

# CURRICULUM VITAE

**Flavia Guzzo**

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## Personal details

Date of birth: March 17, 1965  
Place of birth: Conegliano (TV), Italy  
Nationality: Italian

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## Education

**1990–1994** – PhD in Evolutionary Biology, University of Padua, Italy  
Thesis: *Cytophysiological aspects of induction and differentiation processes during somatic embryogenesis in carrot*

**1991** – Qualification for the professional practice of Biologist

**1990** – MSc in Biological Sciences, University of Padua, Italy  
Thesis: *Cytological study of a novel male-sterile soybean mutant*

## Academic Positions

**Since 2024** – Full Professor (BIO/01), University of Verona, Italy

**2014–2024** – Associate Professor (BIO/01), University of Verona, Italy

**May 1997 – October 2014** – Assistant Professor (tenured) (BIO/01), University of Verona, Italy

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## Research appointments at international institutions

**April 1994 – January 1997** – Postdoctoral Researcher, Department of Molecular Biology, Wageningen Agricultural University, The Netherlands

(2 years and 4 months formally recognized as equivalent to service as Assistant Professor within the Italian academic system)

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## Research group leadership and participation

**Since 2003** – Coordinator of the Plant Biology research group (since 2010: Plant Biology and Metabolomics), University of Verona, Italy

**1997–2003** – Member of the research group led by Prof. M. Levi, University of Verona, Italy

**1994–1997** – Member of the research group led by Prof. S.C. de Vries, Wageningen Agricultural University, The Netherlands

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## Research projects (leadership, coordination, participation)

- **Urban ecosystem services monitoring and implementation in Verona (èVRgreen)**  
Funding organisation: Fondazione Cariverona  
Duration: 2024–2026  
Role: Participant
- **The puzzling mystery of tryptamine and serotonin roles in plants: a comprehensive investigation in *Solanum lycopersicum* (PRIN)**  
Duration: 2023–2025  
Role: Participant
- **National Biodiversity Future Center (PNRR), Spoke 6 – Bioprospecting and bioactivity**  
Funding organisation: PNRR (Italy)  
Duration: 2022–2025  
Grant: €3,500,000  
Role: National Coordinator of Activity 2
- **Evaluation of tomato and melon responses to nutritional regimes through metabolomic analysis**  
Funding organisation: FCP Cerea S.C.  
Duration: 2021  
Grant: €8,000  
Role: Principal Investigator
- **High-tech analysis of bioactive components of food matrices for 3D printing applications**  
Funding organisation: MISE (Italy)  
Duration: 2020–2023  
Grant: €100,000  
Role: Principal Investigator
- **Metabolomic characterization of plant cell lines under different culture conditions and elicitation treatments**  
Funding organisation: Demethra Biotech / Italian Ministry of Economic Development  
Duration: 2017–2020  
Grant: €300,000 (equipment, in-kind)  
Role: Principal Investigator

- **Advanced systems for waste recovery (SARR)**  
Funding organisation: POR FESR Veneto  
Duration: 2017–2020  
Grant: €59,400  
Role: Principal Investigator
- **Development of a prototype for high-quality natural vanilla production in bioreactor**  
Funding organisation: FSE Veneto  
Duration: 2017–2019  
Grant: €54,000  
Role: Principal Investigator
- **SERO-TOM: Biological role of fruit serotonin in *Solanum lycopersicum***  
Funding organisation: University of Verona (competitive project)  
Duration: 2016–2019  
Grant: €55,000  
Role: Principal Investigator
- **Use of in vitro plant cell cultures for food and nutraceutical applications**  
Funding organisation: Demethra Biotech s.r.l.  
Duration: 2016  
Grant: €36,000  
Role: Principal Investigator
- **Molecular markers of meristematic and differentiated phenotypes in plant cell cultures**  
Funding organisation: I.R.B. srl  
Duration: 2015–2016  
Grant: €12,000  
Role: Grant holder and research lead
- **Plant defense and valorisation of kiwifruit production**  
Funding organisation: Regione Veneto  
Duration: 2015–2018  
Grant: €520,000  
Role: Principal Investigator
- **Qualitative characterization of horticultural products and metabolomic profiling**  
Funding organisation: Regione Veneto  
Duration: 2014–2016  
Grant: €280,000  
Role: Principal Investigator
- **Development of novel procedures for innovative supplements based on phytocompounds and microorganisms**  
Funding organisation: University of Verona (competitive project with external peer review)  
Duration: 2011–2013  
Role: Participant
- **Extraction of phenylpropanoids from plant cell cultures of *Buddleja davidii* and *Leontopodium alpinum*: biological activity and cosmetic applications**  
Funding organisation: I.R.B. srl  
Duration: 2011–2013  
Grant: €40,000  
Role: Principal Investigator
- **Physiological and molecular mechanisms underlying ammonium and nitrate uptake in maize roots (PRIN)**  
Duration: 2011–2013  
Role: Participant

