CURRICULUM VITAE

PERSONAL DETAILS

Gerard Farré Armengol
Date of birth: 5th of December of 1987
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Languages: Catalan, Spanish, English.
Driving license: yes

Academic Training:

2005-2010	Degree in Biology Universitat Autònoma de Barcelona
2010-2011	Master in Terrestrial Ecology Universitat Autònoma de Barcelona
2011-2015	PhD in Terrestrial Ecology, *Excellent Cum Laude* Universitat Autònoma de Barcelona

Research experience:

October 2011-March 2015	Completion of the doctoral thesis entitled “Biotic and abiotic factors that determine the emission of volatile organic compounds by flowers” at the Global Ecology Unit CREAF-CEAB-CSIC, studying the environmental factors that determine and modify the emission of VOCs by flowers, and the potential effects of changes in floral emissions on plant-pollinator interaction.
May 2015-November 2015	Research Assistant at the Global Ecology Unit, Center for ecological Research and Forestry Applications (CREAF), Spain.

Lines of Research:

My research focuses on the measure of VOC emissions from plants, and especially on floral scent. I am especially interested in understanding the factors that exert evolutionary pressures determining floral emissions at the species and population level, and also the environmental factors that affect these emissions at the organism and tissue level through their effects on plant physiology and VOC physicochemistry. I am also interested in exploring the effects of such changes in floral scents on the ecological interactions that these emissions mediate with diverse floral visitors (pollinators, larcenists, florivores).

To date, my experiments included the use of gas exchange systems (IRGA) to monitor flower physiology and sample floral volatiles, the use of GC-MS to measure VOC emissions and contents, and also the use of PTR-TOF-MS to measure VOC concentrations and emissions.

Publications:

Farré-Armengol, G., Filella, I., Llusià, J., Primante, C., Peñuelas, J., 2015. Enhanced emissions of floral volatiles by *Diplotaxis erucoides* (L.) in response to folivory and florivory by *Pieris brassicae* (L.). Biochemical Systematics and Ecology 63: 51-58.

Farré-Armengol, G., Peñuelas, J., Li, T., Yli-Pirila, P., Filella, I., Llusià, J., Blande, J.D., 2015. Ozone degrades floral scent and reduces pollinator attraction to flowers. New Phytologist (published online).

Farré-Armengol, G., Filella, I., Llusià, J., Niinemets, Ü., Peñuelas, J., 2015. Optimum temperature for floral terpene emissions tracks the mean temperature of the flowering season. Functional Plant Biology 42: 851-857.

Farré-Armengol, G., Filella, I., Llusià, J., Peñuelas, J., 2015. Pollination mode determines floral scent. Biochemical Systematics and Ecology 61: 44-53.

Sardans, J., Janssens, I.A., Alonso, R., Veresoglou, S.D., Rilling, M.C., Sanders, TGM, Carnicer, J., Filella, I., Farré-Armengol, G., Peñuelas, J., 2014. Foliar elemental composition of European forest tree species associated with evolutionary traits and present environmental and competitive conditions. Global Ecology and Biogeography 24: 240-255.

Farré-Armengol, G., Filella, I., Llusià, J., Josep, P., 2015. Relationships among floral VOC emissions, floral rewards and visits of pollinators in five plant species of a Mediterranean shrubland. Plant Ecology and Evolution 148: 90-99.

Peñuelas, J., Farré-Armengol, G., Llusià, J., Gargallo-Garriga, A., Rico, L., Sardans, J., Terradas, J., Filella, I., 2014. Removal of floral microbiota reduces floral terpene emissions. Scientific Reports 4: 6727.

Farré-Armengol, G., Filella, I., Llusià, J., Niinemets, Ü., Peñuelas, J., 2014. Changes in floral bouquets from compound-specific responses to increasing temperatures. Global Change Biology 20: 3660-3669.

