



I, the undersigned, asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di BIOSCIENZE**

Scientist- in - charge: LUCIA COLOMBO

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	MANRIQUE URPI
Name	SILVIA
Date of birth	26/04/2020

PRESENT OCCUPATION

Appointment	Structure
ASSEGNISTA TIPO A	DIPARTIMENTO BIOSCIENZE, UNIVERSITÀ DI MILANO

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	LAUREA IN BIOLOGIA	UNIVERSITÀ DI BARCELONA	2003
PhD	BIOCHIMICA BIOLOGIA MOLECOLARE	UNIVERSITÀ DI BARCELONA	2010

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
2018	Society of Experimental Botany (SEB)	International
2015	International association of sexual plant reproduction (IASPRR)	International
2014	Spanish Society of Biochemistry and Molecular Biology (SEBBM)	Madrid, Spain
2013	Catalan Society of Biology (SCB)	Barcelona, Spain



LANGUAGES

Languages	level of knowledge
SPANISH	NATIVE
CATALAN	NATIVE
ENGLISH	C1 LEVEL
ITALIAN	B2 LEVEL
JAPANESE	B1 LEVEL
PORTUGUESE	A2 LEVEL

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2018	3-year post-doctoral fellowship awarded by Università degli Studi di Milano (Assegno Tipo A)
2016	2-year post-doctoral fellowship awarded by Fundación Alfonso Martín Escudero (Spain)
2015	EMBO short-term fellowship
2005	4-year FPU (Formación de Personal Universitario) PhD grant from the Spanish Ministry of Science and Technology.
2003	Extraordinary Bachelors Award. University of Barcelona. Awarded to graduates of University of Barcelona that graduated with a overall qualification of "Excellent".

TRAINING OR RESEARCH ACTIVITY

January 2018 to present. **Postdoctoral researcher**, Università degli Studi di Milano (UMIL, UniMi), Milan, Italy. Financed by a postdoctoral grant from UniMi. Group leader. Prof. Lucia Colombo. Research topic: Evolutionary study of sporogenesis genetic regulation.

January 2016 to December 2017. **Postdoctoral researcher**, Università degli Studi di Milano, Milano, Italy (financed by an external grant from Fundación Alfonso Martín-Escudero). Group leader: Lucia Colombo. Research topic: Role of the REM transcription factor VDD in seed development.

January 2015 to December 2015 **Postdoctoral researcher**, Università degli Studi di Milano, Milano, Italy. Group leader: Simona Masiero. Research topic: Gynoecium development in Arabidopsis.

March 2014 to December 2014 **Postdoctoral researcher**, Universidad Federal de Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil. Group leader: Prof. Marcio Alves-Ferreira. Research topic: Involvement of REM transcription factors in flower development.

Jan 2010-Jan 2013 **Postdoctoral researcher**. Centre for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB. Barcelona, Spain. Group leader: Dr. Luisa Maria Lois. Research topic: Study of the biological role of SUMOylation during plant development and in response to environmental stress.

July-December 2009 **Research Associate**. Centre for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB. Barcelona, Spain. Group leader: Dr. Luisa Maria Lois. Research topic: Study of the biological role of SUMOylation during plant development and in response to environmental stress.

January 2004-January 2010. **PhD candidate**. Laboratory of Plant Molecular Genetics. Consortium CSIC-



IRTA. Barcelona, Spain. Supervisor: Dr. Blanca San Segundo. Research topic: Role of calcium-dependent protein kinases in the response to biotic and abiotic stresses in rice plants.

February-December 2003 **Research Assistant.** Laboratory of Plant Molecular Genetics. Consortium CSIC-IRTA. Barcelona, Spain. Supervisor: Dr. Blanca San Segundo. Research topic: Enhancement of growth and disease resistance in tobacco plants expressing the maize pathogenesis-related (PR) gene PRms. Generation by suppressive subtractive hybridisation of a library and a macroarray of genes expressed in response to *Magnaporthe oryzae* infection in rice.

July-August 2002. **Internship.** Department of Microbiology, Tufts University, Boston, US. Supervisor: Dr. Joan Meccas. Research topic: Study of virulence genes of the enteric pathogen *Yersinia pseudotuberculosis*.

March-May 2002. **Internship.** Dept. Plant Biology, Plant Physiology Section, University of Barcelona, Spain. Supervisor: Dra. M^a Isabel Trillas. Research topic: Evaluation of disease suppressing composts.