- **Development of an innovative plant-based product for immune system stimulation**  
Funding organisation: FSE Veneto  
Duration: 2010–2012  
Grant: €57,600  
Role: Principal Investigator
- **Metabolomic analysis of extracts from plant cell culture lines**  
Funding organisation: I.R.B. srl  
Duration: 2010  
Grant: €10,000  
Role: Principal Investigator
- **Enhancement of secondary metabolite production in *Buddleja davidii* plant cell cultures**  
Funding organisation: I.R.B. srl  
Duration: 2009  
Grant: €10,000  
Role: Grant holder and research lead
- **Enhancement of secondary metabolite production in *Echinacea* cell cultures**  
Funding organisation: I.R.B. srl  
Duration: 2005–2006  
Grant: €12,000  
Role: Grant holder and research lead
- **Identification of biologically active secondary metabolites in *Passiflora* species (PRIN)**  
Duration: 2004–2006  
Role: Participant
- **Expression of recombinant proteins in plant cell cultures and development of bioreactor systems with immobilized and suspension cells**  
Funding organisation: I.R.B. srl  
Duration: 2002–2003  
Grant: €30,000  
Role: Grant holder and research lead
- **Toxicity and biological activity of lectins in cereal seeds (PRIN)**  
Duration: 1997–1999  
Role: Participant

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## LIST OF PUBLICATIONS

1. Federico Pinna, Mauro Commisso, **Flavia Guzzo**, Simonetta Bagella, Giulia Ceccherelli, Giovanna Becca, Maria Franca and Patrizia Stipcich (2026) *Exploring the anatomical and metabolomic variabilities in the seagrass Posidonia oceanica (L.) Delile fruits*. **Marine Biology** 173:6, <https://doi.org/10.1007/s00227-025-04758-6>
2. Argentino, G., Di Leo, E. G., Stranieri, C., Negri, S., Commisso, M., **Guzzo, F.**, Fratta Pasini, A.M., Castagna, A., Friso, S. (2025). *Screening of Mediterranean Plant-Derived Extracts for Antioxidant Effect in Cell-Free and Human Cell Line Models*. **Antioxidants**, 14(10), 1217. DOI: 10.3390/antiox14101217
3. Bianchini, S., Bovio, F., Negri, S., **Guzzo, F.**, Forcella, M., Fusi, P. (2025). *Gratiola officinalis alcoholic extract targets Warburg effect, apoptosis and cell cycle progression in colorectal cancer cell lines*. **International Journal of Molecular Sciences**, 26(5), 2220. DOI: 10.3390/ijms26052220

4. Lambiase, A., Spandri, G., Moukham, H., Toini, E., D'Urzo, A., Zecca, G., Commisso, M., **Guzzo, F.**, Santoro, V., Piccinelli, A.L., Calleri, E., Salerno, S., Rinaldi, F., Negri, S., Santambrogio, C., Brioschi, M., Solana-Manrique, C., Labra, M., Grassi, F., Paricio, N., Tripodi, F., Coccetti, P. (2025). *Acteoside exerts neuroprotective effects by preventing  $\alpha$ -synuclein aggregation and oxidative stress in models of Parkinson's disease*. **Neurotherapeutics**, e00825. DOI: 10.1016/j.neurot.2025.e00825
5. Domenico Loperfido, Cecilia Zumajo-Cardona, Mauro Commisso, **Flavia Guzzo**, Barbara Ambrose, Lucia Colombo, Ignacio Ezquer (2025) *The role of cytokinin receptors in Arabidopsis thaliana seed development and how they affect the metabolomic profile*. **Planta** 262:59, <https://doi.org/10.1007/s00425-025-04745-7>
6. Claudio Marcello Marzo, Martino Bianconi, Mauro Commisso, Sofia Gambini, Cristiano Chiamulera, Linda Avesani, Stefano Negri, **Flavia Guzzo** (2025). *Untargeted metabolomics reveals quinic acid as the kiwifruit component that affects brain activity in mice*. **PLOS ONE**, <https://doi.org/10.1371/journal.pone.0326134>.
7. Al-Naqeb, G., Zorzi, G., Oldani, A., Azzalin, A., Avesani, L., **Guzzo, F.**, Pascale, A., De Giuseppe, R., Cena, H. (2024). *Phytochemical profile and in vitro cytotoxic, genotoxic, and antigenotoxic evaluation of Cistus monspeliensis L. leaf extract*. **International Journal of Molecular Sciences**, 25(24), 13707. DOI: 10.3390/ijms252413707
8. De Soricellis, G., Rinaldi, F., Tengattini, S., Temporini, C., Negri, S., Capelli, D., Montanari R., Cena H., Salerno, S., Massolini, G., **Guzzo, F.**, Calleri, E. (2024). *Development of an analytical platform for the affinity screening of natural extracts by SEC-MS towards PPAR $\alpha$  and PPAR $\gamma$  receptors*. **Analytica Chimica Acta**, 1309, 342666. DOI: 10.1016/j.aca.2024.342666
9. Stefano Negri, Fabio Pietrolucci, Sebastiano Andreatta, Ruth Chinyere Njoku, Carolina Antunes Silva Nogueira Ramos, Massimo Crimi, Mauro Commisso, **Flavia Guzzo\***, Linda Avesani\* (2024) *Bioprospecting of Artemisia genus: from artemisinin to other potentially bioactive compounds*. **Nature Scientific Reports** 14:4792, <https://doi.org/10.1038/s41598-024-55128-z>
10. Stefano Negri, Mauro Commisso, Tiziana Pandolfini, Linda Avesani, **Flavia Guzzo** (2024) *Temperature and solar irradiation effects on secondary metabolism during ripening of field-grown everbearing strawberries*. **Plant Physiology and Biochemistry**, 215, <https://doi.org/10.1016/j.plaphy.2024.109081>
11. Alessandro Piva, Giulia Benvegnù, Stefano Negri, Mauro Commisso, Sofia Ceccato, Linda Avesani, **Flavia Guzzo** and Cristiano Chiamulera (2024) *Whole Plant Extracts for Neurocognitive Disorders: A Narrative Review of Neuropsychological and Preclinical Studies*. **Nutrients** 16:3156, <https://doi.org/10.3390/nu16183156>
12. Hellas Cena, Massimo Labra, (...), **Flavia Guzzo** et al (2024) *Biodiversity and planetary health: a call for integrated action*. **The Lancet** (correspondence)
13. Gianluca Zorzi, Sofia Gambini, Stefano Negri, **Flavia Guzzo** and Mauro Commisso (2023). *Untargeted metabolomics analysis of the orchid species Oncidium sotoanum reveals the presence of rare bioactive C-diglycosylated chrysin derivatives*. **Plants** 12: 655, <https://doi.org/10.3390/plants12030655>.
14. Mauro Commisso, Stefano Negri, Elisa Gecchele, Emanuela Fazion, Cecilia Pontoriero, Linda Avesani, **Flavia Guzzo** (2022) *Indolamine accumulation and TDC/T5H expression profiles reveal the complex and dynamic regulation of serotonin biosynthesis in tomato (Solanum lycopersicum L.)*. **Front. Plant Sci.** 13:975434. doi: 10.3389/fpls.2022.975434.
15. Sara Buoso, Anita Zamboni, Alessandro Franco, Mauro Commisso, **Flavia Guzzo**, Zeno Varanini, Roberto Pinton, Nicola Tomasi, Laura Zanin (2022) *Nodulating white lupins take*

