genes involved in DNA repair and antioxidant response. *Genes*. 2020. 11, 242. doi: 10.3390/genes11030242.
4. Macovei A, Pagano A, Cappuccio M, Gallotti L, Dondi D, Araújo S, Feveireiro P, **Balestrazzi A**. A snapshot of the trehalose pathway during seed imbibition in *Medicago truncatula* reveals temporal-and stress-dependent shifts in gene expression patterns associated with metabolite changes. *Frontiers in Plant Sciences* **2019**. doi: 10.3389/fpls.2019.01590.
5. Doria E, Pagano A, Ferreri C, Larocca AV, Macovei A, Araújo S, **Balestrazzi A**. How does the seed pre-germinative metabolism fight against imbibition damage? Emerging roles of fatty acid cohort and antioxidant defence. *Frontiers in Plant Sciences* **2019**. 10:1-13. doi: 10.3389/fpls.2019.00989.
6. Maraeva G, **Balestrazzi A**, Pagano A, Müller J, Kyrtziz A, Kikodze D, Canella M, Mondoni A, Rossi G, Guzzon F. Germination niche differentiation in heteromorphic seeds of wheat wild relatives. *Plant Biology*. doi: 10.1111/plb.13060
7. Cimini S, Gualtieri C, Macovei A, **Balestrazzi A**, De Gara L, Locato V. Redox balance-DDR-miRNA triangle: relevance in genome stability and stress responses in plants. *Frontiers in Plant Science* **2019**, 10:989. doi: 10.3389/fpls.2019.00989
8. De Sousa Araujo S, Pagano A, Dondi D, Lazzaroni S, Pinela E, Macovei A, **Balestrazzi A**. Metabolic signatures of germination triggered by kinetin in *Medicago truncatula*. *Scientific Reports* **2019**, 9: 10466. doi: 10.1038/s41598-019-46866-6.
9. Pavlopoulou A, Karaca E, **Balestrazzi A**, Georgakilas AG. *In silico* phylogenetic and structural analysis of plant endogenous danger signaling effectors. *Oxidative Medicine and Cellular Longevity* **2019**, 2019:1-14. doi: 10.1155/2019/8683054.
10. Pagano A, De Sousa Araújo S, Macovei A, Dondi D, Lazzaroni S, **Balestrazzi A**. Metabolic and gene expression hallmarks of seed germination uncovered by sodium butyrate in *Medicago truncatula*. *Plant Cell & Environment*, **2019**, 42: 259-269. doi: 10.1111/pce.13342.
11. Parreira JR, **Balestrazzi A**, Feveireiro P, De Sousa Araujo S. Maintaining genome integrity during seed development in *Phaseolus vulgaris* L.: evidence from a transcriptomic profiling study. *Genes*, **2018**, 9: E463. doi: 10.3390/genes9100463.
12. Macovei A, Faè M, Biggiogera M, de Sousa Araujo S, Carbonera D, **Balestrazzi A**. Ultrastructural and molecular analyses reveal enhanced nucleolar activity in *Medicago truncatula* cells overexpressing the *MtTdp2 $\alpha$*  gene. *Frontiers in Plant Science*, **2018**, 9: 596. doi: 10.3389/fpls.2018.00596.
13. Macovei A, Pagano A, Sabatini ME, Grandi S, **Balestrazzi A**. The human tyrosyl-DNA phosphodiesterase 1 (hTdp1) inhibitor NSC120686 as an exploratory tool to investigate plant *Tdp1* genes. *Genes*, **2018**, 9: E186. doi: 10.3390/genes9040186.
14. Nikitaki Z, Holá M, Donà M, Pavlopoulou A, Michalopoulos I, Angelis KJ, Georgakilas AG, Macovei A, **Balestrazzi A**. Integrating plant and animal biology for the search of novel DNA damage biomarkers. *Mutation Research - Reviews in Mutation Research*, **2018**, 775: 21-38. doi: 10.1016/j.mrrev.2018.01.001.

15. Macovei A, Donà M, Carbonera D, **Balestrazzi A**. DNA diffusion assay applied to plant cells. *Methods in Molecular Biology*, **2018**, 1743: 107-115. doi: 10.1007/978-1-4939-7668-3\_10.
