

UNIVERSITÀ DEGLI STUDI DI MILANO

Procedura di valutazione per la chiamata a professore di II fascia da ricoprire ai sensi dell'art. 24, comma 6, della Legge n. 240/2010 per il settore concorsuale 05/A2 - Fisiologia Vegetale, (settore scientifico-disciplinare BIO/04-Fisiologia Vegetale) presso il Dipartimento di Bioscienze, Codice concorso 4183

Maria Cristina Bonza

CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	BONZA
NOME	MARIA CRISTINA
DATA DI NASCITA	06 ottobre 1970

a) Attività di ricerca e pubblicazioni scientifiche

SCIENTIFIC ACTIVITY AND INTERESTS

The target of my research is the study of Ca^{2+} signalling in plants, with special regard to the Ca^{2+} efflux systems that, extruding Ca^{2+} from the cytosol, contribute to the modulation of Ca^{2+} signals in response to endogenous and environmental stimuli. In particular, the activity is focused on the study of Ca^{2+} -ATPases and specifically dedicated to both their biochemical and molecular characterisation and to the definition of their physiological role. With our research group and in collaboration with prestigious national and international researchers I contributed in answering important biological questions in the field of Ca^{2+} transport and homeostasis in plants.

I performed the first purification of a plant plasma membrane (PM) localised Ca^{2+} -ATPase and I am responsible for the identification of the first cDNA coding for a type 2B PM Ca^{2+} -ATPase in the model plant *A. thaliana* (ACA8). In addition, I actively contributed to demonstrate that the plant PM Ca^{2+} -ATPase catalyses a $\text{Ca}^{2+}/\text{H}^{+}$ antiport and to the analysis of its regulatory mechanism (auto-inhibition, interaction with calmodulin, calmodulin like proteins, acidic phospholipids and phosphoregulation operated by different classes of protein kinases). In addition, I demonstrated the involvement of ACA8 in the physiological response to the plant hormone abscisic acid and to oligogalacturonides, signal molecules that play key roles in plant immunity.

Besides ACA8, I have also been involved in the analysis of other isoforms of Arabidopsis PM Ca^{2+} -ATPases. In particular, I contributed to the characterisation of ACA12, a peculiar PM-resident Ca^{2+} pump that, unlike other ACAs, has the distinctive feature to be completely deregulated.

Very recently, thanks to a collaboration still ongoing with Hillel Fromm, I have worked on a representative member of Arabidopsis type 2A Ca^{2+} pumps localised at the endoplasmic reticulum (ECA1). This collaborative works has led to the identification of MIZ1 as the first identified regulator of any ECA isoform. Remarkably we have demonstrated that MIZ1 directly binds to ECA1 and acts as a negative regulator of its activity in response to hydrostimulation, thus causing an elevation of cytosolic Ca^{2+} levels that promotes root bending towards zones with a higher water potential.

The expertise acquired studying plant Ca^{2+} -ATPases with multidisciplinary approaches has been instrumental for me to contribute to the identification and characterisation of Ca^{2+} pumps of non-plant organisms including the first viral Ca^{2+} -ATPase encoded by chlorella viruses. In this context, I recently collaborated with Ernesto

Carafoli, a pioneer in the study of human Ca^{2+} pumps. Starting from my previous results showing that plant and animal type 2B Ca^{2+} -ATPases share a common auto-inhibitory mechanism, we used ACA8 as a model for the biochemical characterisation of PMCA3b, a mammalian isoform of PM Ca^{2+} -ATPase that plays a key role in the regulation of neuronal cytosolic Ca^{2+} . In particular, we demonstrated that a point mutation in the calmodulin-binding domain of the enzyme, associated to congenital cerebellar ataxia, affects both the ability of the pump to optimally transport Ca^{2+} in the activated state and the autoinhibition mechanism in its resting state.

During the last 7 years, I have established a successful collaboration with Alex Costa, a pioneer in both development and use of state-of-the-art tools for *in vivo* molecular imaging of different second messengers and metabolites in plants. This long lasting collaboration allowed me to be partly responsible for the generation of an ER-targeted Cameleon reporter protein that we used to monitor *in vivo* transient accumulation of Ca^{2+} in the lumen of the ER of plants at both at the organ and single-cell levels in response to different stimuli. This enables the study of the dynamics of the concentration of Ca^{2+} in the ER and its interconnection with cytosolic Ca^{2+} signatures in different cell types, genetic backgrounds and developmental and stress-response processes. With a similar *in vivo* approach, using imaging with different genetically encoded fluorescent sensors, I identified ACA8 as the prominent Ca^{2+} pump isoform involved in the termination of Ca^{2+} signals in response to mechanical wounding and I actively participated at the demonstration of the existence of a fundamental link between cytosolic Ca^{2+} and pH dynamics that provides an additional layer of cellular signal transduction to tailor signal specificity.

