

Associate Professor at the Department of Agricultural, Forest and Food Sciences (DISAFA) University of Turin. Vladimiro Cardenia's research involves food formulation, technology and analysis (with extensive use of chromatographic techniques), with a particular focus on innovation. His research activity mainly deals with the study and analysis of lipids, their degradation products and bioactive compounds, in model systems, *in vivo* and foods (of animal and non-animal origin), with a special emphasis on their stability. His research activities could be summarized in I) Chemical analysis of food and food-stuffs; II) Qualitative and quantitative determinations of bioactive compounds in agrifood by-products and wastes; III) Lipidomic analysis; IV) Lipid oxidation in food, in model and *in vivo* system.

He was part of the EU H2020 Project PLOTINA research team (2016-2020, GA n. 666008 (<http://www.unibo.it/en/research/projects-and-initiatives/research-projects-horizon-2020-1/plotina>)).

## Education

PhD Degree in Food Science and Biotechnology in 2010, defending a research thesis titled "Food lipids: their effects on quality and oxidative stability of animal tissues and emulsions".

In 2009 he carried out a research activity on oxidation of phospholipids in model systems, at the Department of Food Science, University of Massachusetts (UMass; Amherst, MA-USA).

Master Degree in Chemistry and Pharmaceutical Technologies in 2005.

## Academic career

From December 1<sup>st</sup>, 2018, he is Associate Professor at Department of Agricultural, Forest and Food Sciences (DISAFA), University of Turin.

In March 2017, he obtained the National Scientific Qualification as Associate Professor, sector 07 / F1, Food Science and Technology, valid from 28/03/2017 to 28/03/2023 (Article 16, paragraph 1, Law 240/10).

From 2016 to 2018, he was an adjunct Professor at the University of Bologna.

From 2010 to 2018 he was research fellow at University of Bologna.

## Teaching activities

From 2016 to 2018 he was adjunct Professor for teaching Food Technologies and Environmental Impact (University of Bologna).

From 2010 to 2018 he carried out training laboratory exercises for Food Chemistry Lab courses (University of Bologna).

From 2014 to 2016 he coordinated teaching activities for three editions of the Summer School at the University of Bologna:

- "Writing the Literature Review in Food Science and getting it Published: simple rules & simple tools";
- "Writing on food with Elsevier. How to publish in high impact factor journals: a practical workshop";
- "Writing and publishing the literature review in food science: a practical workshop".

In the Academic Years 2006/2007, 2007/2008, 2008/2009 he was assistant of research for teaching Food Chemistry Laboratory.

## Scientific activities

Participation in different national and international research projects:

- POR FESR 2014-2020 project "Food Crossing District. Simbiosi industriale: due nuovi alimenti da sottoprodotti ed una mappa delle relative economie circolari in Emilia Romagna";
- EU H2020 project proposal "Plat4Food - Platforms and processing technologies for Sustainable and Healthy Food";
- EU H2020 project proposal "GEDnERA – Gender equity and diversity for the new european research Area";
- EU H2020 project "PLOTINA - Promoting gender balance and inclusion in research, innovation and training" (2016-2020, GA n. 666008);
- EU H2020 project proposal "SINEU - An EU-China collaboration to foster food safety, transparency and consumer trust in processed agri-food products traded between both regions";
- PRIN 2015 project Prot. 20152LKFAT: "Olive phenols as multifunctional bioactives for healthier foods: evaluation of simplified formulation to obtain safe meat products and new foods with higher functionality";
- PRIN 2015 project Prot. 20158YJW3W: "Individual differences in the acceptability of healthy foods: focus on phenol and fat content";
- FARB 2012-2013 project "MEATING sensory and fast instrumental analyses of meat and meat products: an integrated approach for quality control and communication";
- PRIN 2008 project "Valutazione del trattamento di criomacerazione nella lavorazione delle olive sulla qualità degli oli e dell'effetto antiossidante dei fenoli recuperati dalla lavorazione delle olive sulla qualità dei lipidi di carni suine fresche ed insaccati";
- PRIN 2008 project "Nuove strategie di allevamento e di trasformazione delle carni per il miglioramento delle caratteristiche nutrizionali e tecnologiche e della sicurezza alimentare delle carni avicole";
- "Healthy Beef" project. Strategie per produrre carne bovina con caratteristiche salutistiche";
- EU project UE STREP FOOD CT-2004-007020 "Quality and safety of feeding fats obtained from waste or by-products from the food chain (Feeding Fats Safety)".

Several collaborations as 'project operations coordination' through research project contracts between University of Bologna and food/non-food companies.

Reviewer for several reviewed international and italian scientific journals in the field of Food Science and Technology and Food Chemistry.

Assistant Editor for the Journal of Food Composition and Analysis (ELSEVIER), from April 2014 to December 2016.