July 2000. **Internship.** Ecology Department, University of Barcelona, Spain. Supervisor: Dr. Josep Lluís Pretus. Research topic: Monitoring and management of biodiversity in S'albufera des Grau (Minorca, Spain) lagoon.

RESEARCH VISITS

February 2015 to December 2015. Visiting scholar at the laboratory of Prof. Franks at North Carolina State University (North Carolina, USA). Purpose of visit: producing a RNAseq data set from using pistil cells sorted by Fluorescence Activated Cell Sorting (FACS).

April 2017 to January 2018. Visiting scholar at the laboratory of Dr. Bombarely at Virginia Tech (Virginia, USA). Purpose of visit: producing several genomic datasets (RNAseq, HiC) in *Arabidopsis* and *Sinningia speciosa*.

April 2019 to June 2019 and January 2020 to March 2020. Visiting scholar at the laboratory of Prof. Higashiyama at the Institute of Transformative Biomolecules (ITbM) (Nagoya, Japan). Purpose of visit: analysis of gametophyte development of several mutant lines of *Arabidopsis thaliana* by live imaging.

PROJECT ACTIVITY

Year	Project
2000-2003	<u>Obtaining of transgenic plants showing resistance to pathogen infection or insect attack.</u> Transgenes for plant genetic improvement. Funded by the Ministry of Science and Technology of Spain . Responsible Researcher: B. San Segundo. Role: researcher.
2006-2009	<u>Regulatory roles of calcium-dependent protein kinases and microRNAs in plant defense responses.</u> A comparative study between <i>Arabidopsis thaliana</i> and rice plants. Funded by the Ministry of Science and Technology of Spain . Responsible Researcher: B. San Segundo. Role: researcher.
2007-2010	<u>Trilateral Initiative for Enhancing Salt TolerancE in Rice (TRIESTER).</u> Funded by ERA-NET PG (European Research Area-Plant Genomics) . Coordinator: B. San Segundo (2007-2010). Role: co-writer, researcher.
2008-2013	<u>Study of the role of protein posttranslational modification by SUMO (Small Ubiquitin-like Modifier) in abscisic acid signaling and stress responses in plant.</u> Funded by the European Research Council, Starting Grant Programme . Responsible Researcher: Luisa Maria Lois



	(2008-2013). Role: researcher.
2009-2011	<u>Role of SUMO during seed development</u> . Funded by the Ministry of Science and Innovation. Responsible Researcher: Luisa Maria Lois (2009-2011). Role: researcher.
2014	<u>Evolutionary Conservation of Regulatory Network Controlling Flower Development (EVO-CODE)</u> . Funded by ERA-NET PG (European Research Area-Plant Genomics) . Supervisor: M. Alves-Ferreira (partner). Coordinator: L. Colombo (2009-2014). Role: researcher.
2015	<u>The physiology and genetics of fruit formation: from genes to networks (FRUIT LOOK)</u> . Funded by ERA-NET PG (European Research Area-Plant Genomics) . Supervisor: S. Masiero. Coordinator: S. Masiero (2013-2018). Role: researcher.
2016-2020	<u>Sexual Plant Reproduction – Seed Formation (SEXSEED)</u> . Funded by ERA-NET PG (European Research Area-Plant Genomics) . Supervisor: L. Colombo. Coordinator: Silvia Coimbra (University of Porto). (2016-2020). Role: researcher and co-writer.

CONGRESSES AND SEMINARS

Date	Title	Place
11/2020	XV Plant Molecular Biology Meeting. Poster presentation.	Online
09/2019	17 th World Petunia Days. Organizer	Gargagno, Italy
06/2019	9 th Workshop on Molecular Mechanisms Controlling Flower Development. Oral presentation	Presqu' Ile de Giens, France
06/2018	Seeds of Change. Satellite meeting of SEB Annual Meeting. Poster presentation. Poster	Florence, Italy
09/2017	8 th Workshop on Molecular Mechanisms Controlling Flower Development. Poster	Padova, Italy
03/2017	16 th World Petunia Days	Amsterdam, Netherlands
03/2016	24 th International Congress on Sexual Plant Reproduction. Poster	Tucson, Arizona, US
02/2010	Molecular Aspects of plant development. Oral communication by B. San Segundo	Vienna, Austria
07/2007	XIII International Congress on Molecular Plant-Microbe Interactions. Oral communication by B. San Segundo	Sorrento, Italy
10/2006	4 th International Rice Functional Genomics Symposium	Montpellier, France
06/2006	VIII Plant Molecular Biology Meeting. Poster	Pamplona, Spain
06/2004	VII Plant Molecular Biology Meeting.	Malaga, Spain