My scientific activity has been also directed to the identification and characterization of a new protein of *A. thaliana*. This protein called PPI1 (proton pump interactor, isoform 1) is able to interact with the H^{+} -ATPase C-terminal domain activating the enzyme through a mechanism distinct from that of 14-3-3s.

At present, my current research is focusing to the identification of the role of Ca^{2+} pumps and glutamate receptor-like channels in plant response to endogenous and environmental stimuli with special regard to their contribution in the generation, modulation and propagation of Ca^{2+} signals. The research topics are faced up with a mix of different approaches: *in vitro* assays of enzyme activity, heterologous expression of recombinant proteins in bacteria and yeast, transient and stable expression *in planta*, *in vivo* molecular imaging analysis of Ca^{2+} using plants expressing genetically encoded fluorescent Ca^{2+} sensors. This combination of complementary approaches has been recently granted by MIUR (PRIN 2017) thanks to a collaborative project with other 5 valuable Italian research groups.

RESEARCH ACTIVITIES

2004-ongoing: Assistant professor (Permanent Position), Department of Biosciences, University of Milan, Italy.

2000-2003: Post-doc with a fellowship of the Italian Ministry for Instruction, University and Research at the Department of Biology, University of Milano.

1998: Visiting PhD Student, in the laboratory of Prof. M.G. Palmgren at the Department of Plant Biology, The Royal Veterinary and Agricultural University of Copenhagen (DK).

SCIENTIFIC EDUCATION AND QUALIFICATION

1997-2000: PhD student in Plant Biology, Università degli Studi di Milano, Italy.

1996: Laurea (five year course equivalent to master degree) in Biological Science, Università degli Studi di Milano, Italy.

PRIZES AND AWARDS

2018: Awarded the National Habilitation to the position of Associate Professor of Plant Physiology (BIO/04-A5/02).

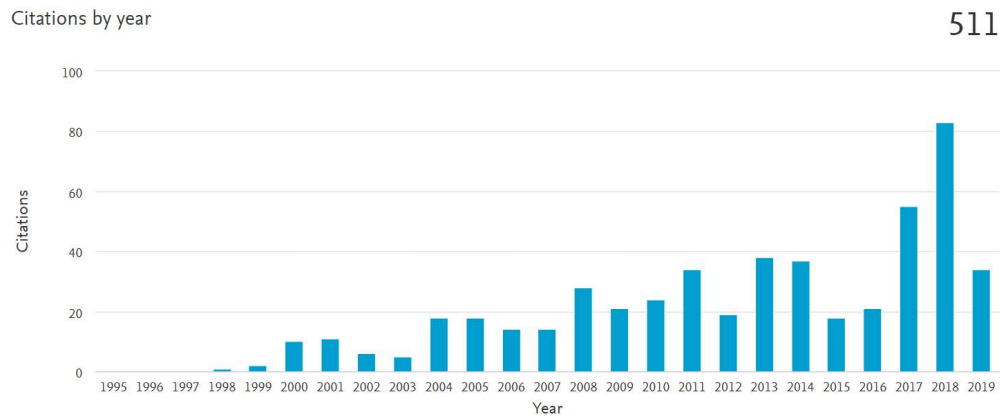
2001: Awarded with the prize “Franca Rasi-Caldogno” of the Italian Society of Plant Physiology assigned at the best PhD thesis in plant biology.