16. Pagano A, Susana Araújo S, Macovei A, Leonetti P, **Balestrazzi A**. The seed repair response during germination: disclosing correlations between DNA repair, antioxidant response, and chromatin remodeling in *Medicago truncatula*. *Frontiers in Plant Science*, **2017**, 8: 1972. doi: 10.3389/fpls.2017.01972.
17. Sabatini ME, Pagano A, Araujo A, **Balestrazzi A**, Macovei A. The tyrosyl-DNA phosphodiesterase 1 $\beta$  (Tdp1 $\beta$ ) gene discloses an early response to abiotic stresses. *Genes*, **2017**, 8: 305. doi: 10.3390/genes8110305.
18. Nikitaki Z, Pavlopoulou A, Holá M, Donà M, Michalopoulos I, **Balestrazzi A**, Angelis K, Georgakilas AG. Bridging plant and human radiation response and DNA repair through an *in silico* approach. *Cancers*, **2017**, 9:E65. doi: 10.3390/cancers9060065.
19. Macovei A, Pagano A, Leonetti P, Carbonera D, **Balestrazzi A**, Araújo S. Systems biology approaches to unveil the molecular players involved in the pre-germinative metabolism: implications on seed technology traits. *Plant Cell Reports*, **2016**, 36: 669-688. doi: 10.1007/s00299-016-2060-5.
20. Araujo SS, **Balestrazzi A**, Faè M, Morano M, Carbonera D, Macovei A. *MtTdp2a*-overexpression boosts the growth phase of *Medicago truncatula* cell suspension and increases the expression of key genes involved in antioxidant response and genome stability. *Plant Cell, Tissue and Organ Culture*, **2016**, 127: 675-680. doi: 10.1007/s11240-016-1075-5.
21. Macovei A, Sahoo R, Faè M, **Balestrazzi A**, Carbonera D, Tuteja N. Overexpression of PDH45 and SUV3 helicases in rice leads to delayed leaf senescence-associated events. *Protoplasma*, **2016**, 254: 1103-1113. doi: 10.1007/s00709-016-1017-4.
22. Araujo S, Paparella S, Bentivoglio A, Dondi D, Carbonera D, **Balestrazzi A**. Physical methods for seed invigoration: advantages and challenges in seed technology. *Frontiers in Plant Science*, **2016**; 7: 1-12. doi: 10.3389/fpls.2016.00646.
23. **Balestrazzi A**, Achary VMM, Macovei A, Yoshiyama KO, Sakamoto AN. Editorial: Maintenance of genome integrity: DNA damage sensing, signaling, repair and replication in plants. *Frontiers in Plant Science*, **2016**; 6: 64. doi: 10.3389/fpls.2016.00064.
24. Sabatini ME, Donà M, Leonetti P, Minio A, Delledonne M, Carbonera D, Confalonieri M, Giraffa G, **Balestrazzi A**. Depletion of tyrosyl-DNA Phosphodiesterase 1 alpha (*MtTdp1alpha*) affects transposon expression in *Medicago truncatula*. *Journal of Integrative Plant Biology*, **2015**; 58: 618-622. doi: 10.1111/jipb.12457.
25. Murgia I, Giacometti S, **Balestrazzi A**, Paparella S, Pagliano C, Morandini P. Analysis of the transgenerational iron deficiency stress memory in *Arabidopsis thaliana* plants. *Frontiers in Plant Sciences*, **2015**; 6: 745. doi: 10.3389/fpls.2015.00745.
26. Paparella S, Araujo S, Rossi G, Wijayasinghe M, Carbonera D, **Balestrazzi A**. Seed priming: state of the art and new perspectives. *Plant Cell Reports*, **2015**; 34: 1281-1293. doi: 10.1007/s00299-015-1784-y.
27. Paparella S, Tava A, Avato P, Biazzini E, Macovei A, Biggiogera M, Carbonera D, **Balestrazzi A**. Cell wall integrity, genotoxic injury and PCD dynamics in alfalfa saponin-treated white poplar cells highlight a complex link between molecule structure and activity. *Phytochemistry*, **2015**; 111: 114-123. doi: 10.1016/j.phytochem.2015.01.008.
