

CURRICULUM VITAE

Name: Carla Benelli

Birth date: 18 January 1961

Nationality: Italian

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Currently position: **Researcher** (from 2001) at the IVALSA/Istituto per la Valorizzazione del Legno e delle Specie Arboree - National Research Council (CNR), in Sesto Fiorentino (Firenze).

Educational history and post-degree experience

- 1989 - **Degree in Agriculture**, University of Florence (Department of Horticulture, Prof. G.Di Collalto supervisor)
- 1990-1991 - **Research Assistant** at the Department of Horticulture, University of Florence
- 1994 - **Ph.D. in Plant Propagation**, University of Pisa, thesis on "Effect of ethylene on *in vitro* proliferation and adventitious of two apple rootstocks ". Prof P. Pisani supervisor
- 1994-1996 - **CNR fellowship**, Research on *in vivo* and *in vitro* propagation of olive plants at the ex Institute for the Propagation of Woody Plants - CNR in Scandicci (Florence).
- 1997-1998 - **Post-doctoral fellowship**, University of Florence (Department of Horticulture). Research on *in vitro* plant regeneration and genetic transformation by microprojectile bombardment of callus from shoot tips in *Diospyros kaki*. Prof. E. Bellini supervisor
- 1999 - **CNR grant** at the School of Environmental & Applied Sciences, Division of Biological Sciences, dell'University of Derby (UK), - Research on cryopreservation techniques on olive.
- 2014 - National scientific qualification of **Associate Professor** (07/B2 -Scienze e tecnologie dei sistemi arborei e forestali).

Main research fields: Plant biotechnology, conservation of plant biodiversity

Current interests: tissue culture (micropropagation, synthetic seed technology), conservation and propagation of plants. Special interest in conservation *in situ* and *ex situ*, conservation *in vitro* and cryopreservation. Studies on histo-anatomical tissue culture and effects of gaseous compounds (ethylene, carbon dioxide) in micropropagation and slow growth storage of woody plants.

Responsible of the IVALSA's laboratory "Histo-Anatomy lab'

Teaching and lectures experience

- Invited Lecturer at the University of Modena and Reggio Emilia, Faculty of Agricultural, Course of Produzioni Vegetali (1996-1997).

- Invited Lecturer at the Gebze Institute of Technology, Faculty of Science, Istanbul (2006).
- Lecturer at the Course of Specialization for Teachers of High-School 'Tecniche di micropropagazione' (Techniques of micropropagation), in Istituto Professionale di Stato per L'Agricoltura e l'Ambiente (ITAGRI), Florence, Italy (2011).
- Lecturer and Co-Organizer at the 'Corso di micropropagazione (propagazione in vitro): teoria e pratica' (Course on micropropagation-in vitro propagation-: theory and practice), organized by the Vivai Piante Battistini in Cesena, Italy (2012).
- Lecturer and Co-Organizer at 'Corso di Crioconservazione', CNR-IVALSA (Course on Cryopreservation), Sesto Fiorentino, Florence (2014).
- Co-Supervisor to Degree theses, PhD and Postdoc students
- Tutor of Italian and foreign students.

Attendance to Professional Courses

- 'Micropropagation: Biological and technological evolution, trends', Scuola Superiore di Studi Universitari e di Perfezionamento S. Anna. Pisa, (September 12-22, 1994)
- '2° Corso sulle applicazioni biotecnologiche per il miglioramento genetico delle piante di interesse agrario', Istituto per la Qualificazione e Aggiornamento Tecnico-professionale in Agricoltura di Brescia (September 18-22, 1995) .
- 'VII International Olive Course', International Olive Council (C.O.I), Scandicci, Florence, (May 6 -11, 1996).
- 'Microscopia a fluorescenza in scienze della vita e non: dall'acquisizione alla restituzione'. Centro di Microscopie Elettroniche (CEME), CNR, Sesto Fiorentino, Florence, (March 16-17, 2005).
- 'Aspetti di Microscopia': workshop at the Centro di Microscopie Elettroniche (CEME), CNR, Sesto Fiorentino, Florence, (November 27, 2012).