[CITATION INDEXES @ 11/09/2019](#)

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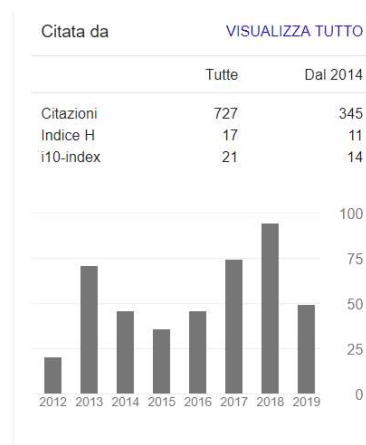


Average citations per item: 19,2 (**SOURCE: WEB OF SCIENCE**)

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[RESEARCHER ID](#) [B-1351-2017](https://orcid.org/0000-0001-7096-2967)

[GOOGLE SCHOLAR](#) <https://scholar.google.it/citations?hl=it&user=kZ60QdoAAAAJ>



[SUBMITTED MANUSCRIPTS](#)

A Alfieri, FG Doccula, R Pederzoli, M Grenzi, [MC Bonza](#), L Luoni, A Candeco, N Romano Armada, A Barbiroli, G Valentini, TR Schneider, A Bassi, M Bolognesi, M Nardini, A Costa “Genetics and structure reveal *Arabidopsis thaliana* GLR3.3 as an amino acid receptor with distinct ligand specificity”

Second round revision for **Proceedings of the National Academy of Sciences**

PUBLICATIONS

Trande M, Pedretti M, Bonza MC, Di Matteo A, Mariapina D'Onofrio MP, Dominici P, Astegno A "Binding of Ca^{2+} , Mg^{2+} and target peptide melittin to CML7, a calmodulin-like protein from *Arabidopsis*" **Journal of Inorganic biochemistry** (2019) in press 110796. doi: 10.1016/j.jinorgbio.2019.110796.

Behera S*, Xu Z*, Luoni L*, Bonza MC*, Doccia FG, De Michelis MI, Morris RJ, Schwarzländer M, Costa A "Cellular Ca^{2+} signals generate defined pH signatures in plants" **The Plant Cell** (2018) 30: 2704–2719, DOI: <https://doi.org/10.1105/tpc.18.00655>. *Co-first author. Highlighted paper of the issue.

Toffolatti SL, De Lorenzis G, Costa A, Maddalena G, Passera A, Bonza MC, Pindo M, Stefani E, Cestaro P, Failla O, Bianoc PA, Maghradze D, Quaglino F "Unique resistance traits against downy mildew from the center of origin of grapevine (*Vitis vinifera*)" **Scientific Reports** (2018) 21; 8 (1) 12523.

Shkolnik D., Nurie, R., Bonza MC, Costa A., Fromm H. "MIZ1 regulates ECA1 to generate a slow, long-distance phloem-transmitted Ca^{2+} signal essential for root water tracking in *Arabidopsis*" **Proceedings of the National Academy of Sciences** (2018) 115(31), 8031-8036.

Cali T, Frizzarin M, Luoni L, Zonta F, Pantano S, Cruz C, Bonza MC, Bertipaglia I, Ruzzene M, De Michelis MI, Damiano N, Marin O, Zanni G, Zanotti G, Brini M, Lopreiato R, Carafoli E "The ataxia related G1107D mutation of the plasma membrane Ca^{2+} -ATPase isoform 3 affects its interplay with calmodulin and the autoinhibition process" **Biochimica Biophysica Acta** (2017)1863: 165-173.

Costa A, Luoni L, Marrano CA, Hashimoto K, Köster P, Giacometti S, De Michelis MI, Kudla J, Bonza MC. " Ca^{2+} -dependent phosphoregulation of the plasma membrane Ca^{2+} -ATPase ACA8 modulates stimulus-induced calcium signatures" **Journal of Experimental Botany** (2017) 68: 3215-3230. **Corresponding author.**

Astegno A, Bonza MC, Vallone R, La Verde V, D'Onofrio M, Luoni L, Molesini B, Dominici P. *Arabidopsis* calmodulin-like protein CML36 is a calcium (Ca^{2+}) sensor that interacts with the plasma membrane Ca^{2+} -ATPase isoform ACA8 and stimulates its activity. **The Journal of Biological Chemistry** (2017) 292: 15049-15061.

M Limonta, S Romanowsky, C Olivari, MC Bonza, L Luoni, JF Harper and MI De Michelis "ACA12 Is a Deregulated Isoform of Plasma Membrane Ca^{2+} -ATPase of *Arabidopsis thaliana*" **Plant Molecular Biology** (2014) 84(0): 387–397.

MC Bonza*, G Loro*, S Behera, A Wong, J Kudla and Alex Costa "Analyses of Ca^{2+} accumulation and dynamics in the Endoplasmic Reticulum of *Arabidopsis thaliana* root cells using genetically encoded Cameleon sensors" **Plant Physiology** (2013) 163:1230-1241. *Co-first author.

