NELSON MARMIROLI

EDUCATION

1967-1971 degree in Biological Sciences at the University of Parma

Currently, Full Professor of Recmbinant DNA Technologies in the Department of Chemistry, Life Sciences and Environmental Sustainability in the University of Parma

PROFESSIONAL EXPERIENCES

1973-1977 Research Assistant at the University of Parma
1978 Associate Professor at the University of Chicago (IL, USA)
1979-1982 Adjunct Professor of Agricultural Genetics at the University of Udine
1983-1986 Associated Professor in Applied Genetics at the University of Parma
1986-1990 Full Professor of Genetics (Chair) at the University of Lecce
1990 Chair of Genetics at the University of Bologna
1991-1995 Chair of Biology at the University of Parma
1999-2000 Professor of Agricultural Genetics at the University of Verona
Since 1995 Chair of Recombinant DNA Technologies at the University of Parma
Teaching activity: Chair Professor of Recombinant DNA Technologies. He teaches the courses of: "Recombinant DNA technologies and Integrated Biotechnology Laboratory", "Genomics and advanced methods for transcriptomics", "Systems Biology"

TITLES AND ASSIGNEMENTS

-Since 2011, Rector Delegate and President of the Committee for University Sport Activities
-Since 2011, Director of the CINSA (National interuniversity consortium for environmental sciences)
-Since 1999, Coordinator of the PhD course in Biotechnology
-Since 1998, Member of the Board of Directors of Italbiotec, a consortium for biotechnology exploitation
-2012-2016, Director of the Department of Life Sciences and member of the Academic Senate of the University of Parma
-2009-2012, Director of the Department of Environmental Sciences, University of Parma
-2000-2004, Director of the Department of Environmental Sciences, University of Parma
-2000-2004, Member of the Academic Senate of the University of Parma
-2000-2010, Director of the International University Master Course "Science and technology for sustainable development in contaminated sites"
-1999-2015, Coordinator of the University Degree in Biotechnology
-1996-1999, Vice-Rector of the University of Parma

OTHER RELEVANT ACTIVITIES

-Milton P. Gordon Award for excellence in the career related to environmental biotechnologies (International Phytotechnology Society, 2013)
-Member of the panel of the Italian Society for Agricultural Genetics on environmental and human health risk assessment in exploitation of modern biotechnology.
-Member of the directorate of the National Society for Agricultural Genetics
-Member of the Executive Board of the International Phytotechnology Society
-Chairman of the Technological Area on Chemical, Biological, RadioNuclear hazards of the Italian Security Platform SERIT
-Member of the "Working Group of External Scientific Experts" of EFSA (2011)
-Member of the Working Group on "Agro-Food biotechnologies" of the National Committee for Biosafety, Biotechnologies and Life Sciences of the Presidency of the Council of Ministries (2008).
-Member of the organising committee of U.S. EPA (Environmental Protection Agency) Phytotechnology Conference (2003, 2005, 2008).
-Member of the eighth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 8) and of the third meeting of the Conference of the Parties serving as the meeting of the Parties to the Biosafety Protocol (COP-MOP 3), Curitiba (Brazil), 2006).
-Coordinator of the NATO ASI Summer School on "Advanced science and technology for biological decontamination of sites affected by chemical and radiological nuclear agents", Zhytomyr, Ukraine, 17-28 August 2005
-Chairman of the Ad Hoc Technical Experts Groups in preparation to the Conference of the Parties to the

Convention on Biological Diversity (2005).
-Participation to the RA-RM European Workshop on the interface between risk assessment and risk management (2003).
-Member of the Italian Ministry of Agriculture Advisory Committee on risk assessment in the dissemination of recombinant organisms (2002).
-Participation to the Scientific Committee organised by IPTS (Institute for Prospective Technological Studies), Joint Research Centre, Seville (Spain) on risk assessment of GMOs (2002).
-Member of the Working Group on Assessment of risks from biotechnologies of the National Committee for Biosafety and Biotechnologies of the Presidency of the Council of Ministries (2000).
-Coordinator of EU project DNA-TRACK (2000-2003)
-Coordinator of EU project OLIV-TRACK (2003-2005)
-WP leader of Integrated project "TRACE-BACK" (2007-2010)
-Participant to EU projects COEXTRA (2005-2009), CHILL-ON (2006-2010), MENTORE (2007-2009), EUROTRANSBIO TOXICHIP (2009-2010), EUROTRANSBIO ALLERGOTYPE (since 2012)