- advantage of the reciprocal interplay between N and P nutritional responses. *Physiologia Plantarum* 174:e13607. <https://doi.org/10.1111/ppl.13607>.
16. Chiara Stranieri, **Flavia Guzzo**, Sofia Gambini, Luciano Cominacini, Anna Maria Fratta Pasini (2022) *Intracellular polyphenol wine metabolites oppose oxidative stress and upregulate Nrf2/ARE pathway. Antioxidants* 11: 2055, <https://doi.org/10.3390/antiox11102055>.
  17. Giovanna Pressi, Oriana Bertaiola, Chiara Guarnerio, Elisa Barbieri, Giovanna Rigillo, Paolo Governa, Marco Biagi, **Flavia Guzzo**, Alessandra Semenzato (2022) *In vitro cell culture of Rhus coriaria L.: a standardized phytocomplex rich of gallic acid derivatives with antioxidant and skin repair activity. Cosmetics* 9:12, <https://doi.org/10.3390/cosmetics9010012>.
  18. Marzo CM, Gambini S, Poletti S, Munari F, Assfalg M, **Flavia Guzzo** (2022) *Inhibition of Human Monoamine Oxidases A and B by specialized metabolites present in fresh common fruits and vegetables. Plants*, 11, 346.
  19. Commisso M, Bianconi M, Poletti S, Negri S, Munari F, Ceoldo S, **Flavia Guzzo** (2021) *Metabolomic profiling and antioxidant activity of fruits representing diverse apple and pear cultivars. Biology* 2021, 10, 380.
  20. Negri S, Commisso M, Avesani A, **Flavia Guzzo** (2021) *The case of tryptamine and serotonin in plants: a mysterious precursor for an illustrious metabolite. Journal of Experimental Botany*, Vol. 72 (15), 5336–5355.
  21. Negri S, Gambini S, Ceoldo S, Avesani M, Commisso M, **Flavia Guzzo** (2021) *Undifferentiated in vitro cultured Actinidia deliciosa as cell factory for the production of quercetin glycosides. Plants*, 10, 2499.
  22. Giovanna Pressi, Oriana Bertaiola, Chiara Guarnerio, Elisa Barbieri, **Flavia Guzzo**, Caroline Durand, Laurent Peno-Mazzarino, Veronica Cocetta, Isabella Giacomini and Alessandra Semenzato (2021) *In vitro cultured Melissa officinalis cells as effective ingredient to protect skin against oxidative stress, blue light, and infrared irradiations damages. Cosmetics* 8: 23, <https://doi.org/10.3390/cosmetics8010023>.
  23. Nicola Busatto, Alice Tadiello, Marco Moretto, Brian Farneti, Francesca Populin, Urska Vrhovsek, Mauro Commisso, Elisa Sartori, Paolo Sonogo, Franco Biasioli, Guglielmo Costa, **Flavia Guzzo**, Paolo Fontana, Kristof Engelen, and Fabrizio Costa (2021) *Ethylene-auxin crosstalk regulates postharvest fruit ripening process in apple. Fruit Research* 1: 13.
  24. Sajeela Ahmed, Naseer Ahmed, Alessio Rungtatscher, Daniele Linardi, Bibi Kulsoom, Giulio Innamorati, Sultan Ayoub Meo, Mebratu Alebachew Gebrie, Romel Mani, Flavia Merigo, **Flavia Guzzo**, Giuseppe Faggian (2020) *Cocoa Flavonoids Reduce Inflammation and Oxidative Stress in a Myocardial Ischemia-Reperfusion Experimental Model. Antioxidants*, 9: 167.
  25. Martino Bianconi, Laura Ceriotti, Salvatore Cuzzocrea, Emanuela Esposito, Giovanna Pressi, Elena Sgaravatti, Oriana Bertaiola, Chiara Guarnerio, Elisa Barbieri, Alessandra Semenzato, Stefano Negri, Mauro Commisso, Linda Avesani, **Flavia Guzzo** (2020) *Red Carrot Cells Cultured in vitro Are Effective, Stable, and Safe Ingredients for Skin Care, Nutraceutical, and Food Applications. Frontiers in Bioengineering and Biotechnology*, 8 article 575079.
  26. Sara Zenoni, Alessandra Amato, Erica D'Inca, **Flavia Guzzo**, Giovanni Battista Tornielli (2020) *Rapid dehydration of grape berries dampens the post-ripening transcriptomic program and the metabolite profile evolution. Horticulture Research* 7:141.
  27. Maura Ferri, Anton Happel, Giulio Zanaroli, Marco Bertolini, Stefano Chiesa, Mauro Commisso, **Flavia Guzzo**, Annalisa Tassoni (2020) *Advances in combined enzymatic extraction of ferulic acid from wheat bran. New Biotechnology* 56:38.