S Giacometti, CA Marrano, MC Bonza, L Luoni, M Limonta and MI De Michelis "Phosphorylation of serine residues in the N-terminus modulates the activity of ACA8, a plasma membrane Ca^{2+} -ATPase of *Arabidopsis thaliana*" **Journal of Experimental Botany** (2012) 63(3): 1215-1224.

MC Bonza, MI De Michelis "The plant Ca^{2+} -ATPases repertoire: biochemical features and physiological functions" **Plant Biology** (2011) 13, 421-430.

MC Bonza, L Luoni "Plant and Animal type 2B Ca^{2+} -ATPases: evidence for a common auto-inhibitory mechanism" **FEBS Letters** (2010) 584, 4783–4788. **Corresponding author.**

MC Bonza, H Martin, M Kang, G Lewis, T Greiner, S Giacometti, JL Van Etten, MI De Michelis, G Thiel, and A Moroni "A functional calcium transporting ATPase encoded by *Chlorella* viruses" **Journal of General Virology** (2010) 91, 2620-2629.

T Fusca, MC Bonza, L Luoni, S Meneghelli, CA Marrano, and MI De Michelis “Single Point Mutations in the Small Cytoplasmic Loop of ACA8, a Plasma Membrane Ca^{2+} -ATPase of *Arabidopsis thaliana*, Generate Partially Deregulated Pumps” (2009) **The Journal of Biological Chemistry** 284 (45) 30881–30888.

MC Bonza, T Fusca, U Homann, G Thiel, M I De Michelis “Intracellular localisation of PPI1 (proton pump interactor, isoform 1), a regulatory protein of the plasma membrane H^+ -ATPase of *Arabidopsis thaliana*” **Plant Biology** (2009) 11, 869-877. **Corresponding author.**

M Cerana, MC Bonza, R Harris, D Sanders and MI De Michelis “Absciscic acid stimulates the expression of two isoforms of plasma membrane Ca^{2+} -ATPase in *Arabidopsis thaliana* seedlings” **Plant Biology** (2006) 8: 572-578. **Corresponding author.**

Luoni L, Bonza MC, De Michelis MI “Calmodulin/ Ca^{2+} -ATPase interaction at the *Arabidopsis thaliana* plasma membrane is dependent on calmodulin isoform showing isoform-specific Ca^{2+} dependencies” **Physiologia Plantarum** (2006) 126: 175-186.

Luoni, S Meneghelli, MC Bonza, MI De Michelis “Auto-inhibition of *Arabidopsis thaliana* plasma membrane Ca^{2+} -ATPase involves an interaction of the N-terminus with the small cytoplasmic loop” **FEBS Letters** (2004) 594: 20-24.

G Romani, MC Bonza, I Filippini, M Cerana, N Beffagna, MI De Michelis “Involvement of the plasma membrane Ca^{2+} -ATPase in the short term response of *Arabidopsis thaliana* cultured cells to oligogalacturonides” **Plant Biology** (2004) 6:192-200.

MC Bonza, L Luoni and MI De Michelis “Functional expression in yeast of a N-deleted form of At-ACA8, a plasma membrane Ca^{2+} -ATPase of *Arabidopsis thaliana*, and characterization of a hyperactive mutant” **Planta** (2004) 218: 814-823.

P Morandini, M Valera, C Albumi, MC Bonza, S Giacometti, G Ravera, I Murgia, C Soave and MI De Michelis “A novel interaction partner for the C-terminus of *Arabidopsis thaliana* plasma membrane H^+ -ATPase (AHA1 isoform): site and mechanism of action on H^+ -ATPase activity differ from those of 14-3-3 proteins” **The Plant Journal** (2002) 31 (4): 487-497.

MC Bonza, L Luoni and MI De Michelis “Stimulation of the plasma membrane Ca^{2+} -ATPase activity by acidic phospholipids” **Physiologia Plantarum** (2001) 112: 315-320.

MC Bonza, P Morandini, L Luoni, M Geisler, MG Palmgren, MI De Michelis “At-ACA8 encodes a plasma membrane-localized Calcium-ATPase of *Arabidopsis thaliana* with a calmodulin binding domain at the N-terminus” **Plant Physiology** (2000) 123 :1495-1505.

L Luoni, MC Bonza and MI De Michelis “ $\text{H}^+/\text{Ca}^{2+}$ exchange driven by the plasma membrane Ca^{2+} -ATPase of *Arabidopsis thaliana* reconstituted in proteoliposomes after calmodulin-affinity purification” **FEBS Letters** (2000) 482: 225-230.