## Prizes and awards

- Best poster competition award, Society of Chemical Industry (SCI) London (UK), at "Waste not want not, Agri-food waste solutions for a hungry world" congress (London, UK; 2013).
- SISSG fellowship (10th Euro Fed Lipid Congress), Società Italiana per lo Studio delle Sostanze Grasse (Italy; 2012).
- Marco Polo Fellowship, Alma Mater Studiorum University of Bologna (Italy; 2009).

## Other activities

He is member of:

- **SISSG** (Società Italiana per lo Studio delle Sostanze Grasse)
- **EURO FED LIPID** (European Federation for Science and Technology of Lipids)
- **ENOR** (European Network on Oxysterol Research)

### **Most recent oral presentations at international and national congresses**

- 1) "**Durum wheat bran by-products for oil and phenolic acids: industrial symbiosis development**". Food Waste Recovery Workshop – ISEKI FOOD 2018 (Stuttgart, Germany) July 2<sup>nd</sup>, 2018.
- 2) "**Food Crossing District a way for new foods from by-products**". 15<sup>th</sup> Euro Fed Lipid Congress Oils, Fats and Lipids: New Technologies and Applications for a Healthier Life (Uppsala, Sweden) August 28<sup>th</sup>, 2017.
- 3) "**Alimenti tradizionali: gestione dell'impatto ambientale e performances**". Gestione Ambientale nella Produzione di Cibo Tradizionale – Agenzia per la Promozione della Ricerca Europea (APRE) (Cesena, Italy) 13 novembre 2015.
- 4) "**Lipid composition of gluten-free wafer snack present in the Italian market**". 13<sup>th</sup> Euro Fed Lipid Congress Fats, Oils and Lipids: New Challenges in Technology, Quality Control and Health" (Firenze, Italy) September 15<sup>th</sup>, 2015.
- 5) "**Cholesterol photosensitized oxidation products in foods systems**". 5<sup>th</sup> Euro-Global Summit and Expo on Food and Beverages (Alicante, Spain) June 17<sup>th</sup>, 2015.
- 6) "**How can carotenoids impact cholesterol oxidation in egg yolk?**" 12<sup>th</sup> Euro Fed Lipid Congress Oils, Fats and Lipids: from Lipidomics to Industrial Innovation (Montpellier, France) September 16<sup>th</sup>, 2014.
- 7) "**Effect of dietary thymol supplementation on lipid oxidation of chicken legs as related to storage conditions**". Animal Science and Production Association (ASPA) 20<sup>th</sup> Congress (Bologna, Italy) June 12<sup>th</sup>, 2013.
- 8) "**Struttura e stabilità di emulsioni olio/acqua: possibilità analitiche con lo Zetasizer Nano (Malvern)**". Alfatest Strumentazione Scientifica – Open Day (Cesena, Italia) 17 Maggio, 2013.
- 9) "**Effect of microwave heating on fatty acid methyl esters, as related to their unsaturation degree**". 10<sup>th</sup> Euro Fed Lipid Congress. Fats, Oils and Lipids: from Science and Technology to Health (Cracow, Poland) September 25<sup>th</sup>, 2012.
- 10) "**Fast gas chromatography/mass spectrometry: a valid alternative for the analysis of cholesterol oxidation products**". 1<sup>st</sup> ENOR Symposium, Oxysterols and Related Sterols in Chemistry, Biology & Medicine (Rome, Italy) September 23<sup>rd</sup>, 2011.
- 11) "**Antioxidant activity of 1,2-dioleoyl phosphatidylcholine in oil/water emulsions as related to concentration and pH**". 7<sup>th</sup> National Meeting "Fatty acids,  $\omega$ -3, CLA and Antioxidants" (Ancona, Italy) June 24<sup>th</sup>, 2010.

### **Most recent proceedings**

- 1) M. Zappaterra; **V. Cardenia**; D. Luise; V. Motta; R. Davoli; P. Bosi, **Colostrum fatty acid composition in sows belonging to three different Italian pig breeds**. ASPA 22<sup>nd</sup> Congress, Perugia (Italy), June 13 - 16, 2017. In: Book of Abstract - ASPA 22<sup>nd</sup> Congress, Perugia, Italian Journal of Animal Science, 2017, 16, pp. 168.
- 2) **V. Cardenia**; F. Tesini; M.T. Rodriguez-Estrada; T. Gallina Toschi, **Analyzing beef sexing and sex-related compounds in meat: a problem of authentication**. STEM Gender Equality Congress (SGEC), Berlin (Germany), June 8 – 9, 2017.