28. Mauro Commisso , Stefano Negri, Martino Bianconi, Sofia Gambini, Sara Avesani, Stefania Ceoldo, Linda Avesani, **Flavia Guzzo** (2019) *Untargeted and Targeted Metabolomics and Tryptophan Decarboxylase In Vivo Characterization Provide Novel Insight on the Development of Kiwifruits (Actinidia deliciosa)*. **Int. J. Mol. Sci.**, 20:897.
29. Sota Hirano, Michele Bovi, Alessandro Romeo, **Flavia Guzzo**, Cristiano Chiamulera, Massimiliano Perduca (2018) *Ketamine nano-delivery based on poly-lactic-co-glycolic acid (PLGA) nanoparticles*. **Appl Nanosci**. <https://doi.org/10.1007/s13204-018-0765-1>.
30. Maria De Benedictis, Cecilia Brunetti, Elizabeth K. Brauer, Andrea Andreucci, Sorina C. Popescu, Mauro Commisso, **Flavia Guzzo**, Adriano Sofo, Monica Ruffini Castiglione, Olena K. Vatamaniuk and Luigi Sanità di Toppi (2018) *The Arabidopsis thaliana Knockout Mutant for Phytochelatins Synthase1 (cad1-3) Is Defective in Callose Deposition, Bacterial Pathogen Defense and Auxin Content, But Shows an Increased Stem Lignification*. **Frontiers in Plant Science**, vol. 9 art. 00019.
31. Massimiliano Corso, M. Sol Schwartzman, **Flavia Guzzo**, Florence Souard, Eugeniusz Malkowski, Marc Hanikenne and Nathalie Verbruggen (2018). *Contrasting cadmium resistance strategies in two metal-tolerant populations of Arabidopsis halleri*. **New Phytologist** 218: 283–297.
32. Zeno Varanini, Stefano Cesco, Nicola Tomasi, Roberto Pinton, **Flavia Guzzo**, Anita Zamboni, Brigitte Schloter-Hai, Michael Schloter, Laura Giagnoni, Mariarita Arenella, Paolo Nannipieri, Giancarlo Renella (2018) *Nitrate induction and physiological responses of two maize lines differing in nitrogen use efficiency: effects on N availability, microbial diversity and enzyme activity in the rhizosphere*. **Plant and soil**, 422:331.
33. Nicola Busatto, Brian Farneti, Mauro Commisso, Martino Bianconi, Barbara Iadarola, Elisa Zago, Benedetto Ruperti, Francesco Spinelli, Angelo Zanella, Riccardo Velasco, Alberto Ferrarini, Giulia Chitarrini, Urska Vrhovsek, Massimo Delledonne, **Flavia Guzzo**, Guglielmo Costa and Fabrizio Costa (2018) *Apple fruit superficial scald resistance mediated by ethylene inhibition is associated with diverse metabolic processes*. **The Plant Journal** 93, 270–285.
34. Stefano Negri, Arianna Lovato, Filippo Boscaini , Elisa Salvetti , Sandra Torriani , Mauro Commisso, Roberta Danzi , Maurizio Ugliano, Annalisa Polverari , Giovanni B. Tornielli, **Flavia Guzzo** (2017) *The Induction of Noble Rot (Botrytis cinerea) Infection during Postharvest Withering Changes the Metabolome of Grapevine Berries (Vitis vinifera L., cv. Garganega)*. **Frontiers in Plant Science**, vol. 8 art. 1002.
35. Amanda M. Vondras, Mauro Commisso, **Flavia Guzzo** and Laurent G. Deluc (2017) *Metabolite Profiling Reveals Developmental Inequalities in Pinot Noir Berry Tissues Late in Ripening*. **Frontiers in Plant Science**, vol. 8 art. 1008.
36. Mauro Commisso, Andrea Anesi, Silvia Dal Santo and **Flavia Guzzo** (2017). *Performance comparison of electrospray ionization and atmospheric pressure chemical ionization in untargeted and targeted liquid chromatography/mass spectrometry based metabolomics analysis of grapeberry metabolites*. **Rapid Commun. Mass Spectrom.** 31: 292–300.
37. Chiara Santi, Barbara Molesini, **Flavia Guzzo**, Youry Pii , Nicola Vitulo and Tiziana Pandolfini (2017) *Genome-wide transcriptional changes and lipid profile modifications induced by Medicago truncatula N5 overexpression at an early stage of the symbiotic interaction with Sinorhizobium meliloti*. **Genes**, 8, 396; doi:10.3390/genes8120396.
38. Mauro Commisso, Martino Bianconi, Flavia Di Carlo, Stefania Poletti, Alessandra Bulgarini, Francesca Munari, Stefano Negri, Matteo Stocchero, Stefania Ceoldo, Linda Avesani, Michael Assfalg, Gianni Zoccatelli, **Flavia Guzzo** (2017) *Multi-approach metabolomics analysis and artificial simplified phytocomplexes reveal cultivar-dependent synergy between*