C Bonza, A Carnelli, MI De Michelis and F. Rasi-Caldogno “Purification of the plasma membrane Ca^{2+} -ATPase from radish seedlings by calmodulin-agarose affinity chromatography” **Plant Physiology** (1998) 116: 845-851. **Corresponding author.**

BOOK CHAPTERS

Doccula FG, Luoni L, Behera S, Bonza MC, Costa A. “In vivo analysis of calcium levels and glutathione redox status in *Arabidopsis* epidermal leaf cells infected with the hypersensitive response-inducing bacteria

Pseudomonas syringae pv. tomato AvrB (PstAvrB)” **Methods in Molecular Biology** (2018) DOI: 10.1007/978-1-4939-7668-3_12

MC Bonza, L Luoni, C Olivari and MI De Michelis “Plant type 2B Ca²⁺-ATPases: the diversity of isoforms of the model plant *Arabidopsis thaliana*” In: S. Chakraborti & Dhalla N.S. (Eds) *Regulation of Ca²⁺-ATPases, V-ATPases and F-ATPases* Springer (2016) 227-241.

MC Bonza, L Luoni, C Olivari and MI De Michelis “Unravelling the molecular mechanisms of regulation of plant type 2B Ca²⁺-ATPases using *Arabidopsis thaliana* plasma membrane isoform ACA8 as a model system” *Recent Research Developments in Membrane Biology*, 3 (2013): 1-14 ISBN: 978-81-308-0529-0.

JK Pittman, MC Bonza and MI De Michelis « Ca²⁺ pumps and Ca²⁺ antiporters in plant development” In: M. Geisler & K. Venema (Eds). *Transporters and pumps in plant signalling*. Springer-Verlag, Berlin, Heidelberg, D, (2011) 133-164.

GRANTED PROJECTS

1998: MIUR-COFIN: prot. 9805260431_006 (1998-2001) Partecipant

2000: MIUR COFIN: prot. MM05157971 (2000-2003) Partecipant

2003: MIUR COFIN: prot. 2003050355_002 (2003-2005) Partecipant

2005: MIUR PRIN: prot. 2005055120_002 (2006-2008) Partecipant

2005: UNIMI Fondo Interno Ricerca Scientifica e Tecnologica, Proponent

2007: MIUR PRIN: prot. 20074NJYKL (2008-2010) Partecipant

2007: UNIMI Fondo Interno Ricerca Scientifica e Tecnologica, Proponent

2008: UNIMI Programma dell’Università per la Ricerca, Proponent

2014: UNIMI "Transition Grant - Linea A1_A_Progetto Europa", Proponent

2016: UNIMI Finanziamento di Ateneo, Piano di sostegno alla ricerca-Linea 2, Co-proponent

2017: UNIMI Finanziamento di Ateneo, Piano di sostegno alla ricerca-Linea 2, Co-proponent

2018: MIUR Fondo Finanziamento Attività ricerca di base, Proponent

2018: UNIMI Finanziamento di Ateneo, Piano di sostegno alla ricerca-Linea 2, Proponent

2019: MIUR PRIN (2017) Associate Investigator Responsible for UNIMI Research Uni-prot. 2017ZBBYNC_004

PROJECTS UNDER EVALUATION

2019: UNIMI Finanziamento di Ateneo, Bando SEED, Co-Proponent (Capo Unità Dipartimentale)

2019: EU LIFE program 2014-2020, LIFE19 ENV/IT/000297 Co-proponent

EDITORIAL ACTIVITY AND REVIEWER ACTIVITY FOR INTERNATIONAL JOURNALS

2011-ongoing: Member of the Editorial Board of “Frontiers in Plant Traffic and Transport”.

Reviewer for international journals with IF (Plant Physiology, Frontiers in Plant Science, Plant Biology, Protein & Peptide Letters)

PARTECIPATION TO MEETINGS AND CONGRESS

2019: SIBV-SBI Joint Meeting. Padova, Italy, 4-6 September.

2018: Plant Signalling and Development. Daegu, Republic of Korea. 17 December. **Invited speaker.**

2017: Plant Calcium Signaling 2017. John Innes Centre, Norwich, UK, 5-7 September.

2015: SIBV-SIGA Joint Meeting, "Feeding the planet: plant science and breeding for the future of agriculture"
Milan, Italy, 8-11 September.