Filella, I., Primante, C., Llusia, J., Martín González, A.M., Seco, R., Farré-Armengol, G., Rodrigo, A., Bosch, J., Peñuelas, J., 2013. Floral advertisement scent in a changing plant-pollinators market. Scientific Reports 3.

Peñuelas, J., Marino, G., LLusia, J., Morfopoulos, C., Farré-Armengol, G., Filella, I., 2013. Photochemical reflectance index as an indirect estimator of foliar isoprenoid emissions at the ecosystem level. Nature Communications 4.

Farré-Armengol, G., Filella, I., Llusià, J., Peñuelas, J., 2013. Floral volatile organic compounds: Between attraction and deterrence of visitors under glorbal change. Perspectives in Plant Ecology Evolution and Systematics 15: 56-67.

In preparation:

Farré-Armengol, G., Filella, I., Llusià, J., Peñuelas, J. Bidirectional interaction between phyllospheric microbiota and plant volatile emissions.

Presentations and events of scientific diffusion:

- June 2012. **Biogenic Hydrocarbons and the Atmosphere** (Congress) in Lewiston, Maine (United States). Presentation of the poster entitled “Floral BVOC emissions in relation to floral rewards and visits of pollinators in 5 plant species of a Mediterranean shrubland”, Farré-Armengol, G., Filella, I., Llusià, J., Peñuelas, J.

- January, 2015. **Imbalance-P conference PLECO Antwerp, and Global Ecology Unit CREAF-CSIC** (European Research Council Synergy grant ERC-2013-SyG-610028) in Barcelona (Catalonia,

Spain). Communication "Effects of nutrient availability on floral volatile emissions and flower pollination", Farré-Armengol G, Achotegui-Castells A.

Stays in foreign centers:

2013. Grant by the COST European research network Terrabites to conduct a stay of one month at Tartu (Estonia) doing a Short-Term Scientific Mission (STSM) to establish collaboration with the Department of Plant Physiology at the Estonian University of Life Sciences.

2014. Grant by the COST European research network GreenInUrbs to conduct a stay of two months at Kuopio (Finlandia) to establish collaboration with the Department of Environmental Science at the University of Eastern Finland.

Scholarships and Awards

June 2012 Gordon Research Conference on Biogenic Hydrocarbons & the Atmosphere (Lewiston ME, USA). Received funding for the travel ($1542) and free registration and accommodation.

March 2013 COST European research network Terrabites. Received a 2000€ grant to conduct a stay of one month at Tartu (Estonia) doing a Short-Term Scientific Mission (STSM) to establish collaboration with the Department of Plant Physiology at the Estonian University of Life Sciences leaded by Prof. Ülo Niinemets. Two publications in journals from the SCI resulted from this collaboration.

May 2014 COST European research network GreenInUrbs. Received a 2000€ grant to conduct a stay of two months at Kuopio (Finland) to establish collaboration with the Department of Environmental Science at the University of Eastern Finland. The recent acceptance of one publication in a journal from the SCI resulted from this collaboration.

Key Research Skills

• Measured several floral traits including floral volatile emissions, nectar production, pollen production and pollinator visitation rates to the flowers.

• Conducted several campaigns of sampling of plant volatiles in the field and in the lab. Included the use of several IRGA systems (LI-6400XT, Li-COR; LCi-SD, ADC Bioscientific; CIRAS-3, PP Systems) to sample leaf and flower volatiles.

• Conducted many analyses of plant volatile emissions with Gas Cromatography-Mass Spectrometry and also with PTR/PTR-TOF-MS. Included the identification and quantification of chemical peaks from GC-MS chromatograms and the statistical treatment of the abundant resulting data.

• Designed and managed the implementation of a very novel experimental system consisting of three reaction chambers to simulate the degradation of plant volatiles with distance under different ozone atmospheric concentrations.

• Collaborated for five years in the Catalan Butterfly Monitoring Scheme, identifying and counting the butterfly specimens once a week from March to September in an itinerary of 1km.