28. Faè M, **Balestrazzi A**, Confalonieri M, Donà M, Macovei A, Valassi A, Giraffa G, Carbonera D. Copper-mediated genotoxic stress is attenuated by the overexpression of the DNA repair gene *MtTdp2a* (tyrosyl-DNA phosphodiesterase 2 alpha) in *Medicago truncatula* plants. *Plant Cell Reports* **2014**; 33: 1071-1080. doi: 10.1007/s00299-014-1595-6.
29. Mondoni A, Orsenigo S, Donà M, **Balestrazzi A**, Probert R, Hay FR, Abeli T. Environmental-induced transgenerational changes in seed longevity: maternal and genetic influence. *Annals of Botany* **2014**; 113: 1257-1263. doi: 10.1093/aob/mcu046.
30. Santos AR, Miguel AS, Macovei A, Maycock C, **Balestrazzi A**, Oliva A, Fevereiro P. CdSe/ZnS Quantum Dots trigger DNA repair and antioxidant enzyme systems in *Medicago*

- sativa* cells in suspension culture. *BMC Biotechnology* **2014**; 13: 111. doi: 10.1186/1472-6750-13-111
31. Donà M, Confalonieri M, Minio A, Biggiogera M, Buttafava A, Raimondi E, Delledonne M, Ventura L, Sabatini ME, Macovei A, Giraffa G, Carbonera D, **Balestrazzi A**. RNA-Seq analysis discloses early senescence and nucleolar dysfunction triggered by *Tdp1* depletion in *Medicago truncatula*. *Journal of Experimental Botany* **2013**; 64: 1941-1951. doi: 10.1093/jxb/ert063.
  32. Confalonieri M, Faè M, **Balestrazzi A**, Donà M, Macovei A, Valassi A, Giraffa G, Carbonera D. Enhanced osmotic stress tolerance in *Medicago truncatula* plants overexpressing the DNA repair gene *MtTdp2 $\alpha$*  (tyrosyl-DNA phosphodiesterase 2). *Plant Cell, Tissue and Organ Culture* **2013**; 116: 187-203. doi: 10.1007/s11240-013-0395-y.
  33. Donà M, Macovei A, Faè M, Carbonera D, **Balestrazzi A**. Plant hormone signaling and modulation of DNA repair under stressful conditions. *Plant Cell Reports* **2013**; 32: 1043-1052. doi: 10.1007/s00299-013-1410-9.
  34. Ventura L, Giovannini A, Savio M, Donà M, Macovei A, Buttafava A, Carbonera D, **Balestrazzi A**. Single cell gel electrophoresis (Comet) assay with plants: research on DNA repair and ecogenotoxicity testing. *Chemosphere* **2013**; 92:1-9. doi: 10.1016/j.chemosphere.2013.03.006.
  35. Donà M, Ventura L, Macovei A, Confalonieri M, Savio M, Giovannini A, Carbonera D, **Balestrazzi A**. Gamma irradiation with different dose rates induces different DNA damage responses in *Petunia x hybrida* cells. *Journal of Plant Physiology* **2013**; 170: 780-787. doi: 10.1016/j.jplph.2013.01.010.
  36. Donà M, **Balestrazzi A**, Mondoni A, Rossi G, Ventura L, Buttafava A, Macovei A, Sabatini ME, Valassi A, Carbonera D. DNA profiling, telomere analysis and antioxidant properties as tools for monitoring *ex situ* seed longevity. *Annals of Botany* **2013**; 111: 987-998. doi:10.1093/aob/mct058.
  37. Ventura L, Donà M, Macovei A, Carbonera D, Buttafava A, Mondoni A, Rossi G, **Balestrazzi A**. Recent advances in understanding the molecular pathways associated with seed vigor: role of DNA repair. *Plant Physiology and Biochemistry* **2012**; 60: 196-206. doi: 10.1016/j.plaphy.2012.07.031.
  38. **Balestrazzi A**, Confalonieri M, Macovei A, Donà M, Carbonera D. Genotoxic stress and DNA repair in plants: emerging functions and tools for improving crop productivity. *Plant Cell Reports* **2011**, 30: 287-295. doi: 10.1007/s00299-010-0975-9.