Prof. N. Marmiroli coordinates a team which includes one full professor, two associate professors, five research associates, one technician; on average, each year he also coordinates 3 PhD students, 3 research fellows, 10 graduate students, 5 collaborators to research activities. He cooperates with Research Institutions in Europe and in the United States, with exchanges of personnel and materials. The Laboratory is accredited with the European Food Safety Authority, Art. 36 of Regulation EC 178/2002 and Art.1 of Regulation EC 2230/2004.
With the team he participates as founding member to the Technological Center SITEIA.PARMA for technological transfer in food quality and safety, of the University of Parma and the Region Emilia Romagna. Previously, he participated to the Regional Laboratories for Technological Transfer (PRRIITT) SIQUAL (2005-2008) and SITEIA (2008-2010)

In the last 30 years he has coordinated over 40 research projects at national and international level.
He has organised International Conferences and Workshops; the most recent examples are
- COST Action FA0905 “Mineral Improved Crop Production for Healthy Food and Feed” (2011)
- 7th International Phytotechnologies Conference. Phytotechnologies in the 21st century: Challenges after Copenhagen 2009. Remediation – Energy – Health – Sustainability (2010)
- 18th Annual Congress of the Italian Society for Ecology (2008)
- Meeting of COST Action 859, Working Group 2 “Exploiting-omics approaches in phytotechnologies” (2004)
- 45th Annual Congress of the Italian Society for Agricultural Genetics (2001)

In this capacity he has managed both the scientific and the logistics aspects of the meetings, being also Chairman of sessions.
Prof Marmiroli has acted as consultant to EC DGXII and to different Ministries. He has been evaluator for EC in Framework programmes 4 and 5 in the topics of biotechnology, microbiology, plant biology. He has been an evaluator for national research programmes of the National Research Council, Interuniversity Consortium for Biotechnology, Ministry of Education and University, Ministry for Agriculture, and others. He is also member of the Editorial Board of ‘International Journal of Phytoremediation’ and ‘Chemia i Inzynieria Ekologiczna’, and he is a consultant for ‘Bioprocess’ and ‘Plant biosystems’.
He is currently coordinating an international electronic network focused on application of plants for remediation and recovery of degraded environmental situations: PHYTONET, http://www.dsa.unipr.it/phytonet. He coordinates a portal for researches on food safety, http://www.dsa.unipr.it/foodhealth.
He has authored over 300 scientific publications.

MAIN RESEARCH ACTIVITES (last years)
1-Application of environmental biotechnologies for sustainability. Phytoremediation, bioremediation, emerging contaminants (nanomaterials and nanoparticles), interaction of plants with pollutants (outdoor and indoor)
2-Study of the genetic and molecular bases of genotype-environment interactions in different organisms, from microorganisms to plants. Proteomic, genomic, transcriptomic analyses.
3-Innovative methodologies as countermeasure against deliberate threats towards environmental and food

resources
4-Molecular traceability of food supply chains for food safety and authenticity protection. Food genomics, proteomics and metabolomics for analysis of food products.
5- Coexistence of genetically modified plants with non modified plants. Sampling systems and molecular analyses.
6- Study of miRNA expression in humans in response to viral infections and pathological processes
7-Development of innovative tools for toxicogenomic analyses based on cellular and macromolecular chips (DNA, proteins)

RECENT RELEVANT PUBLICATIONS (last 5 years)

CALDARA, M., GRAZIANO, S., GULLÌ, M., CADONICI, S., MARMIROLI, N. (2017) Off-target effects of neuroleptics and antidepressants on *Saccharomyces cerevisiae*. Toxicol. Sci. in press