- polyphenols and ascorbic acid in fruits of the sweet cherry (Prunus avium L.). PLOSone* <https://doi.org/10.1371/journal.pone.0180889>.
39. Zenoni Sara, Fasoli Marianna, **Guzzo Flavia**, Dal Santo Silvia, Amato Alessandra, Anesi Andrea, Commisso Mauro, Herderich Markus, Ceoldo Stefania, Avesani Linda, Pezzotti Mario, Tornielli Giovanni Battista (2016). *Disclosing the molecular basis of the postharvest life of berry in different grapevine genotypes. Plant physiology*, p. 1-19, ISSN: 0032-0889, doi: 10.1104/pp.16.00865.
  40. Dal Santo Silvia, Commisso Mauro, D'Inca Erica, Anesi Andrea, Stocchero Matteo, Zenoni Sara, Ceoldo Stefania, Tornielli Giovanni B, Pezzotti Mario, **Guzzo Flavia** (2016). *The terroir concept interpreted through grape berry metabolomics and transcriptomics. Journal of Visualized Experiments*, p. 1-16, ISSN: 1940-087X, doi: 10.3791/54410.
  41. Habran Aude, Commisso Mauro, Helwi Pierre, Hilbert Ghislaine, Negri Stefano, Ollat Nathalie, Gomès Eric, van Leeuwen Cornelis, **Guzzo Flavia\***, Delrot Serge\*(2016). *Roostocks/scion/nitrogen interactions affect secondary metabolism in the grape berry. Frontiers in Plant Science*, vol. 7, p. 1134-1144, ISSN: 1664-462X, doi: 10.3389/fpls.2016.01134 (\*corresponding authors).
  42. Commisso Mauro, Toffali Ketti, Strazzer Pamela, Stocchero Matteo, Ceoldo Stefania, Baldan Barbara, Levi Marisa, **Guzzo Flavia** (2016). *Impact of Phenylpropanoid Compounds on Heat Stress Tolerance in Carrot Cell Cultures. Frontiers in Plant Science*, vol. 7, p. 1439-1455, ISSN: 1664-462X, doi: 10.3389/fpls.2016.01439.
  43. Dal Santo Silvia, Fasoli Marianna, Negri Stefano, D'Inca Erica, Vicenzi Nazareno, **Guzzo Flavia**, Tornielli Giovanni Battista, Pezzotti Mario, Zenoni Sara (2016). *Plasticity of the Berry Ripening Program in a White Grape Variety. Frontiers in Plant Science*, vol. 7, p. 1-17, ISSN: 1664-462X, doi: 10.3389/fpls.2016.00970.
  44. Andrea Anesi, Matteo Stocchero, Silvia Dal Santo, Mauro Commisso, Sara Zenoni, Stefania Ceoldo, Giovanni Battista Tornielli, Tracey E. Siebert, Markus Herderich, Mario Pezzotti and **Flavia Guzzo** (2015) *Towards a scientific interpretation of the terroir concept: plasticity of the grape berry metabolome. BMC Plant Biology* 15:191-207.
  45. Mariana Amato, Marisa C. Caruso, **Flavia Guzzo**, Fernanda Galgano, Mauro Commisso, Rocco Bochicchio, Rosanna Labella, Fabio Favati (2015) *Nutritional quality of seeds and leaf metabolites of Chia (Salvia hispanica L.) from Southern Italy. European food research and technology*, 241 (5):615-625.
  46. Maria Pia Argentieri, Marisa Levi, **Flavia Guzzo** and Pinarosa Avato (2015) *Phytochemical analysis of Passiflora loefgrenii Vitta, a rich source of luteolin-derived flavonoids with antioxidant properties. Journal of Pharmacy and Pharmacology*, 67:1603-1612.
  47. Anna Manara, Giovanni DalCorso, **Flavia Guzzo**, Antonella Furini (2015) *Loss of the Atypical Kinases ABC1K7 and ABC1K8 Changes the Lipid Composition of the Chloroplast Membrane. Plant and Cell Physiology*, 56(6): 1193–1204.
  48. Erika Cavallini, José Tomás Matus, Laura Finezzo, Sara Zenoni, Rodrigo Loyola, **Flavia Guzzo**, Rudolf Schlechter, Agnès Ageorges, Patricio Arce-Johnson, Giovanni Battista Tornielli (2015) *The phenylpropanoid pathway is controlled at different branches by a set of R2R3-MYB C2 repressors in grapevine. Plant Physiology*, 167: 1448–1470.
  49. Elisa Zampieri\*, **Flavia Guzzo\***, Mauro Commisso, Antonietta Mello, Paola Bonfante, Raffaella Balestrini (2014) *Gene expression and metabolite changes during Tuber magnatum fruiting body storage. Curr Genet.* 60:285–294 (\* equal contribution).
  50. Erika Cavallini, Sara Zenoni, Laura Finezzo, **Flavia Guzzo**, Anita Zamboni, Linda Avesani and Giovanni Battista Tornielli (2014). *Functional diversification of grapevine MYB5a and*