06/2003	XIX International Conference on Maize and Sorghum (EUCARPIA). Poster	Barcelona, Spain
06/2003	7 th International Congress of Plant Molecular Biology. Organising committee	Barcelona, Spain

PUBLICATIONS

Articles in journals	
Cucinotta M, Cavalleri A, Guazzotti A, Astori C, Manrique S , Bombarely A, Oliveto S, Biffo S, Weijers D, Kater MM, Colombo L. Alternative splicing generates a MONOPTEROS isoform required for ovule development. <i>Curr Biol</i> 2020;Nov 25:S0960-9822(20)31737-1 Online ahead of print.	
Callizaya-Terceros G, Resentini F, Cucinotta M, Manrique S , Colombo L, Mendes MA. The importance of cytokinins during reproductive development in arabidopsis and beyond. <i>Int J Mol Sci.</i> 2020 21(21):8161.	
Manrique S , Friel J, Gramazio P, Hasing T, Ezquer I, Bombarely A. Genetic insights into the modification of the pre-fertilization mechanisms during plant domestication. <i>J Exp Bot.</i> 2019;70(11):3007-3019.	
Hasing T, Rinaldi E, Manrique S , Colombo L, Haak DC, Bombarely A. Extensive phenotypic diversity in the cultivated Florist's <i>Gloxinia</i> , <i>Sinningia speciosa</i> (Lodd.) Hiern, is derived from the domestication of a single founder population. <i>Plants, People, Planet.</i> 2019; 1: 363– 374. https://doi.org/10.1002/ppp3.10065	
Cucinotta M, Manrique S , Cuesta C, Benkova E, Novak O, Colombo L. CUP-SHAPED COTYLEDON1 (CUC1) and CUC2 regulate cytokinin homeostasis to determine ovule number in Arabidopsis. <i>J Exp Bot.</i> 2018 Oct 12;69(21):5169-5176.	
Castaño-Miquel L, Mas A, Teixeira I, Seguí J, Perearnau A, Thampi BN, Schapire AL, Rodrigo N, La Verde G, Manrique S , Coca M, Lois LM SUMOylation Inhibition Mediated by Disruption of SUMO E1-E2 Interactions Confers Plant Susceptibility to Necrotrophic Fungal Pathogens. <i>Mol Plant</i> 2017 10(5):709-720.	
Cucinotta M, Manrique S , Guazzotti A, Quadrelli NE, Mendes MA, Benkova E, Colombo L. Cytokinin response factors integrate auxin and cytokinin pathways for female reproductive organ development. <i>Development.</i> 2016 143(23):4419-4424.	
Mendes MA, Guerra RF, Castelnuovo B, Silva-Velazquez Y, Morandini P, Manrique S , Baumann N, Groß-Hardt R, Dickinson H, Colombo L. Live and let die: a REM complex promotes fertilization through synergic cell death in Arabidopsis. <i>Development.</i> 2016 143(15):2780-90.	
Villarino GH, Hu Q, Manrique S , Flores-Vergara M, Sehra B, Robles L, Brumos J, Stepanova AN, Colombo L, Sundberg E, Heber S, Franks RG. Transcriptomic Signature of the SHATTERPROOF2 Expression Domain Reveals the Meristematic Nature of Arabidopsis Gynoecial Medial Domain. <i>Plant Physiol.</i> 2016 171(1):42-61	
Castaño-Miquel L*, Seguí J*, Manrique S* , Teixeira MI, Carretero-Paulet L, Atencio F, Lois LM. Diversification of SUMO activating enzyme in Arabidopsis: implications in SUMO conjugation. <i>Mol Plant</i> 2013 6(5):1646-60 * have contributed equally to the work.	
Sonia Campo, Manrique S , J. García-Martínez, Blanca San Segundo. Production of cecropin A in transgenic rice plants has an impact on host gene expression <i>Plant Biotechnology J</i> 2008 6(6):585-608.	