CORDIOLI, M., PIRONI, C., DE MUNARI, E., MARMIROLI, N., LAURIOLA, P., RANZI, A. (2017) Combining land use regression models and fixed site m onitoring to reconstruct spatiotemporal variability of NO2 concentrations over a wide geographical area. Science of the Total Environment 574:1075-1084, 10.1016/j.scitotenv.2016.09.089

PASQUALI, F., AGRIMONTI, C., PAGANO, L., ZAPPETTINI, A., VILLANI, M., MARMIROLI, M., WHITE, J.C., MARMIROLI, N. (2017) Nucleo-mitochondrial interaction of yeast in response to cadmium sulfide quantum dot exposure. Journal of Hazardous Materials 324:744-752. (doi:10.1016/j.jhazmat.2016.11.053)

GRAZIANO, S., GULLI', M., MAESTRI, E., MARMIROLI, N. (2016) The global effect of exposing bakers' yeast to 5-fluoruracil and nystatin; a view to Toxichip. Chemosphere 145:470-479, 10.1016/j.chemosphere.2015.11.045

GALIENI, A., STAGNARI, F., VISIOLI, G., MARMIROLI, N., SPECA, S., ANGELOZZI, G., D'EGIDIO, S., PISANTE, M. (2016) Nitrogen fertilization of durum wheat: a case study in Mediterranean area during transition to Conservation Agriculture. Italian Journal of Agronomy, 11:662

LENCIONI. G., IMPERIALE, D., CAVIRANI, N., MARMIROLI, M., MARMIROLI, N. (2016) Environmental application and phytotoxicity of anaerobic digestate from pig farming by in vitro and in vivo trials. International Journal of Environmental Science and Technology 13:2549-2560. DOI 10.1007/s13762-016-1088-y

MAESTRI, E., MARMIROLI, N. (2016) Advances in polymerase chain reaction (PCR) technologies for food authenticity testing. In: Downey, G. (ed.) Advances in food authenticity testing. Woodhead Publishing, Duxford (UK), pp. 285-309. (ISBN: 978-0-08-100220-9)

MAESTRI, E., MARMIROLI, M., MARMIROLI, N. (2016) Bioactive peptides in plant-derived foodstuffs. Journal of Proteomics 147:140-155, doi:10.1016/j.jprot.2016.03.048

MARMIROLI, M., PAGANO, L., PASQUALI, F., ZAPPETTINI, A., TOSATO, V., BRUSCHI, C.V., MARMIROLI, N. (2016) A genome-wide nanotoxicology screen of *Saccharomyces cerevisiae* mutants reveals the basis for cadmium sulphide quantum dot tolerance and sensitivity. Nanotoxicology 10:84-93. Posted online on May 4, 2015. (doi:10.3109/17435390.2015.1019586)

MARMIROLI, N., WHITE, J.C. (2016) Editorial: Nanotoxicology and environmental risk assessment of engineered nanomaterials (ENMs) in plants. Frontiers in Plant Science 7:1370 doi:10.3389/fpls.2016.01370

PAESANO, L., PEROTTI, A., BUSCHINI, A., CARUBBI, C., MARMIROLI, M., MAESTRI, E., IANNOTTA, S., MARMIROLI, N. (2016) Data on HepG2 cells changes following exposure to cadmium sulphide quantum dots (CdS QDs). Data in Brief, in press.

PAESANO, L., PEROTTI, A., BUSCHINI, A., CARUBBI, C., MARMIROLI, M., MAESTRI, E., IANNOTTA, S., MARMIROLI, N. (2016) Markers for the toxicity to HepG2 exposed to cadmium sulphide quantum dots; damage to mitochondria. Toxicology 374:18-28. doi 10.1016/j.tox.2016.11.012

PAGANO, L., SERVIN, A.D., DE LA TORRE-ROCHE, R., MUKHERJEE, A., MAJUMDAR, S., HAWTHORNE, J., MARMIROLI, M., MAESTRI, E., MARRA, R.E., ISCH, S.M., PARKASH DHANKHER, O., WHITE, J.C., MARMIROLI, N. (2016) Molecular Response of Crop Plants to Engineered Nanomaterials. Environmental Science and Technology 50:7198-7207. 10.1021/acs.est.6b01816