  39. **Balestrazzi A**, Agoni V, Tava A, Avato P, Biazzi E, Raimondi E, Macovei A, Carbonera D. Cell death induction and nitric oxide biosynthesis in white poplar (*Populus alba* L.) suspension cultures exposed to alfalfa saponins. *Physiologia Plantarum* **2011**; 141: 227-238. doi: 10.1111/j.1399-3054.2010.01436.x.
  40. Macovei A, **Balestrazzi A**, Confalonieri M, Buttafava A, Carbonera D. The *TFIIS* and *TFIIS-like* genes from *Medicago truncatula* are involved in oxidative stress response. *Gene* **2011**; 470: 20-30. doi: 10.1016/j.gene.2010.09.004.
  41. Macovei A, **Balestrazzi A**, Confalonieri M, Faè M, Carbonera D. New insights on the barrel medic *MtOGG1* and *MtFPG* functions in relation to oxidative stress response *in planta* and during seed imbibition. *Plant Physiology and Biochemistry* **2011**; 49: 1040-1050. doi: 10.1016/j.plaphy.2011.05.007.
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  43. Confalonieri M, Borghetti R, Macovei A, Testoni C, Carbonera D, Fevereiro MPS, Rommens C, Swords K, Piano E, **Balestrazzi A**. Backbone-free transformation of barrel medic (*Medicago truncatula*) with a *Medicago*-derived transfer DNA. *Plant Cell Reports* **2010**; 29: 1013-1021. doi: 10.1007/s00299-010-0887-8.
  44. Macovei A, **Balestrazzi A**, Confalonieri M, Carbonera D. The *Tdp1* (Tyrosyl-DNA phosphodiesterase) gene family in barrel medic (*Medicago truncatula* Gaertn.): bioinformatic investigation and expression profiles in response to copper- and PEG-mediated stress. *Planta* **2010**; 232: 393-407. doi: 10.1007/s00425-010-1179-9.
  45. **Balestrazzi A**, Locato V, Bottone MG, De Gara L, Biggiogera M, Pellicciari C, Botti S, Di

Gesù D, Donà M, Carbonera D. Response to UV-C radiation in topo I-deficient carrot cells with low ascorbate levels. *Journal of Experimental Botany* **2010** 61: 575-585. doi:10.1093/jxb/erp323.

### **Book chapters**

1. Gualtieri C, Pagano A, Macovei A, **Balestrazzi A**. Oxidative stress and antioxidant defense in Fabaceae plants under abiotic stresses. In: Hasanuzzaman M, Araujo S, Gill SS (eds) *The Plant Family Fabaceae -Biology and Physiological Responses to Environmental Stresses*. Springer **2020** (eBook ISBN 978-981-15-4752-2). doi: 10.1007/978-981-15-4752-2
2. Gianella M, Pagano A, Forti C, Guzzon F, Mondoni A, de Sousa Araújo S, Macovei A, **Balestrazzi A**. Molecular aspects of seed priming as means of progress in crop improvement. In: Tuteja N, Tuteja R, Passricha N, Saifi S (eds) "*Advancement in crop improvement techniques*"-1<sup>st</sup> Edition. Elsevier, Woodhead Publishing **2020** (ISBN: 0128185813). In press
3. Forti C, Gualtieri C, de Sousa Araújo S, **Balestrazzi A**, Macovei A. Genome Editing in the context of Seed research: How these novel biotechnology tools can change the future face of agricultural crop development? In: Tuteja N, Tuteja R, Passricha N, Saifi S (eds) "*Advancement in crop improvement techniques*"-1<sup>st</sup> Edition. Elsevier, Woodhead Publishing **2020** (ISBN: 0128185813). In press
4. Pagano A, Macovei A, Araujo S, Forti C, **Balestrazzi A**. *Medicago truncatula*, an informative model to investigate the DNA damage response during seed germination. In: "*The Model Legume Medicago truncatula*", 2 Volume Set. de Bruijn FJ Ed. J. Wiley & Sons. **2020** (ISBN 9781119409168). In press.