- MYB5b* in the control of flavonoid biosynthesis in a *Petunia* anthocyanin regulatory mutant. ***Plant and Cell Physiology***, 55(3): 517–534.
51. Margherita Daminato, **Flavia Guzzo**, Giorgio Casadoro (2013). *A SHATTERPROOF-like gene controls ripening in the non-climacteric strawberries, and auxin and abscisic acid antagonistically affect its expression.* ***Journal of Experimental Botany***, 64(12): 3775–3786.
  52. Alessandro Lovisetto\*, **Flavia Guzzo\***, Alice Tadiello, Enrico Confortin, Anna Pavanello, Alessandro Botton, Giorgio Casadoro (2013). *Characterization of a bZIP Gene Highly Expressed During Ripening of the Peach Fruit.* ***Plant Physiology and Biochemistry***, 70: 462:470 (\* equal contribution).
  53. Ketti Toffali, Stefania Ceoldo, Matteo Stocchero, Marisa Levi, **Flavia Guzzo** (2013) *Carrot specific features of the phenylpropanoid pathway identified by feeding cultured cells with defined intermediates.* ***Plant Science*** 209: 81-92.
  54. Silvia Dal Santo, Giovanni Battista Tornielli, Sara Zenoni, Marianna Fasoli, Lorenzo Farina, Andrea Anesi, **Flavia Guzzo**, Massimo Delledonne, Mario Pezzotti (2013) *The plasticity of the grapevine berry transcriptome.* ***Genome Biology*** 2013, 14:R54
  55. Alessandro Lovisetto\*, **Flavia Guzzo\***, Nicola Busatto and Giorgio Casadoro (2013). *Gymnosperm B-sister genes may be involved in ovule/seed development and, in some species, in the growth of fleshy fruit-like structures.* ***Annals of Botany***, 112: 535–544 (equal contribution).
  56. Barizza Elisabetta, **Guzzo Flavia**, Fanton Paolo, Lucchini Giorgio, Sacchi G. Attilio, Lo Schiavo Fiorella, and Nascimbene Juri (2013) *Nutritional profile and productivity of bilberry (Vaccinium myrtillus L.) in different habitats of a protected area of the eastern Italian Alps.* ***Journal of Food Science***, 78 (5): 673-678.
  57. Mauro Commisso, Pamela Strazzer, Ketti Toffali, Matteo Stocchero, **Flavia Guzzo** (2013) *Untargeted metabolomics: an emerging approach to determine the composition of herbal products.* ***Computational and Structural Biotechnology Journal***, Volume No: 4, Issue: 5, January 2013, e201301007.
  58. Chiara Francesca Guarnerio, Marica Fraccaroli, Irene Gonzo, Giovanna Pressi, Roberto Dal Toso, **Flavia Guzzo**, Marisa Levi (2012) *Metabolomic analysis reveals that the accumulation of specific secondary metabolites in Echinacea angustifolia cells cultured in vitro can be controlled by light.* ***Plant Cell Rep*** 31:361–367.
  59. Alessandro Lovisetto, **Flavia Guzzo**, Alice Tadiello, Ketti Toffali, Alessandro Favretto, Giorgio Casadoro (2012) *Molecular Analyses of MADS-Box Genes Trace Back to Gymnosperms the Invention of Fleshy Fruits.* ***Molecular Biology and Evolution*** 29(1):409–419.
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## Patents

