

**XXVII International EUCARPIA Symposium Section Ornamentals.
From Nature to Culture: Breeding Ornamentals for Sustainability
Genova (Italia) 2-5 July 2023**

02 JULY 2023

16h00-18h00 Welcome Reception and Registration

18h00-20h00 City tour

03 JULY 2023

8h00-9h00 Registration

9h00-9h30 Institutional Welcome

**9h30-12h50 Session I - Biodiversity and access to genetic resources
(Chairs: Neil Anderson; Rodrigo Barba-Gonzalez)**

9h30-10h00 *Keynote speech:*

From wild species to ornamental crops. A never-ending story

Rodrigo Barba-Gonzalez, CIATEJ a.c, Guadalajara (**Mexico**)

10h00-10h20 **Keith Allen Funnell**, Wayne Blissett (**New Zealand**): Ethical plant access – experiences in New Zealand

10h20-10h40 **Sajad Alipour**, Nasim Safari, Ramiar Majidi (**Iran**): Iranian *Dionysia*, domestication to commercialization (**YMA**)

10h40-11h00 Coffee break

11h00-11h30 *Keynote speech:*

Short notes on breeding using botanical species to produce innovative ornamental products

Flavio Sapia, Hybrida srl, Sanremo (**Italy**)

11h30-11h50 **Paul Arens**, Natascha van Lieshout, Martijn van Kaauwen, Linda Kodde, Michiharu Nakano, Richard GF Visser, Makoto Kusaba, Richard Finkers, Rene MJM Smulders (**The Netherlands**): Towards understanding the genome complexity of hexaploid *Chrysanthemum*

11h50-12h10 **Liesl Bower-Jernigan**, Neil Anderson (**USA**): *Chrysanthemum arcticum* subsp. polaré is genetically distinct from other taxa in the *Chrysanthemum arcticum* species complex

12h10-12h30 **Nasim Safari**, Ali Tehranifar, Mahdiyeh Kharrazi (**Iran**): *Iris ferdowsii*, a threatened and endangered Iranian Iris

12h30-12h50 **Rafael Aguirre Zarate**, Jose Merced Mejia-Muñoz, Teresa Colinas León, Ma.de Jesús Juárez Hernández, Juan Porfirio Legaria Solano, Keith Richard William Hammett (**Mexico**): Interspecific hybridization of *Dahlia* (Asteraceae) for the development of varieties with ornamental value

13h00-14h15 Lunch

**14h15-17h50 Session II- Strategies for breeding and selection of new sustainable ornamentals
(Chairs: Johan Van Huylenbroeck; Stephanie Saade)**

14h15-14h45 *Keynote speech:*

Sustainable production of greenhouse ornamentals using plant growth promoting bacteria

Michelle Jones, Ohio State University (**USA**)

14h45-15h05 **Philipp Franken**, Julia Brandes (**Germany**): The mycorrhiza responsiveness of a petunia RIL population is influenced by environmental and genetic factors

15h05-15h25	Mehrdad Akbarzadeh, Stefaan P.O. Werbrouck, Johan Van Huylenbroeck, and Emmy Dhooghe (Belgium): Breeding opportunities in Geraniaceae: Enhancing Genetic Diversity and Ornamental Traits (YMA)
15h25-15h55	Esther Geukens, Kurt Heungens, Erik Smolders, Leen Leus (Belgium): A bio-assay to screen <i>Ilex crenata</i> for tolerance to high soil pH and black root rot resistance
16h00- 16h20	Coffee break
16h20-16h50	Keynote speech: Genomic analysis of inflorescence development and double flowering in bigleaf hydrangea Lisa W. Alexander, USDA-ARS FNPRU, McMinnville (USA)
16h50-17h10	Ewout Van Oost, Katrijn Van Laere, Kathy Steppe, Peter Lootens, Bert De Rybel, Leen Leus (Belgium): Evaluation of frost tolerance screening methods to support hardy lavender breeding (YMA)
17h10-17h30	Andrea Copetta, Alex Alberto, Marina Laura, Mario Rabaglio, Fabio Fusco, Barbara Ruffoni (Italy): In vitro biotechnology to support anemone breeding (<i>Anemone coronaria</i> L.)
17h30-17h50	Juana Cordoba, Keith Funnell, Duncan Hedderley, Nick Roskruge, Ed Morgan (New Zealand): Nitrous oxide treatment increases the proportion of viable pollen and the pollen size in <i>Limonium perezii</i>
18h00-19h00	Poster session
19h00-19h30	Eucarpia business meeting
20h30- 22h30	Ligurian evening reception
04 JULY 2023	
8h00-9h00	Registration
9h00-9h30	Welcome by the representatives of ISHS and EUCARPIA Welcome by Arturo Croci, professional journalist of Floritecnica and columnist of Floraculture International
9h30-12h50	Session III: New Genomic Techniques and ornamental plant breeding- part I (Chairs: <i>Paul Arens; Kexuan Tang</i>)
9h30-10h00	Keynote speech: Gene editing to support breeding in ornamental species Jan G. Schaart, Wageningen UR Plant Breeding (The Netherlands)
10h00-10h20	Kexuan Tang, Xueqing Fu (China): Efficient genome editing in carnation (<i>Dianthus caryophyllus</i>) using CRISPR/Cas9 system
10h20-10h40	Wilco Ligterink, Stephanie Saade (The Netherlands): Genomic tools to enable development of new sustainable ornamental products
10h40-11h00	Coffee break
11h00-11h30	Keynote speech: Sustainability in ornamentals needs effective protection of Intellectual Property Edgar Krieger, CIOPORA, Hamburg (Germany)
11h30-11h50	Bixuan Cheng, Chao Yu (China): High-density genetic map construction and QTL analysis of flower colour traits based on a tetraploid rose genome (YMA)
11h50-12h10	Ellen De Keyser, Tom Eeckhaut, Jaroslaw Tyburski, Natalia Mucha, Katrijn Van Laere, Emmy Dhooghe (Belgium): Breeding for drought tolerance in <i>Chrysanthemum</i> with <i>Agrobacterium rhizogenes</i> as a natural gene-donor
12h10-12h30	Matteo Martina, Ezio Portis, Alberto Acquadro, Edoardo Vergnano, Lorenzo Barchi, Sergio Lanteri (Italy): The first reference genome of <i>Ranunculus asiaticus</i> L. reveals a key region for anthocyanin pigmentation (YMA)