5. Wijayasinghe M, **Balestrazzi A**. Seed priming. In: "*Native Seed Ecology, Production & Policy. Advancing knowledge and technology in Europe*" De Vitis M., Mondoni A., Pritchard H. W., Laverack G., Bonomi C. Eds. **2018** Muse, Trento.
6. Pagano A, Forti C, Gualtieri C, **Balestrazzi A**, Macovei A. Oxidative stress and antioxidant defense in germinating seeds: A Q&A session. In: "*Metabolic Adaptations in Plants during Abiotic Stress*" R Akula and SS Gill Eds. **2018** Taylor and Francis (CRC Press).
7. Araújo SS, Gomes C, Pavia JAP, **Balestrazzi A**, Macovei A. MicroRNAs: emerging roles in abiotic stresses and metabolic processes. In: "*Metabolic Adaptation in Plants during Abiotic Stress*" Ramakrishna A and SS Gill Eds. Taylor & Francis (CRC Press) **2018** (ISBN 978-1-138-05638-1).
8. Macovei A, Donà M, Carbonera D, **Balestrazzi A**. DNA diffusion assay applied to plant cells. In: "*Methods in Molecular Biology*" book series (MIMB Vol. 1743) De Gara L and Locato V Eds. Springer, **2018**, pp 107-115. doi: 10.1007/978-1-4939-7668-3\_10.
9. Martins D, Macovei A, Leonetti P, **Balestrazzi A**, Araújo SS. The influence of P-deficiency on legume symbiotic N<sub>2</sub> fixation. In: "*Legume Nitrogen Fixation in Soils with Low Phosphorus Availability*" S Sulieman, LS Tran Eds. Springer International Publishing AG **2017**, pp. 41-75. ISBN 978-3-319-55728-1 (Print) 978-3-319-55729-8 (Online). doi: 10.1007/978-3-319-55729-8\_3
10. Macovei A, Donà M, Carbonera D, **Balestrazzi A**. Plant response to genotoxic stress: a crucial role in the context of global climate change. In: "*Abiotic Stress Response in Plants*" N Tuteja and SS Gill Eds. Wiley-VCH Verlag GmbH & Co., **2015**, pp 13-26. ISBN 978-3-527-33491-9
11. **Balestrazzi A**, Confalonieri M, Macovei A, Donà M, Carbonera D. Genotoxic stress, DNA repair and crop productivity. In: "*Crop Improvement Under Adverse Conditions*". N Tuteja and SS Gill Eds. Springer New York, NY. **2013**, pp. 153-169. ISBN 978-1-4614-4632-3 (Print) 978-1-4614-4633-0 (Online). doi: 10.1007/978-1-4614
12. Carbonera D, **Balestrazzi A**, Confalonieri M, Ressegotti V. OGM e sterilità: produzione di piante transgeniche di pioppo a basso impatto ambientale. In: Medici A, Grilli CM, Bernacchia G, "*Organismi Geneticamente Modificati*". Etica, Tecnica, Norme. Ed. La Tribuna, Piacenza, **2003**. pp 197-209

13. Zelasco S, Carbonera D, Giorcelli A, Mattivi F, Bonadei M, Gennaro M, Confalonieri M, Quattrini E, Calligari P, Picco F, Deandrea G, **Balestrazzi A**. Evaluation of GM poplars expressing relevant traits for herbicide tolerance, disease resistance and production of pharmaceuticals: biochemical, molecular and microbiological studies on plants and detection of transgene sequences in soil. In: "*Biotechnology and sustainable agriculture 2006 and beyond*". Conference Paper. Xu Z, Li J, Vasil IK, Xue Y, Yang W Eds. Springer-Verlag Berlin Heidelberg, **2006**, pp 413-418. ISBN 978-1-4020-6634-4. doi: 10.1007/978-1-4020-6635-1\_67
14. **Balestrazzi A**, Allegro G, Confalonieri M. Genetically modified trees expressing genes for insect pest resistance. In: Tree transgenesis: Recent Developments. Fladung M, Ewald D Eds. Springer-Verlag Berlin Heidelberg, **2006**, pp 253-273. ISBN 978-3-540-32198-9 (Print) 978-3-540-32199-6 (Online). doi: 10.1007/3-540-32199-3\_12