Congress proceedings
Manrique S , Guazzotti A, Kurihara D, Higashiyama T, Colombo L. "Sporophytic control of synergid identity". XV Meeting of Plant Molecular Biology. 26-27 November 2020. Online. Poster.
Manrique S , Guazzotti A, Cavalleri A, Villarino GH, Franks RG, Colombo L. "New insights into female gametophytic development in Arabidopsis". Workshop on Molecular Mechanisms Controlling Flower Development, 18-22 June 2019, Presqu' Ile de Giens, France. Oral communication by L. Colombo.
Manrique S , Lopez F, Ferreira L, Mendes MA, Colombo L. "Regulation of sporogenesis through auxin-dependent pathways". Seeds of Change. Satellite meeting of SEB Annual Meeting, Florence (Italy). June 30-July 1, 2018. Poster.
Manrique S , Mendes MA, Rattaggi MM, Colombo L. "The REM transcription factor VERDANDI regulates seed development through CK level modulation". 8 th Workshop on Molecular Mechanisms Controlling Flower Development (WMMCFD), Padova, Italy. September 3-7 2017. Poster.
Manrique S , Guazzotti A, Villarino GH, Masiero S, Franks RG, Colombo L. "Identification of HDA19-regulated genes in STK-GFP expressing cells by FACS and RNAseq". 24 th International Congress on Sexual Plant Reproduction. March 18-23 2016. Tucson (AZ), USA. Poster.
Teixeira MI, Manrique S , Roig-Villanova I, Rodrigo N, Lois LM. SUMOylation during seed development and germination. Molecular Aspects of plant development. International Conference February 23-26 2010, Vienna, Austria. Poster.
Campo S, Manrique S , San Segundo B "Alterations in expression of endogenous genes in rice plants expressing a cecropin A gene" XIII International Congress on Molecular Plant-Microbe Interactions July 21 - 27, 2007 - Sorrento, Italy. Poster
Campo S, Manrique S , San Segundo B "Expression of inducible defense responses against pathogens in genetically engineered rice" 4th International Rice Functional Genomics Symposium, Oct 9-11, 2006 – Montpellier - France. Oral communication by B. San Segundo.
Campo S, Manrique S , García-Martínez J, San Segundo B "Expression analysis of genes involved in the defence response against <i>Magnaporthe oryzae</i> in transgenic plants expressing an antifungal gene" VIII Plant Molecular Biology Meeting, June 28th to July 1st 2006, Pamplona, Spain. Poster.
Murillo I, Bortolotti C, Roca R, Campo S, Manrique S , San Segundo B "Overexpression of the maize pathogenesis-related prms gene in tobacco increases sucrose efflux, improves growth and provides pathogen resistance" XIX International Conference on Maize and Sorghum (EUCARPIA) June 4-6, 2003 Barcelona, Spain. Oral communication by B. San Segundo.

OTHER INFORMATION



PROFESSIONAL SKILLS

Molecular genetics. Cloning techniques, Methods for obtaining and analyzing nucleic acids, techniques for gene characterization and expression analysis (*in situ* hybridization, qRT-PCR, RNAseq, ChIPseq), Protein analysis techniques (protein expression and interaction *in vitro* e *in vivo*).

Confocal microscopy. Proficiency in the usage of Nikon, Leica and Olympus confocal systems for high resolution imaging, spinning-disk and FRET-FLIM analysis, Live imaging (Yokogawa Cell Voyager).

Cell biology. Plant cell protoplasting and Fluorescence-Activated Cell sorting (FACSaria II (BD), MoFlo XDP (Beckman Coulter)).

***In vitro* culture and other plant related techniques.** *In vitro* culture of rice, Obtaining of transgenic plants (Arabidopsis and rice), Transient transformation (biolistics, agroinfiltration, protoplast transformation). Competence in experimentation related with flower, ovule and seed development (sample dissection, staining, etc).

Plant Pathology. Preparation and maintenance of fungal stocks, *In vitro* and *in vivo* assays, fungal growth and growth inhibition assays

Biostatistics principles and data analysis for molecular biology. Statistical methods: PCA, Pearson. RNAseq and ChIPseq analysis.

Project management. Proposal and article writing; Experimental design; Implementation; Impact and relevance analysis.

ACTIVITY AS A REVIEWER FOR INTERNATIONAL JOURNALS

2019. Reviewer for Molecular Genetics and Genomics (Springer).

TEACHING AND TRAINING OF STUDENTS

October 2020 to present. Supervision of Riccardo Ciminaghi's Master Thesis (Program: Biologia Evolutiva, Università degli Studi di Milano).