VISIOLI, G., COMASTRI, A., IMPERIALE, D., PAREDI, G., FACCINI, A., MARMIROLI, N. (2016) Gel-based and gel-free analytical methods for the detection of HMW-GS and LMW-GS in wheat flour. Food Analytical Methods 9:469-476. doi: 10.1007/s12161-015-0218-3

VISIOLI, G., GALIENI, A., STAGNARI, F., BONAS, U., SPECA, S., FACCINI, A., PISANTE, M., MARMIROLI, N., (2016) Proteomics of durum wheat grain during transition to Conservation Agriculture. PLoS ONE 11(6):e0156007. doi:10.1371/journal.pone.0156007

AGRIMONTI, C., PIRONDINI, A., MARMIROLI, M., MARMIROLI, N. (2015) A quadruplex PCR (qxPCR) assay for adulteration in dairy products. Food Chemistry 187:58-64. DOI: 10.1016/j.foodchem.2015.04.017

CALESTANI, C., MOSES, M.S., MAESTRI, E., MARMIROLI, N., BRAY, E.A. (2015) Constitutive expression of the barley dehydrin gene aba2 enhances Arabidopsis germination in response to salt stress. International Journal of Plant Biology 6:20-27. doi:10.4081/pb.2015.5826

GULLÌ, M., SALVATORI, E., FUSARO, L., PELLACANI, C., MANES, F., MARMIROLI, N. (2015) Comparison of drought stress response and gene expression between a GM maize variety and a near-isogenic non-GM variety. PLoS ONE 10(2): e0117073. doi:10.1371/journal.pone.0117073

MARMIROLI, M., IMPERIALE, D., PAGANO, L., VILLANI, M., ZAPPETTINI, A., MARMIROLI, N. (2015) The proteomic response of Arabidopsis thaliana to cadmium sulfide quantum dots, and its correlation with the transcriptomic response. Frontiers in Plant Science (doi: 10.3389/fpls.2015.01104)

MARMIROLI, M., PAGANO, L., PASQUALI, F., ZAPPETTINI, A., TOSATO, V., BRUSCHI, C.V., MARMIROLI, N. (2015) A genome-wide nanotoxicology screen of *Saccharomyces cerevisiae* mutants reveals the basis for cadmium sulphide quantum dot tolerance and sensitivity. Nanotoxicology. Posted online on May 4, 2015. (doi:10.3109/17435390.2015.1019586)

MARMIROLI, M., PAGANO, L., SAVO SARDARO, M.L., VILLANI, M., MARMIROLI, N. (2014) A genome-wide approach in *Arabidopsis thaliana* to assess the toxicity of cadmium sulphide quantum dots. Environmental Science and Technology, 48:5902-5909 DOI: 10.1021/es404958r.

MARMIROLI, M., PIGONI, V., SAVO SARDARO, M.L., MARMIROLI, N. (2014) The effect of silicon on the uptake and translocation of arsenic in tomato (*Solanum lycopersicum* L.). Environmental and Experimental Botany, 99:9-17.

MARMIROLI, N., MAESTRI, E. (2014) Plant peptides in defense and signaling. Peptides, 56:30-44. HTTP://DX.DOI.ORG/10.1016/J.PEPTIDES.2014.03.013

AGRIMONTI, C., BORTOLAZZI, L., MAESTRI, E., SANANGELANTONI, A.M., MARMIROLI, N. (2013) A Real Time PCR/SYBR Green I method for the rapid quantification of *Salmonella enterica* in poultry meat. Food Analytical Methods 6:1004-1015. DOI: 10.1007/s12161-013-9583-y

BEESLEY, L., MARMIROLI, M., PAGANO, L., PIGONI, V., FELLET, G., FRESNO, T., VAMERALI, T., BANDIERA, M., MARMIROLI, N. (2013) Biochar addition to an arsenic contaminated soil increases arsenic concentrations in the pore water but reduces uptake to tomato plants (*Solanum lycopersicum* L.). Science of the Total Environment, 454-455:598-603. HTTP://DX.DOI.ORG/10.1016/J.SCITOTENV.2013.02.047

BOTTARI, B., AGRIMONTI, C., GATTI, M., NEVIANI, E., MARMIROLI, N. (2013) Development of a multiplex real time PCR to detect thermophilic lactic acid bacteria in natural whey starters. International Journal of Food Microbiology 160:290-297, doi: 10.1016/j.ijfoodmicro.2012.10.011.