Projects

Participant:

1. Project VITROFLOR - Innovation *in vitro* techniques to improve quality-quantity of propagation material of ornamental plants. Granted by Ministero delle Politiche Alimentari e Forestali. 2009-2014
2. "In vitro conservation and cryopreservation of valuable plant germplasm of the Veneto region", granted by the Veneto Agricoltura regional Institution. 2002-2014
3. Project CRIOGERM - Innovative technologies for conservation of plant biodiversity by cryopreservation and establishment of a CRIOBANK of the germplasm's Citrus 'Villa Medicea di Castello' in Florence. Granted by Ente Cassa di Risparmio of Florence. 2007-2009
4. International Bilateral Project Italy-Argentina (Ministry of Foreign Affairs) between the CNR/IVALSA and the IBONE/Instituto de Botanica del Nordeste, Facultad de Ciencias Agrarias (UNNE) on "Cryopreservation of plant germplasm of high economical interest". 2007-2008
5. Selection, conservation, propagation and safeguard of Tuscany woody species (pear-olive) for production of high-value wood. Granted by ARSIA (Regional Institution). 2005-2007
6. EU COST Action 871, 'Cryopreservation of crop species in Europe'. 2007 - 2010

7. International Bilateral Project CNR-TUBITAK (Italia-Turchia), with the Gebze Institute of Technology di Kocaeli (Turchia) on “Development of biotechnological procedures for the propagation, the cryopreservation and the molecular assay of valuable plant germplasm”. 2006-2007

Referee International Journals

CryoLetters, Advances in Horticultural Science, Plant Biosystem, Acta Physiologia Plantarum, Protoplasma, Plant Cell Tissue and Organ Culture, African Journal of Biotechnology, Resources.

Membership of Scientific Societies

I.S.H.S - International Society for the Horticultural Science;
S.O.I. - Società di Ortoflorofruitticoltura Italiana;
S.I.R.O.E. - Società Italiana per la Ricerca degli Oli Essenziali

Main papers: (impact factor and number citations)

1. TAVAZZA R., LUCIOLI A., **BENELLI C.**, GIORGI D., D'ALOSIO E., PAPACCHIOLI V. 2013. Cryopreservation in artichoke: towards a phytosanitary qualified germplasm collection. *Annals of Applied Biology*, 163: 231-241. doi: 10.1111/aab.12049 (IF 2.14, cit. 2)
2. **BENELLI C.**, DE CARLO A., ENGELMMAN F. 2013. Recent advances in the cryopreservation of shoot-derived germplasm of economically important fruit trees of *Actinidia*, *Diospyros*, *Malus*, *Olea*, *Prunus*, *Pyrus* and *Vitis*. *Biotechnol Adv.* 31, 175-185. (IF 9.6, cit. 7)
3. GANINO A., SILVANINI D., BEGHÈ C., **BENELLI C.**, LAMBARDI M., FABBRI A. 2012. Anatomy and osmotic potential of the *Vitis* rootstock shoot tips recalcitrant to cryopreservation. *Biol. Plant.*, 56 (1): 78-82. (IF 1.69, cit. 5)
4. LYNCH P.T., SIDDIKA A., JOHNSTON J.W., TRIGWEEL S. MEHRA A., **BENELLI C.**, LAMBARDI M., BENSON E. 2011. Effects of osmotic pretreatments on oxidative stress, antioxidant profiles and cryopreservation of olive somatic embryos. *Plant Science* 181: 47-56. (IF 2.94, cit. 7)
5. TERZOLI S., BERITOGNOLO I., GIOVANNELLI A., **BENELLI C.**, MIGLIACCIO F., PICONESE S., SABATTI M., KUZMINSKY E., SCARASCIA MUGNOZZA G. 2011. Expression of Aux/IAA genes during development of sylleptic and proleptic buds in white poplar. *Plant Biosystems* 145: 370-380. (IF 1.41, cit. 2)
6. OZUDOGRU E.A, KIRDOK E., KAYA E., CAPUANA M, **BENELLI C.**, ENGELMANN F. 2011 Cryopreservation of redwood (*Sequoia sempervirens* (D. Don.) Endl.) *in vitro* buds using vitrification-based techniques”. *Cryoletters* 32: 99-110. (IF 1.24, cit. 5)
7. **BENELLI C.**, GERMANÀ M. A., GANINO T., BEGHÈ D., FABBRI A. 2010. Morphological and anatomical observations of abnormal somatic embryos from anther cultures of *Citrus reticulata*. *Biol. Plantarum*, 54 (2): 224-230. (IF 1.97, cit. 3)
8. **BENELLI C.**, FABBRI A., GRASSI S., LAMBARDI M., RUGINI E., 2001. Histology of somatic embryogenesis in mature tissue of olive (*Olea europaea* L.). *J. Hort. Sc. & Biotech.* 76: 112-119. (IF 0.7, cit. 29)
9. DE CARLO A., **BENELLI C.**, LAMBARDI M., 2000. Development of a shoot-tip vitrification protocol and comparison with encapsulation-based procedures for plum (*Prunus domestica* L.) cryopreservation. *Cryo-Letters* 21: 215-222. (IF 1.05, cit. 20)
10. FABBRI A., **BENELLI C.**, 2000. Flower bud induction and differentiation in olive. *Journal of Horticultural Science & Biotechnology*, 75 (2): 131-141. (IF 0.7, cit. 20)