12h30-12h50	Philipp Rüter, Thomas Debener, Traud Winkelmann (Germany): Unravelling the genetic basis of rose transformation with <i>Rhizobium rhizogenes</i> using a genome-wide association study (YMA)
13h00-14h15	Lunch
14h15-15h25	Session III: New Genomic Techniques and ornamental plant breeding- part II (Chairs: Jan G. Schaart; Lisa W. Alexander)
14h15- 14h45	<i>Keynote speech:</i> noncoding Genome- controlling plant morphology and flowering Prem L Bhalla , University of Melbourne, Parkville (Australia)
14h45-15h05	Tanja Harrass, Matthias Gundermann, Dr. Conny Tränkner (Germany): Towards genetic characterization of remontancy in <i>Hydrangea macrophylla</i>
15h05-15h25	Hilary Rogers, Matthew Casey, Ilaria Marchioni, Bianca Lear, Anthony Stead (UK): Using transcriptomics to identify gene markers for flower longevity in dahlias
15h25- 18h20	Session IV: Ornamentals for a suitable world (Chairs: Prem L Bhalla; Michelle Jones)
15h25-15h55	<i>Keynote speech:</i> Ornamental plants in different contexts that favor sustainability and quality of life Rossana Porta , Senior horticulturalist- plant designer, London (UK)
16h00-16h20	Coffee break
16h20-16h50	Bonifazio C., Valardo L., Tripi. S., Savona M., Mascarello C., Camerini L., Minuto L. (Italy): The use of psammophilous flora in the Mediterranean low-impact gardens (YMA)
16h50-17h10	Moumita Malakar, Margherita Beruto, S. Jayasavitha, S. Sankavi, S. Sivabalan (India): Drying, a sustainable way of bringing diversity in the ornamental sector (YMA)
17h10-17h30	Francesca Bretzel, Sara Gabellini, Francesca Papini, Silvia Scaramuzzi (Italy): Wildflowers valorise sustainable agriculture, local cultural identity and territorial development
17h30-17h50	Matteo Caser, Giulia Daniele, Nicole Sebesta, Elena Barni, Federica Larcher (Italy): New insights on management strategies for invasive species in urban environment and selection of new sustainable ornamentals
17h50-18h20	<i>Keynote speech:</i> "Flora & Green" are the new must in communicating your sustainable reputation Maurizio Abbati , expert in Environmental Communication and Sustainability; Sanremo (Italy)
18h30-19h30	Poster session
20h30-23h00	Gala dinner
05 JULY 2023 (The closing ceremony will be held at the Hanbury Botanical Gardens in XXmiglia (15h30-16h30) and the on-line connection will be established with the University of Genoa for people who will join tour 2 or will stay in Genoa)	
Technical tour (optional activity to be indicated in the registration form)	
Option 1	Visit to the floriculture companies in the West-part of Liguria Departure from Genoa, first stop at Albenga (SV). Visit to the farm " Azienda Agricola Biologica RaveraBio " (www.raverabio.com) which is located in Albenga, area renowned for the production of aromatic plants throughout Italy and abroad. The farm has a long tradition in the cultivation of several aromatic plants (basil, coriander, tarragon, chives, lavender, marjoram, mint, oregano, parsley, rosemary, rocket, sage, savory, thyme). No pesticides or herbicides are used and the farm got the certification Bioagricert . A recent innovation was achieved by the production of edible flowers. The packages of the products are environmentally friendly and are made with recycled, recyclable and biodegradable materials. During the visit,

Dr. Luca De Michelis, President of the Floriculture District, will introduce the participants to the Ligurian floriculture industry.