December 2019 to November 2020. Supervision of Andrea Movilli (grantee "borsa giovani promettenti", Università degli Studi di Milano).

May 2019. Teaching assistant. Functional live imaging of plants. EMBO Course. 21-30 May 2019. Nagoya, Japan.

October 2018 to October 2019. Supervision of Andrea Movilli's Master Thesis. (Program: Biologia Molecolare della Cellula, Università degli Studi di Milano).

October 2016 to October 2017. Supervision of Francesca Lopez's Master Thesis. (Program: Biologia Evolutiva, Università degli Studi di Milano). At present F. Lopez is a PhD candidate in the laboratory of Prof. Charles Spillane in NUIG (Ireland).

Jan 2010-Jan 2013 Training of Natalia Rodrigo (research assistant), Laura Castaño-Miquel (PhD student), Maria Ines Teixeira (PhD student) Arnau Rovira-Freixes (Master student) and Abraham Mas-García, (PhD student), all of them junior members of Dr. Lois lab, at CRAG (Barcelona, Spain).

2010 Supervision of Arnau Rovira-Freixes for a Biology Degree practicum. Research topic: production of constructs by Gateway cloning and generation and selection of *Arabidopsis* transgenic plants. A. Rovira Freixes obtained this PhD degree working at Dr. Monte laboratory at CRAG (Barcelona, Spain) and at present is a data scientist in Erni (Luzerne, Switzerland).

2007 Supervision of L. Montesinos Barreda's Biochemistry Degree Final Dissertation. Autonomous University of Barcelona, Barcelona, Spain. Dissertation: Analysis of genes regulating the defense response



in rice transgenic plants under environmental stress (catalan). At present, L. Montesinos Barreda is an associate professor in the University of Girona (Girona, Spain).

PARTICIPATION IN SCIENCE OUTREACH ACTIVITIES

Participant of 2016 edition of Pint of Science in Milan, Italy. (<https://pintofscience.it/>). Pint of Science is a non-profit organization run by volunteers born in 2012 in the UK that brings some of the most brilliant scientists to local pubs in different locations across Europe to discuss their latest research and findings with the general public.

Participant of 2015 edition of International Darwin Day in the North Carolina Museum of Natural Sciences as a visitor of Dr. Franks laboratory. (<http://darwinday.org/about/>) Several groups of the Department of Plant and Microbial Biology Department had stands in the NC-Museum of Natural Sciences where they explained their research and had activities for children like DNA extraction from strawberries Darwin Day is an international initiative born in 1995 which aims to inspire people to act on the principles of intellectual bravery, curiosity and scientific thinking embodied in Charles Darwin.

Participant of STEM Fridays as a visitor of Dr. Franks laboratory. STEM-Fridays (Strategies the Engage Minds) is an initiative of North Carolina government to foster a culture of inquiry among students and teachers by inviting researchers to speak about their research. In the event where Dr. Manrique participated, she and other members of Dr. Franks laboratory were invited to teach class to 5th graders on DNA and heredity in Aldert Root Elementary School (Raleigh, North Carolina). (<http://stematroot.weebly.com/stem-friday.html>)

Participant of "Experiments vius" ("Living experiments") workshop (October-November 2011, CRAG). Part of TalentLab experience (nota al pie: <http://www.talentlab.csic.es>), a laboratory for the creation of online science education resources joining scientists and teachers. This initiative wants to promote scientific creativity of students through educational proposals conceived by researchers and teachers together.

Collaborator, as a member of Prof. San Segundo's laboratory, with the canadian artist Annie Thibault in the production of the art exhibition "Beyond Science". The exhibition consisted in an arrangement of Petri dishes in which competing fungus have been grown as a metaphor of the comparison between a science laboratory and an artist's studio. Exhibition held at Metrònom Gallery-Rafael Tous Contemporary Art Foundation, Barcelona, Spain. From 3 December 2004 to 22 January 2005.

Participant of "Viu la Ciència Contemporània" ("Experience Contemporary Science") fair as a member of Prof. San Segundo's laboratory. May 2003, Catalan Society of Biology, Barcelona, Spain. This fair (annually held in Barcelona) intends to approach research and researchers to high school students and people in general and is held on a yearly basis in Barcelona.

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: Milan, 20/12/202

SIGNATURE