### Italian patents

- **No. 102019000004107** – Phytocomplex and extract of a selected meristematic cell line from *Daucus carota sativa*  
Filing date: March 21, 2019 – Status: Granted
- **No. 102019000004113** – Phytocomplex and extract of a selected meristematic cell line from a plant belonging to the genus *Melissa*  
Filing date: March 21, 2019 – Status: Granted
- **No. 102019000004119** – Phytocomplex and extract of a selected meristematic cell line from *Echinacea purpurea*  
Filing date: March 21, 2019 – Status: Granted
- **No. 102019000004105** – Phytocomplex and extract of a selected meristematic cell line from a plant belonging to the genus *Rosa*  
Filing date: March 21, 2019 – Status: Granted
- **No. 102021000002387** – Composition and method for the biofortification of food plants and biofortified food plants  
Filing date: February 3, 2021 – Status: Granted
- **No. 102020000028130** – Phytocomplex and extract of a selected meristematic cell line from *Perilla frutescens*  
Filing date: November 24, 2020 – Status: Granted

- **No. 102020000028142** – Phytocomplex and extract of a selected meristematic cell line from *Punica granatum*  
Filing date: November 24, 2020 – Status: Granted
- **No. 102020000028136** – Phytocomplex and extract of a selected meristematic cell line from *Rhus coriaria*  
Filing date: November 24, 2020 – Status: Granted
- **No. 102021000028496** – Undifferentiated in vitro cultured *Actinidia deliciosa* and *Actinidia chinensis* cell lines as cell factories for the production of quercetin glycosides, and process for their preparation  
Filing date: November 10, 2021 – Status: Granted
- **No. 102022000000581** – Quinic acid for use in the treatment of mood disorders  
Filing date: January 17, 2022 – Status: Granted
- **No. 102025000007659** – Plant extracts with antioxidant activity  
Filing date: April 8, 2025 – Status: Filed

## International patents

- **WO/2020/188535; JP2022527846** – Phytocomplex and extract of a meristematic cell line selected from *Echinacea purpurea*  
Publication date: January 26, 2022
- **WO/2020/188534; KR1020210145186; JP2022527996; US20220339232; EP3942017** – Phytocomplex and selected extract of a meristematic cell line from a plant belonging to the genus *Melissa*  
Publication date: January 26, 2022
- **WO/2022/112864** – Phytocomplex and extract of a meristematic cell line selected from *Punica granatum*  
Publication date: June 2, 2022
- **WO/2022/112862** – Phytocomplex and extract of a meristematic cell line selected from *Perilla frutescens*  
Publication date: June 2, 2022
- **WO/2022/112863** – Phytocomplex and extract of a meristematic cell line from *Rhus coriaria*  
Publication date: June 2, 2022
- **WO/2020/188533** – Phytocomplex and extract of a meristematic cell line selected from *Daucus carota sativa*  
Publication date: September 24, 2020
- **WO/2020/188531; JP2022527570** – Phytocomplex and extract of a meristematic cell line from a plant belonging to the genus *Rosa*  
Publication date: September 24, 2020
- **WO/2022/167375; EP2022703604** – Composition and method for the biofortification of food plants and biofortified food plants  
Publication date: August 3, 2022

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## Awards and recognitions

**Antico Fattore Award 2011**, conferred by the *Accademia dei Georgofili*

Awarded to Mario Pezzotti, Anita Zamboni, Mariasole Di Carli, **Flavia Guzzo**, Matteo Stocchero, Sara Zenoni, Alberto Ferrarini, Paola Tononi, Ketti Toffali, Angiola Desiderio, Kathryn Lilley, Enrico Pè, Eugenio Benvenuto, and Massimo Delledonne for the work:

*“Identification of putative stage-specific grapevine berry biomarkers and omics data integration into networks.”*

### **Motivation:**

The authors investigated grape berry development and post-ripening physiology. The study addresses key theoretical aspects through integrated transcriptomic, proteomic, and metabolomic analyses. The application of bioinformatic approaches enabled the identification of molecular processes underlying the qualitative characteristics of wine.

## **Research activity**

FG began her research activity focusing on various aspects of somatic embryogenesis, using in vitro carrot cell cultures as a model system. Through this work, she developed extensive expertise in the generation and management of plant cell cultures.

After moving to the University of Verona—home to the first Italian degree program in Biotechnology (Agro-Industrial Biotechnology)—she progressively oriented her research toward more applied aspects, while maintaining a strong interest in plant developmental biology. In this context, plant cell cultures were explored as potential platforms for the production of compounds of applied interest.

Plant specialized metabolites became the central focus of her research, both in terms of their biological roles in plant systems and their potential applications. Over time, her research group has been equipped with advanced analytical platforms for metabolite analysis, including HPLC-DAD, HPLC-MS (ion trap), and high-resolution UPLC-MS (QTOF), which are currently actively used and managed within the group.

Research activities subsequently expanded from in vitro cell cultures to the investigation of specialized metabolites in whole plant organs, including fruits, roots, and leaves.