Recent publications (2010-2014)

ISI International Journals (Impact Factor)

1. LYNCH P.T., SIDDIKA A., MEHRA A., **BENELLI C.**, LAMBARDI M. 2014. Cryopreservation of quince (*Cydonia Oblonga* MILL.) 2014. Cryoletters 35 (3), 188-196. (IF 0.84)
2. TAVAZZA, R., LUCIOLI, A., **BENELLI, C.**, GIORGI, D., D'ALOISIO, E., PAPACCHIOLI, V. 2013. Cryopreservation in artichoke: towards a phytosanitary qualified germplasm collection. Annals of Applied Biology, 163: 231-241. doi: 10.1111/aab.12049 (IF 2.14)
3. **BENELLI C.**, DE CARLO A., ENGELMMAN F. 2013. Recent advances in the cryopreservation of shoot-derived germplasm of economically important fruit trees of *Actinidia*, *Diospyros*, *Malus*, *Olea*, *Prunus*, *Pyrus* and *Vitis*. Biotechnol Adv . 31, 175-185. (IF 9.6)
4. GANINO A., SILVANINI D., BEGHÈ C., **BENELLI C.**, LAMBARDI M., FABBRI A. 2012. Anatomy and osmotic potential of the *Vitis* rootstock shoot tips recalcitrant to cryopreservation. Biol. Plant., 56 (1): 78-82. (IF 1.69)
5. LYNCH P.T., SIDDIKA A., JOHNSTON J.W., TRIGWEEL S. MEHRA A., **BENELLI C.**, LAMBARDI M., BENSON E. 2011. Effects of osmotic pretreatments on oxidative stress, antioxidant profiles and cryopreservation of olive somatic embryos. Plant Science 181: 47-56. (IF 2.94)
6. TERZOLI S., BERITOGNOLO I., GIOVANNELLI A., **BENELLI C.**, MIGLIACCIO F., PICONESE S., SABATTI M., KUZMINSKY E., SCARASCIA MUGNOZZA G. 2011. Expression of Aux/IAA genes during development of sylleptic and proleptic buds in white poplar. Plant Biosystems 145: 370-380. (IF 1.41)
7. OZUDOGRU E.A, KIRDOK E., KAYA E., CAPUANA M, **BENELLI C.**, ENGELMANN F. 2011 Cryopreservation of redwood (*Sequoia sempervirens* (D. Don.) Endl.) *in vitro* buds using vitrification-based techniques". Cryoletters 32: 99-110. (IF 1.24)
8. **BENELLI C.**, GERMANÀ M. A., GANINO T., BEGHÈ D., FABBRI A. 2010. Morphological and anatomical observations of abnormal somatic embryos from anther cultures of *Citrus reticulata*. Biol. Plantarum, 54 (2): 224-230. (IF 1.97).