2014: SEB Plant Transport Group. 2014. Systems and Synthetic Biology, Glasgow, Scotland, 5-7 December.

2010: XV International Workshop Plant Membrane Biology, Adelaide, Australia, 19-24 September. **Oral presentation**

2009: 2nd International Workshop on Expression, Structure and Function of Membrane Proteins, Firenze, Italy 20-24 September. **Oral presentation**

2009: 1st Annual Congress Italian Society of Plant Biology. Verona, Italy 30 June-2 July

2008: Annual National Meeting of Italian Society of Plant Physiology. Pisa, Italy, 30 June-2 July.

2007: XIV International Workshop Plant Membrane Biology. Valencia, Spain, 26-30 June.

2006: SIFV Meeting - II incontro di Bertinoro (FC), Italy, 30 June-1 July.

2006: Congress FISV Italian Federation of Life Science. Riva del Garda (TN), Italy, 28 September-1 October.

2005: 7th Congress FISV Italian Federation of Life Science. Riva del Garda (TN), Italy, 22-25 September.

2005: SIFV Meeting "43 anni e mezzo di Fisiologia Vegetale: Il punto della situazione". Bertinoro (FC), Italy, 25-26 February.

2004: Annual SIFV Meeting. Lecce, Italy, 15-18 September.

2004: 13th International Workshop on Plant Membrane Biology. Montpellier, France, 6-10 July.

2003: Congress FISV Italian Federation of Life Science Rimini, Italy, 10-13 October.

2002: 4th Congress FISV Italian Federation of Life Science. Riva del Garda (TN), Italy, 20-23 September.

2001: SIFV National Meeting of Italian Society of Plant Physiology. Abano Terme (PD), Italy, 17-19 September.
Oral presentation.

2001: 12th international workshop on Plant membrane Biology. Madison (USA), 11-16 August

2000: Annual National Meeting of Italian Society of Plant Physiology. Bologna, Italy, 18-20 September.

1999: Annual SIFV National Meeting of Italian Society of Plant Physiology. Torino, Italy, 27-29 September.
Oral presentation

1998: 11th international workshop on Plant membrane Biology, Cambridge, UK, 9-14 August.

1997: Research Conference on “Plant cell biology and biotechnological applications: plants as producers and raw materials for industry” (European Science Foundation), Helsinki, Finland.

1997: National Meeting of Italian Society of Plant Physiology, Bari Italy, 24-26 September.

1996: 10th FESSP Congress Federation of European Societies of Plant Physiology. Firenze, Italy 9-13 September.

1995: Annual SIFV National Meeting of Italian Society of Plant Physiology. Orvieto, Italy, 27-29 September.

PARTECIPATION TO SCHOOLS

2004: School of Pure and Applied Biophysics. “Ion channels and transporters in plant cells”. Venice, Italy.

1999: PhD School of Italian Society of Plant Physiology. Biologia delle interazioni tra le piante e i microrganismi patogeni. Maratea (PZ), Italy.

1997: PhD School of Società Italiana di Chimica Agraria. Ruolo delle attività di membrana nella produzione vegetale: dagli aspetti molecolari a quelli agronomici. Pallanza (VB), Italy.

NATIONAL AND INTERNATIONAL COLLABORATIONS (PAST AND PRESENT)

Joerg Kudla. Institut für Biologie und Biotechnologie der Pflanzen Westfälische Wilhelms-Universität Münster, D.

Hillel Fromm. Molecular Biology & Ecology of Plants Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel.

Alessandra Astegno. Department of Biotechnology, University of Verona, Verona, I.

Ernesto Carafoli. Venetian Institute of Molecular Medicine, Padova, I.

Raffaele Lopreiato. Department of Biomedical Sciences, University of Padova, Padova, I.

Gherard Thiel. Institute of Botany, Technical University of Darmstadt, Darmstadt, D.

Dale Sanders. John Innes Centre, Norwich, UK

Michael G. Palmgren. Department of Plant and Environmental Science, University of Copenhagen, Copenhagen, DK.

James L. Van Etten. School of Biological Sciences and Nebraska Center for Virology, University of Nebraska, Lincoln, USA.

Jeffrey F. Harper. Biochemistry Department, University of Nevada, Reno, USA.

Maria Ida De Michelis, Alex Costa, Piero Morandini, Stefano Ricagno, Anna Moroni, Marco Nardini. Department of Biosciences, Università degli Studi Milano, Milan, I.