In recent years, FG’s research has focused on three main areas:

1. The role of the indolamines tryptamine and serotonin in tomato
2. The evolution of plant specialized metabolism
3. The identification of specialized metabolites and/or phytocomplexes with novel bioactivities of potential application

Within the framework of the National Biodiversity Future Center (NBFC), Spoke 6 – Activity 2 (“Biomolecules and bioactivities”), coordinated at the national level by FG, her research group has developed a core collection of more than 700 plant species (MPL, Mediterranean Phytocomplex Library). These species were selected to represent the diversity of both non-vascular and vascular plant families of the Italian flora and have been systematically analyzed using LC–MS-based metabolomics.

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## **Books and book chapters**

-BERTA G., BRASILI E., DI SANSEBASTIANO GP., FORNI C., GAMALERO E., GUZZO F., LABRA M., LANFRANCO L., LINGUA G., MICCHELI A., PASQUA G., TRAINOTTI L., VALLETTA A., VISCONTI S. (2022) *Biotechnologie vegetali*. Ed. Piccin, Padova, ISBN 978829932849.

-SIMEONI E., FRACCAROLI M., TOFFALI K., CEOLDO S., LEVI M., GUZZO F. (2007). Elicitazione di colture in vitro di *Passiflora* per la produzione di metaboliti secondari. In: - *Culture artificiali di piante medicinali*. ROMA: Aracne, ISBN:9788854812451.

Altamura M.M., Biondi S., Colombo L., Guzzo F. (2007). *Elementi di biologia dello sviluppo delle piante*. ed. Edises, Napoli, ISBN: 9788879594035.

L.A. QUESADA ALLUE, B. CADENAS, K. HAGELIN, FLAVIA GUZZO, F.LO SCHIAVO (1995). Changes in the synthesis of unusual glycolipids during somatic embryogenesis in *Daucus carota*. In: *Plant Lipid Metabolism*, Kluwer Academic Publisher, Dordrecht, Netherlands, pp.242-246, ISBN: 9789048144983.

## **Supervision of undergraduate and graduate theses**

FG has supervised a large number of Bachelor's and Master's thesis students in the field of plant biology and biotechnology (non-exhaustive list), including:

E. Campagnari, M. Melotti, R. Grisi, K. Cantamessa, S. Barone, S. Zampieri, C.F. Guarnerio, A. Lillo, F. Andretta, P. Strazzer, M. Commisso, V. Giarola, S. Nicoletti, G. Baldan, M.L. Giarola, S. Mantovani, A. Gjoka, S. Dolci, F. Bauli, E. Simeoni, S. Poletti, A. Anesi, R. Arduini, E. Fazion, C. Pontoriero, S. Avesani, E. Gasparotto, G. Panzeri, G. Ardagna, M. La Cagnina, S. Gambini, F. Boscaini, V. Dagiati.

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## **PhD supervision and co-supervision**

FG has supervised and co-supervised several PhD students in plant biology and biotechnology, including:

C.F. Guarnerio, M. Fraccaroli, K. Toffali, M. Sega, P. Strazzer, A. Anesi, M. Commisso, F. Di Carlo, S. Negri, C.M. Marzo, F. Pietrolucci, G. Gambacorta, C. Ramos, L. Bisson, R. Greco.

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## **Editorial activity**

FG serves as Associate Editor of *Frontiers in Plant Science* and has previously been a member of the Editorial Board of *Biotechnology Letters*.

## **Peer-review activity**

FG has served as a reviewer for numerous international scientific journals in the fields of plant biology, metabolomics, biotechnology, and analytical chemistry, including:

*Analytica Chimica Acta, Australian Journal of Grape and Wine Research, Biotechnology Letters, BMC Research Notes, BMC Plant Biology, BMC Bioinformatics, Current Biology, Current Metabolomics, Environmental and Experimental Botany, Food Chemistry, Frontiers in Plant Science, International Journal of Molecular Sciences, Journal of Agricultural and Food Chemistry, Journal of Pharmaceutical and Biomedical Analysis, Journal of Plant Growth Regulation, Metabolites, Metabolomics, Molecules, Nature Communications, Scientific Reports, Phytochemistry, Plant Biosystems, Plant Cell Reports, Plant Molecular Biology, Plant Physiology and Biochemistry, Plant Tissue and Organ Culture, PLOS ONE, The Plant Genome.*

FG has also served as an expert evaluator for international funding agencies, including: the French National Research Agency (ANR), the Austrian Science Fund (FWF, in collaboration with ARRS), Genome British Columbia (Genome BC, Canada), and the Ontario Research Fund (Canada).

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## **Academic and administrative responsibilities**

**Since 2024** – Coordinator of the PhD Programme in Molecular, Industrial and Environmental Biotechnology, University of Verona

**2018–2021** – Member of the University Equal Opportunities Committee (Comitato Unico di Garanzia), University of Verona

**2012–2014** – Member of the Academic Senate, University of Verona

**2011** – Member of the Committee for the revision of the University Statute (following Italian Law 240/2010)

**1997–2001** – Member of the Board of Directors, University of Verona