- 3) **V. Cardenia**; F. Vivarelli; S. Cirillo; D. Canistro; M. Paolini; M. T. Rodriguez-Estrada, **Does the electronic-cigarettes aerosol impact rat brain lipid profile?** ENOR 7<sup>th</sup> Symposium. Oxysterols and Sterol Derivatives in Health and Disease, Brussels (Belgium), September 21 – 22, 2017. In: ENOR 7<sup>th</sup> Symposium. Oxysterols and Sterol Derivatives in Health and Disease, Brussels, ENOR, 2017, pp. 42.
- 4) **V. Cardenia**; M. T. Rodriguez Estrada; T. Gallina Toschi, **Wheat bran: from by-product to new food products?** Food Innova, Cesena (Italy), January 31 – February 03, 2017. In: Food Innova 2017, 4<sup>th</sup> International Conference on Food Innovation, P1.41 – A364.
- 5) **V. Cardenia**; F. Vivarelli; S. Cirillo; D. Canistro; M. Paolini; M. T. Rodriguez-Estrada, **Dietary effects of Raphanus sativus cv Sango on lipid accumulation and oxysterols in rat brain: a lipidomic study on a non-genetic obesity model.** ENOR 6<sup>th</sup> Symposium. Current Trends in Oxysterols & Related Sterols: Biological and Medical Aspects, Paris (France), September 29 – 30, 2016. In: ENOR 6<sup>th</sup> Symposium. Current Trends in Oxysterols & Related Sterols: Biological and Medical Aspects, Paris, ENOR, 2016, pp. 68.
- 6) C. Pinna; C. G. Vecchiato; M. Grandi; **V. Cardenia**; M. T. Rodriguez-Estrada; M. Zini; G. Zaghini; G. Biagi, **In vitro evaluation of the effect of Yucca schidigera and chestnut tannins on composition and metabolism of canine and feline fecal microbiota.** 20<sup>th</sup> Congress of the ESVCN, Berlin (Germany), September 15 – 17, 2016. In: Proceedings of the 20<sup>th</sup> Congress of the ESVCN, Berlin, 2016, pp. 163.
- 7) **V. Cardenia**; J. Ortuno Casanova; R. Inchingolo; T. Gallina Toschi; S. Banos Arias; M. T. Rodriguez Estrada, **Sex approach on lipid and cholesterol oxidation research in lamb meat.** The 1<sup>st</sup> Food Chemistry Conference – Shaping the Future of Food Quality, Health and Safety, Amsterdam (The Netherlands), October 30 – November 1, 2016.
- 8) M. T. Rodriguez-Estrada; A. Zaazaa; S. Savioli; **V. Cardenia**, **Photooxidation of lipids and proteins of different types of raw meats during storage under commercial retail conditions.** 13<sup>th</sup> Euro Fed Lipid Congress. Fats, Oils and Lipids: New Challenges in Technology, Quality Control and Health, Frankfurt (Germany), September 27 – 30, 2015. In: 13<sup>th</sup> Euro Fed Lipid Congress. Fats, Oils and Lipids: New Challenges in Technology, Quality Control and Health, Frankfurt, Euro Fed Lipid, 2015, pp. 290.
- 9) R. Inchingolo; E. J. Leal-Castañeda; **V. Cardenia**; H. S. García; M. T. Rodriguez-Estrada, **Effect of microwave heating on phytosterol oxidation.** 13<sup>th</sup> Euro Fed Lipid Congress. Fats, Oils and Lipids: New Challenges in Technology, Quality Control and Health, Florence (Italy), September 27 – 30, 2015. In: 13<sup>th</sup> Euro Fed Lipid Congress. Fats, Oils and Lipids: New Challenges in Technology, Quality Control and Health, Frankfurt, Euro Fed Lipid, 2015, pp. 259.
- 10) **V. Cardenia**; M. T. Rodriguez-Estrada; M. Malaguti; S. Hrelia, **Effect of broccoli extract enriched diet on liver cholesterol oxidation in rats subjected to exhaustive exercise.** 5<sup>th</sup> ENOR Symposium. Oxysterols: Players in Different Metabolic Leagues, Rome (Italy), September 24 – 25, 2015. In: 5<sup>th</sup> ENOR Symposium. Oxysterols: Players in Different Metabolic Leagues, Roma, ENOR, 2015, pp. 40.
- 11) R. Inchingolo; **V. Cardenia**; M. T. Rodriguez-Estrada, **Comparative evaluation of volatile compounds in corn oil during long storage - a preliminary study.** 12<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Lipidomics to Industrial Innovation, Montpellier (France), September 14 – 17, 2014. In: 12<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Lipidomics to Industrial Innovation, Frankfurt, Euro Fed Lipid, 2014, pp. 241.
- 12) **V. Cardenia**; R. Inchingolo; M. T. Rodriguez-Estrada, **Analysis of plant sterols in enriched food by Fast gas chromatography/mass spectrometry.** 3<sup>rd</sup> MS Food Day, Trento (Italy), October 9 – 11, 2013. In: Book of Abstracts - 3<sup>rd</sup> MS Food Day, Trento, Fondazione Edmund Mach, 2013, pp. 220 – 221.
- 13) **V. Cardenia**; S. Peluso; A. Funaro; M. T. Rodriguez-Estrada; M. Petracci; C. Cavani, **Effect of dietary thymol supplementation on lipid oxidation of chicken legs as related to**