MAESTRI, E., PIRONDINI, A., VISIOLI, G., MARMIROLI, N. (2013) Trade-off between genetic variation and ecological adaptation of metallicolous and non-metallicolous *Noccaea* and *Thlaspi* species. Environmental and Experimental Botany 96:1-10, 10.1016/j.envexpbot.2013.08.002.

MARMIROLI, M., IMPERIALE, D., MAESTRI, E., MARMIROLI, N. (2013) The response of *Populus* spp. to cadmium stress: chemical, morphological and proteomics study. Chemosphere 93:1333-1344, 10.1016/j.chemosphere.2013.07.065

SAMSON, M.C., GULLI', M., MARMIROLI, N. (2013) Multiplex real-time PCR assays for simultaneous detection of maize MON810 and GA21 in food samples. Food Control 30:518-525. DOI 10.1016/j.foodcont.2012.08.001

VIETINA, M., AGRIMONTI, C., MARMIROLI, N. (2013) Detection of plant oil DNA using high resolution melting (HRM) post PCR analysis: A tool for disclosure of olive oil adulteration. Food Chemistry, 141:3820-3826. doi: 10.1016/j.foodchem.2013.06.075

VISIOLI, G., MAESTRI, E., POLVERINI, E., PAVESI, A., MARMIROLI, N. (2013) AtL1 a non-LTR retrotransposon fragment in the genome of *Arabidopsis thaliana* with homology to plants and animals. American Journal of Plant Sciences, 4:806-816. doi:10.4236/ajps.2013.44099

VISIOLI, G., MARMIROLI, N. (2013) The proteomics of heavy metal hyperaccumulation by plants. Journal of Proteomics 79:133-145, doi:10.1016/j.jprot.2012.12.006

BIGNAMI, F., PILOTTI, E., BERTONCELLI, L., RONZI, P., GULLÌ, M., MARMIROLI, N., MAGNANI, G., PINTI, M., LOPALCO, L., MUSSINI, C., RUOTOLO, R., GALLI, M., COSSARIZZA, A., CASOLI, C. (2012) Stable changes in CD4+ T-lymphocyte microRNA expression following exposure to HIV-1. Blood 119:6259-6267. doi:10.1182/blood-2011-09-379503

MARMIROLI, M., ROBINSON, B.H., CLOTHIER, B.E., BOLAN, N.S., MARMIROLI, N., SCHULIN, R. (2012) Effect of dairy effluent on the biomass, transpiration, and elemental composition of *Salix kinuyanagi* Kimura. Biomass and Bioenergy, 37:282-288. doi:10.1016/j.biombioe.2011.12.001

ORSI, I., MALATRASI, M., BELFANTI, E., GULLI', M., MARMIROLI, N. (2012) Determining resistance to *Pseudomonas syringae* in tomato, a comparison of different molecular markers. Molecular Breeding 30:967-974. Published online 21 December 2011. DOI 10.1007/s11032-011-9681-8

SAVO SARDARO, M.L., MARMIROLI, M., MAESTRI, E., MARMIROLI, N. (2012) Genetic characterization of Italian tomato varieties and their traceability in tomato food products. Food Science & Nutrition, doi: 10.1002/fsn3.8.

VISIOLI, G., VINCENZI, S., MARMIROLI, M., MARMIROLI, N. (2012) Correlation between phenotype and proteome in the Ni hyperaccumulator *Noccaea caerulescens* subsp. *caerulescens*. Environmental and Experimental Botany, 77:156-164. doi:10.1016/j.envexpbot.2011.11.016