International Referred Journals

9. GIORDANI E., FERRI A., **BENELLI C.** 2013. Viability and *in vitro* Germination Rate of Pollen Grains of *D. kaki* Thunb., *D. lotus* L. and *D. virginiana* L. in Relation to Storage Time and Temperatures. Acta Hortic 996: 97-102
10. **BENELLI C.**, OZUDOGRU E.A., LAMBARDI M., DRADI G. 2012. In vitro conservation ornamental plants by slow growth storage. Acta Hortic. 961: 89-93
11. OZUDOGRU E.A, KIRDOK E., KAYA E., CAPUANA M, **BENELLI C.** 2012. In vitro conservation of redwood (*Sequoia sempervirens*) by slow growth storage and cryopreservation. Acta Hortic. 961: 291-295
12. **BENELLI C.**, PREVIATI A., DE CARLO A., LAMBARDI M. 2011. Shoot-tip vitrification protocol for red chicory (*Cichorium intybus* L.) lines. Adv. Hort. Sci. 25: 44-50.
13. JEVREMOVIC S., **BENELLI C.**, DE CARLO A., SUBOTIC A., LAMBARDI M. 2011. Cryopreservation of *Iris pumila* shoot tips by vitrification. Acta Hortic. 908: 355-360.
14. **BENELLI C.**, DE CARLO A., GIORDANI E., LAMBARDI M., PREVIATI A., **BENELLI C.**, DA RE F., DE CARLO A., ELLIS D. 2011. Cryopreservation of ancient apple cultivars of Veneto: a comparison between PVS2-vitrification and dormant-bud techniques. Acta Hortic. 908: 191-198.

National Journals

15. DE CARLO A., **BENELLI C.** 2012. Applicazioni della tecnologia dell'incapsulamento per la propagazione e conservazione in vitro di specie ornamentali. Acta Italus Hortus 6: 113-118

16. RUFFONI B. , SAVONA M., SACCO E., BARBERINI S., LAMBARDI M., **BENELLI C.**, MARINO G., DRADI G.,
17. RONCASAGLIA R. 2012. Ottimizzazione delle tecniche in vitro per la propagazione e la valorizzazione di genotipi migliorati di piante ornamentali. *Acta Italus Hortus* 4: 115-124
18. **BENELLI C.**, OZUDOGRU E.A., RONCASAGLIA R., LAMBARDI M. 2011. Conservazione *in vitro* di specie ornamentali mediante crescita rallentata: progetto 'VITROFLOR'. *Acta Italus Hortus* 2: 55-58.
19. DE CARLO A., **BENELLI C.**, LAMBARDI M. 2011. Coltura *in vitro* e azoto liquido: nuovi approcci alla conservazione *ex situ* del germoplasma vegetale. *Acta Italus Hortus* 2: 111-112.
20. **BENELLI C.**, DE CARLO A., PIGNATTELLI S., LAMBARDI M. 2010. Recenti acquisizioni sulla crioconservazione (-196°C) di gemme e semi di specie arboree. Atti del "VIII Convegno Nazionale sulla Biodiversità", La Biodiversità- Risorsa per sistemi funzionali, 47-49. (ISBN 978-88-904490-4-8)
21. PREVIATI A., **BENELLI C.**, DA RE F., DE CARLO A., GIANNINI M., LAMBARDI M. 2010. Biotecnologie per la salvaguardia della biodiversità del Veneto: risultati di una collaborazione CNR/IVALSA-VENETO AGRICOLTURA. Atti del "VIII Convegno Nazionale sulla Biodiversità", La Biodiversità- Risorsa per sistemi funzionali, 364-366. (ISBN 978-88-904490-4-8).

Book chapters

22. GIORDANI E., NAVAL M., **BENELLI C.** 2013. In vitro propagation of persimmon (*Diospyros kaki* Thumb.). In: *Protocols for Micropropagation of Selected Economically-important Horticultural Plants*. New York 2013 *Methods in Molecular Biology*, 11013 pp.89-98.