Fabio Quaglino. Dipartimento di Scienze Agrarie e Ambientali, Università degli Studi Milano, Milan, I.

b) Attività di didattica, di didattica integrativa e di servizio agli studenti

TEACHING FOR UNDERGRADUATE AND MASTER STUDENTS

2018-19, 2017-18:

Università degli Studi Milano, Italy. Master studies in Biogeoscienze, Analisi degli Ecosistemi e Comunicazione delle Scienze (Class LM-60). Teacher for the “Adattamento degli Organismi all’Ambiente” course (**3** of 6 CFU; **SSD BIO/04** BIO/09). Role: course responsible.

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Tirocinio Interno presso Laboratori Universitari- Fisiologia e Biologia cellulare” practical course (**2** of 6 CFU). Role: course holder.

2016-17:

Università degli Studi Milano, Italy. Master studies in Scienze della Natura (Class LM-60). Teacher for the “Adattamento degli Organismi all’Ambiente” course (**3** of 6 CFU; **SSD BIO/04** BIO/09). Role: course responsible.

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Tirocinio Interno presso Laboratori Universitari- Fisiologia e Biologia cellulare” practical course (**3** of 6 CFU). Role: course holder.

2015-16, 2014-15, 2013-14, 2012-13:

Università degli Studi Milano, Italy. Master studies in Scienze della Natura (Class LM-60). Teacher for the “Adattamento degli Organismi all’Ambiente” course (**3** of 6 CFU; **SSD BIO/04** BIO/09). Role: course responsible.

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Tirocinio Interno presso Laboratori Universitari- Tecniche di fisiologia cellulare e molecolare” practical course (**2** of 6 CFU). Role: course holder.

2011-12:

Università degli Studi Milano, Italy. Master studies in Scienze della Natura (Class LM-60). Teacher for the “Adattamento degli Organismi all’Ambiente” course (**3** of 6 CFU; **SSD BIO/04** BIO/09). Mutuato for Master studies in Biodiversità ed Evoluzione Biologica, “Sistemi Integrati delle piante” course. Role: course responsible.

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Tirocinio Interno presso Laboratori Universitari- Fisiologia e citochimica animale e vegetale” (**2** of 6 CFU). Role: course holder.

2010-11:

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Tirocinio Interno presso Laboratori Universitari- Fisiologia e citochimica animale e vegetale” practical course (**1** of 6 CFU). Role: course holder.

2009-10:

Università degli Studi Milano, Italy. Bachelor in Scienze Naturali (Class L-32). Teacher for the “Fisiologia Generale e Ambientale” (3 of 8 CFU; **SSD BIO/04** BIO/09). Role: course holder.

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Laboratorio di Biologia Sperimentale II” (1 of 4 CFU) practical course. Role: course holder.

2008-09, 2006-07:

Università degli Studi Milano, Italy. Master studies in Scienze della Natura, Curriculum Analisi e Gestione degli Ambienti Naturali (Class LM-60). Teacher for the “Complementi di Botanica II” course (3 CFU; **SSD BIO/01**). Role: course responsabile

2004-05:

Università degli Studi Milano, Italy. Master studies in Scienze della Natura, Curriculum Analisi e Gestione degli Ambienti Naturali (Class LM-60). Teacher for the “Fisiologia Vegetale” course (3 CFU; **SSD BIO/04**). Role: course responsabile.

2000-01 to 2004-05:

Università degli Studi Milano, Italy. Bachelor in Scienze Biologiche (Class L-13). Teacher for the “Laboratorio di Biologia Sperimentale II” (1 of 4 CFU) practical course. Role: course holder.

STUDENTS THESIS TUTORIAL, CO-TUTORIAL AND PHD CO-TUTORIAL**Master Students**

2019-20: Mara Cademartori, Master in Molecular Biology of the Cell, Università degli Studi Milano. Co-tutor.

2019-20: Marco Leoni, Master in Natural Sciences, Università degli Studi Milano. Tutor.

2017-18: Shahrzad Karimianshahrivar, Master in Molecular Biology of the Cell, Università degli Studi Milano. Co-tutor.

2015-16: Giulia Artuso, Master in Molecular Biology of the Cell, Università degli Studi Milano. Co-tutor.

2014-15: Fabrizio Gandolfo Doccia, Master in Molecular Biology of the Cell, Università degli Studi Milano. Co-tutor.