**storage conditions.** ASPA 20<sup>th</sup> Congress, Bologna (Italy), June 11 – 13, 2013. In: Book of Abstract - ASPA 20<sup>th</sup> Congress, Bologna, Italian Journal of Animal Science, 2013, 12, pp. 45.

- 14) R. Inchingolo; **V. Cardenia**; M. T. Rodriguez-Estrada, **Performance of vegetable oils during standardized domestic frying.** 11<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: New Strategies for a High Quality Future, Antalya (Turkey), October 27 – 30, 2013. In: Proceedings of the 11<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: New Strategies for a High Quality Future, Frankfurt, Euro Fed Lipid, 2013, pp. 401.
- 15) **V. Cardenia**; M. T. Rodriguez-Estrada; G. Lercker, **Comparison of Fast GC/MS and conventional GC/MS for the determination of cholesterol oxidation products.** 36<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda (Italy), May 27 – June 1, 2012. In: Proceedings of the 36<sup>th</sup> International Symposium on Capillary Chromatography, Messina, Chromaleont, 2012, pp. 230.
- 16) A. Funaro; **V. Cardenia**; M. Petracci; C. Cavani; M. T. Rodriguez-Estrada, **Effects of the rearing systems on the oxidative stability of chicken meat.** 9<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids for a Healthy and Sustainable World, Rotterdam (The Netherlands), September 18 – 21, 2011. In: 9<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids for a Healthy and Sustainable World, Frankfurt, Euro Fed Lipid, 2011, pp. 261.
- 17) **V. Cardenia**; T. Waraho; M. T. Rodriguez-Estrada; G. Lercker; E. A. Decker, **Antioxidant role of DOPC in stripped soybean oil-in-water emulsion as related to pH and DOPC concentration.** 8<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: Health & Nutrition, Chemistry & Energy, Frankfurt, Munich (Germany), November 21 – 24, 2010. In: Proceedings of the 8<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: Health & Nutrition, Chemistry & Energy, Frankfurt, Euro Fed Lipid, 2010, pp. 238.
- 18) T. Waraho; **V. Cardenia**; M. T. Rodriguez-Estrada; D. J. McClements; E. A. Decker, **Prooxidant Mechanisms of Free Fatty Acids in Stripped Soybean Oil-in-Water Emulsions.** 7<sup>th</sup> Euro Fed Lipid Congress. Lipids, Fats and Oils: From Knowledge to Application, Graz (Austria), October 18 – 21, 2009. In Proceedings of 7<sup>th</sup> Euro Fed Lipid Congress. Lipids, Fats and Oils: From Knowledge to Application, Frankfurt, Euro Fed Lipid, 2009, pp. LAMI-105.
- 19) **V. Cardenia**; M. Massimini; M. T. Rodriguez-Estrada; G. Lercker, **Effect of dietary supplementation on cholesterol photooxidation of beef meat, during storage under commercial retail conditions.** 6<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids in the 3rd Millenium: Challenges, Achievements and Perspectives, Athens (Greece), September 7 – 10, 2008. In: Proceedings of the 6<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids in the 3rd Millenium: Challenges, Achievements and Perspectives, Frankfurt, Euro Fed Lipid, 2008, pp. 376.
- 20) **V. Cardenia**; A. Poerio; F. Cumella; M. C. Venturini; M. Massimini; M. T. Rodriguez-Estrada; G. Lercker, **Effect of dietary supplementation on the photooxidative stability of lipids from beef meat, during storage under commercial retail conditions.** 5<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Science to Applications-Innovations for a better World, Gotheburg (Sweden), September 16 – 19, 2007. In: Proceedings of the 5<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Science to Applications-Innovations for a better World, Frankfurt, Euro Fed Lipid, 2007, pp. 217.
- 21) F. Cumella; M. Massimini; **V. Cardenia**; A. Poerio; M. T. Rodriguez-Estrada; G. Lercker., **Effects of dietary supplementation and storage conditions on the oxidative stability pork meat lipids.** 5<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Science to Applications-Innovations for a better World, Gotheburg (Sweden), September 16 – 19, 2007. In: Proceedings of the 5<sup>th</sup> Euro Fed Lipid Congress. Oils, Fats and Lipids: From Science to Applications-Innovations for a better World, Frankfurt, Euro Fed Lipid, 2007, pp. 219.