Abstracts of proceedings International and National Congresses/Symposia

23. DE CARLO A., **BENELLI C.**, CENCETTI G., MICHELOZZI M. 2013. Oli essenziali prodotti da piante di *Myrtus communis* allevate in vitro mediante l'impiego dell'innovativo bioreattore plantform. *Natural* 1, 127:48-49. Proceedings of "1° Congresso Nazionale della Società Italiana per la Ricerca sugli Oli Essenziali". Roma 15-17 Novembre 2013.
24. **BENELLI C.**, FERRI A., GIORDANI E. 2013. Effetti di basse e ultrabasse temperature sulla vitalità e germinabilità in vitro di polline di kaki (*Diospyros kaki* Thunb.) conservato per differenti periodi. Proceedings of 'X Giornate Scientifiche SOI', Padova 25-26 /06/2013.
25. **BENELLI C.**, LAMBARDI M., OZUDOGRU E.A. , DRADI G., RONCASAGLIA R. 2013. Conservazione in vitro in crescita rallentata di specie ornamentali: progressi e risultati del progetto "VITROFLOR". Proceedings of 'X Giornate Scientifiche SOI', Padova 25-26 /06/2013..
26. TAVAZZA R., LUCIOLI A., **BENELLI C.**, GIORGI D., D'ALOISIO E., PAPACCHIOLI V. 2013. Crioconservazione di germoplasma di carciofo: conservazione e risanamento. Proceedings of 'X Giornate Scientifiche SOI', Padova 25-26 /06/2013.
27. LAMBARDI M., **BENELLI C.**, DE CARLO A., OZUDOGRU E.A, SERRA S., DA RE F., PREVIATI A. 2013.
28. Sviluppo di una criobanca per la conservazione a -196°C di gemme dormienti da antiche varietà di melo del Veneto. Proceedings of 'X Giornate Scientifiche SOI', Padova 25-26 /06/2013.
29. LAMBARDI M., OZUDOGRU E.A., **BENELLI C.**, DRADI G., CORREA DA SILVA P., PAIVA R. 2013 Development of cost-effective in vitro multiplication and conservation techniques of ornamental plants (*Nandina domestica*, *Carex oshimensis*) for the benefits of commercial nurseries. Book of Abstracts "8th International Symposium on In Vitro Culture and Horticultural Breeding". Coimbra, Portugal, June 2-7, 2013 p. 77

30. TAVAZZA R., LUCIOLI A., **BENELLI C.**, GIORGI D., D'ALOISIO E., PAPACCHIOLI V. 2013. Cryopreservation in artichoke: towards a phytosanitary qualified germplasm collection. '2nd International Symposium on Plant Cryopreservation', 11-14 August 2013, Fort Collins, Colorado, (USA), p.67
31. **BENELLI C.**, FERRI A., GIORDANI E. 2013. Ultra-low temperatures for long-term storage of *Diospyros* spp. and *Olea europaea* pollen grains. '2nd International Symposium on Plant Cryopreservation', 11-14 August 2013, Fort Collins, Colorado, (USA), p.
32. **BENELLI C.**, DA RE F., DE CARLO A., OZUDOGRU E.A., SERRA S., LAMBARDI M. 2013. Cryobanking of ancient Italian apple germplasm by the dormant –bud technique. '2nd International Symposium on Plant Cryopreservation', 11-14 August 2013, Fort Collins, Colorado, (USA)
33. LAMBARDI M., **BENELLI C.**, DA RE F., DE CARLO A., OZUDOGRU E.A., SERRA S. 2013. Developing a cryobank of woody plants (apple, citrus) at the CNR-IVALSA of Florence, Italy. 'Innovation of low temperature, Preservation, Biobanking', SLTB, October 6-9, 2013, Hannover, Germany.
34. JEVREMOVIC S., BOHANEK B., LAMBARDI M., DE CARLO A., **BENELLI C.**, SUBOTIC A. 2011. Clonal fidelity of Iris plants regenerated after cryopreservation. Cryopreservation Symposium, Cost Action 871- Final meeting, Agrocampus Ouest INHP, Angers (France). February 8-11, 2011.
35. LYNCH P.T., SIDDIKA A., JOHNSTON J.W., TRIGWHEEL S., MEHRA A., **BENELLI C.**, LAMBARDI M., BENSON E. 2011. The use of oxidative stress and antioxidant profiling to optimize pretreatments for cryopreserved olive (*Olea europaea* L.) somatic embryos. Proceedings of the final meeting 'Cryopreservation Symposium', Cost Action 871, Angers (France). February 8-11, 2011 p. 8
36. LAMBARDI M., DAMIANO C., ARIAS M., **BENELLI C.**, CABONI E., CONDELLO E., DE CARLO A., FRATTARELLI A., OZUDOGRU E.A. 2011 Country report: Italy. Proceedings of the final meeting "Cryopreservation of crop species in Europe". Angers (France). February 8-11, 2011 pp. 201-204
37. LYNCH P.T., SIDDIKA A., MEHRA A., LAMBARDI M., **BENELLI C.** 2011. Cryopreservation of Quince (*Cidonia oblonga* Mill.) 2011. Symposium Preservation of Forest Species, 6-7/10/2011, London
38. LAMBARDI M., **BENELLI C.**, DE CARLO A., OZUDOGRU E.A., PREVIATI A., SERRA S. 2011. Towards the establishment of a dormant-bud cryobank of ancient Italian apple cultivars. Proceeding 'Biotechnological advances in vitro horticultural breeding' IVCHB September 18-22, 2011, Ghent, Belgium pp.85-86.
39. OZUDOGRU E.A., KIRDOK E., KAYA E., CAPUANA M., **BENELLI C.** 2011. In Vitro Conservation of Redwood (*Sequoia sempervirens*) by Slow Growth Storage and Cryopreservation. Proceeding 'Biotechnological advances in vitro horticultural breeding' IVCHB September 18-22, 2011, Ghent, Belgium.p.86.
40. RONCASAGLIA R., **BENELLI C.**, OZUDOGRU E.A., LAMBARDI M. 2011. Effect of the Carbohydrate composition in the medium during the *in vitro* Slow Growth Storage of the Cherry Rootstock 'Gi.SEL.A[®]5'. Proceeding 'Biotechnological advances *in vitro* horticultural breeding' IVCHB September 18-22, 2011, Ghent, Belgium. p.164.
41. **BENELLI C.**, OZUDOGRU E.A., DRADI G., RONCASAGLIA R., LAMBARDI M. 2011. Conservazione *in vitro* in crescita rallentata di specie ornamentali. Atti '2° Convegno Nazionale sulla Micropropagazione'. Sanremo (IM), 7-9/11/2011. p. 62.
42. DE CARLO A., **BENELLI C.** 2011. Applicazione della tecnologia dell'incapsulamento per la propagazione e conservazione *in vitro* di specie ornamentali. Atti '2° Convegno Nazionale sulla Micropropagazione'. Sanremo (IM), 7-9/11/2011. p. 29.
43. LAMBARDI M., **BENELLI C.**, DRADI G., OZUDOGRU E.A. 2010. *In vitro* conservation of economically-important fruit and ornamental species by slow growth storage. 28th