2011-12: Stefania Forte, Master in Biologia Molecolare della Cellula, Università degli Studi Milano. Tutor.

2008-09: Russo Elisa, Master in Biotecnologie per L'industria e l'Ambiente, Università degli Studi Milano. Co-tutor.

2008-09: Gianera Serena, Master in Biologia Molecolare della Cellula, Università degli Studi Milano. Tutor.

2007-08: Desanti Daniela, Master in Biologia Molecolare della Cellula, Università degli Studi Milano. Co-tutor.

2004-05: Tiziana Fusca, five year course in Biotechnology equivalent to master degree, Università degli Studi Milano. Co-tutor.

2001-02: Luca Gianotti, five year course in Biological Sciences equivalent to master degree, Università degli Studi Milano. Co-tutor.

2001-02: Mauro Bondesan, five year course in Biological Sciences equivalent to master degree, Università degli Studi Milano. Co-tutor.

2000-01: Michela Cerana, five year course in Biological Sciences equivalent to master degree, Università degli Studi Milano. Co-tutor.

Bachelor Students

2011-12: Basso Francesca, Bachelor in Natural Sciences, Università degli Studi Milano. Tutor.

2010-11: Magri Marta, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2009-10: Ruscica Vincenzo, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2008-09 Bertuzzi Andrea, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2007-08: Madaschi Ileana, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2007-08: Limonta Margherita, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2007-08: Lucano Caterina, Bachelor in Biological Sciences, Università degli Studi Milano. Tutor.

2004-05: Marrano Claudia, Bachelor in Biological Sciences, Università degli Studi Milano. Co-tutor.

PhD Students

32th Cycle: Maurizio di Marzio. PhD School in Molecular and Cellular Biology, Università degli Studi di Milano. Member of the Thesis Committee.

31th Cycle: Fabrizio Gandolfo Doccia. PhD School in Molecular and Cellular Biology, Università degli Studi di Milano. Co-tutor.

25th Cycle: Marrano Claudia. PhD School in Molecular and Cellular Biology, Università degli Studi di Milano. Co-tutor.

24th Cycle: Marco Lolicato. PhD School in Molecular and Cellular Biology, Università degli Studi di Milano. Member of the Thesis Committee.

21th Cycle: Tiziana Fusca. PhD School in Plant Biology, Università degli Studi di Milano. Co-tutor.

18th Cycle: Michela Cerana. PhD School in Plant Biology, Università degli Studi di Milano. Co-tutor.

MENTORSHIP ACTIVITY

2014-ongoing: Tutor for students involved in the “Erasmus plus- mobility for study” program for the biological area at the Department of Biosciences, Università degli Studi di Milano (61 students for the mobility out and 71 students for the mobility in).

2005-ongoing: Tutor for students in Natural Sciences (both bachelor and master students).

c) Attività istituzionali, organizzative e di servizio

DEPARTMENTAL ASSIGNMENT

2014-ongoing: Coordinator and responsible of the selection committee for “Erasmus plus - mobility for study” program for the biological area at the Department of Biosciences, Università degli Studi di Milano (both bachelor and master students).

MEMBER OF TEACHING COMMITTEES

2014-ongoing: Member of the committees for “Approvazione Piani di Studio e Trasferimenti” for both bachelor and master studies in Natural Sciences, Università degli Studi di Milano.

2011-ongoing: Member of the committees for admission to the Master programs in “Scienze della Natura” and “Biogeoscienze, Analisi degli Ecosistemi e Comunicazione delle Scienze”, Università degli Studi di Milano.

PHD SCHOOL MEMBERSHIP

2012-ongoing: Member of the PhD school in Molecular and Cellular Biology (DBMC), Università degli Studi Milano.

MEMBER OF PHD THESIS JURIES

2017: PhD committee member for the PhD School in Scienze Ingegneria Medicina- Dottorato di Ricerca in Biotecnologie Applicate XXVIII cycle, Università degli Studi di Verona.

MEMBER OF SCIENTIFIC SOCIETIES

2011-ongoing: Member of the Italian Society of Plant Biology (SIBV)

ORGANIZATION OF NATIONAL AND INTERNATIONAL MEETINGS

2019: Member of the scientific and organizing committee for the next “Plant Calcium Signalling” (Milano, 2020).

2015: Member of the organizing committee for the Annual Society Meeting SIBV-SIGA 2015 and for a scientific event held at the Milan EXPO 2015.

Data

15/09/2019

Luogo

Milano