International Horticultural Congress, Lisbon, Portugal, 21-27 August 2010, Abstracts, Vol II, p. 525.

44. **BENELLI C.**, DE CARLO A., PREVIATI A., RONCASAGLIA R. 2010. Recenti acquisizioni sulla conservazione *in vitro* in crescita rallentata. Proceedings of 'IX Giornate Scientifiche SOI', Italus Hortus, 17 (2): 91.
45. CANTINI C., SANI G., BETTI A., LAMBARDI M., **BENELLI C.**, DE CARLO A., GIOVANNELLI A., IANNI G., MICHELOZZI M. 2010. Attività della sezione della banca regionale del germoplasma di Follonica - Azienda Agraria Sperimentale. Proceedings of "La tutela e la valorizzazione dell'agrobiodiversità: le esperienze regionali a confronto" Firenze, 15 Luglio 2010.
46. LAMBARDI M. , **BENELLI C.**, DA RE F, PREVIATI A., SERRA S. 2010. Salvaguardia del germoplasma di specie da frutto mediante conservazione in azoto liquido di gemme dormienti. Proceedings of 'IX Giornate Scientifiche SOI', Italus Hortus, 17 (2): 27.
47. OZUDOGRU E.A., **BENELLI C.**, CAPUANA M., KAYA E., KIRDOK E., LAMBARDI M. 2010. Development of an effective cryopreservation protocol for apical and basal buds of redwood (*Sequoia sempervirens* (D. Don.) Endl.). Abstract Book 4th Working Group 1, COST Action 871 "Fundamental aspects of plant cryopreservation - Cryoprotection and genetic stability". Poznan-Kornik, Poland, 29-30 April (oral abstract).

Editor of books

48. **BENELLI C.** E PACE L. (eds) 2011. Atti del Workshop 'La Coltura in vitro applicata alla Conservazione e alla Valorizzazione della Biodiversità vegetale'. Acta Italus Hortus vol. 2, pp.120.