Second stop at Taggia (Imperia) to visit **Diemme Fiori** (www.diemmeexport.com), a company specialized in the production and import-export of dried flowers, ornamental plants, fresh green and fresh cut flowers. During the visit we will see the facilities for dried flowers and for dried essence used as home fragrance. The company has several certifications thanks to their attention to the sustainable production and the recycling. After lunch, we will move towards Ventimiglia (IM) to reach the **Hanbury Botanical Gardens** (<https://giardinihanbury.com/en/>), one of the main botanic gardens for acclimatization in this area of the Mediterranean operated by the University of Genoa. We will visit the plant collections with about 2500 taxa. Many of the species are plants from the six climate zones of the world. Major collections include agaves, aloes, and salvia, as well as fine old specimens of *Araucaria cunninghamii* (planted 1832), *Casimiroa edulis* (1867), olive trees, *Olmediella betschleriana*, and *Pinus canariensis* (1870). At Hanbury Botanical Gardens we will have the closing ceremony which will be held online connected with the University of Genoa where the Tour number 2 will end the visit.

Option 2

Visit to the historical gardens in Genoa

Visit to Villa Pallavicini in Genoa Pegli (<https://www.villadurazzopallavicini.it/en/>) and other gardens and parks in Genoa included the Botanical Garden of the University of Genoa. It will be possible to attend on line the closing ceremony held in person at Hanbury Botanical Gardens.

06 JULY 2023

Post- symposium tour

A post-symposium tour will be organized who will choose this optional activity.

POSTERS

Posters could be displayed from 02 July till 04 July 2023 in the poster room at the symposium venue. A specific link will be also provided to the participants to display the on-line posters.

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| P 1.1 | <i>Laphakorn Lertsutham, Klaus Olbricht, Tsu-Wei Chen, Ina Pinker (Germany):</i> <i>Linaria</i> Mill. - A genus with ornamental value and breeding potential |
| P 1.2 | <i>Ma de Jesús Juárez Hernández, Darcy Erandi Ramiro Alvarado, Juan Martinez Solis. M. Gisela Peña Ortega, José Mascorro Gallardo (Mexico):</i> Morphological characterization of amaryllis (<i>Hippeastrum</i> Herbert) genotypes |
| P 1.3 | <i>Mr. Senjiro Harada, Sho Yamamoto, Hayato Morimoto, Takafumi Sakomura, Yuta Abe, Tomoki Hotta, Miru Kawakubo, Hirokazu Yamamoto, Shogo Shukuya, Takashi Handa (Japan):</i> Genetic diversity of wild population and identification of uncertain cultivars of <i>Hydrangea serrata</i> by SSR analysis (YMA) |
| P 1.4 | <i>Andrea Copetta, Elena Balzani, Claudio Cervelli, Barbara Ruffoni (Italy):</i> Conservation, characterization and enhancement of accessions and species of the <i>Salvia</i> genus |
| P 1.5 | <i>Juan Martinez Solis, María de Jesús Juárez-Hernández, M. Gisela Peña-Ortega, Darcy Erandi Ramiro-Alvarado (Mexico):</i> Molecular characterization of amaryllis (<i>Hippeastrum</i> Herbert) |
| P 1.6 | <i>Edna Fabiola Valdez Hernandez, Roberto Carlos Rodriguez-Valdivia, Santos Gerardo Leyva-Mir, Jose Luis Rodriguez-De la O, Ma. de Jesus Juárez-Hernández, José Merced Mejía Muñoz (Mexico):</i> Determination of a protocol for the in vitro germination of <i>Tillandsia usneoides</i> |
| P 1.7 | <i>Amando Espinosa-Flores (Mexico):</i> Genetic improvement program of some ornamental mexican species at Autonomous University Chapingo |
| P 1.8 | <i>Mariola Plazas, Marina Martínez-López, Edgar García-Fortea, Pietro Gramazio, Santiago Vilanova, Jaime Prohens (Spain):</i> A new miniature dwarf eggplant with interest as potential ornamental plant |
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P 1.9	Renato Paiva, Afonso Ricardo de Souza, Patrícia Duarte de Oliveira Paiva (Brasil): Seed and embryo cryopreservation as strategy to ornamental plants and genetic resources conservation
P 2.1	Ewout Van Oost, Leen Leus, Katrijn Van Laere, Bert De Rybel, Kurt Heungens (Belgium): Screening for <i>Phytophthora</i> resistance in <i>Lavandula</i> spp (YMA)
P 2.2	Chao Yu (China): Analysis of secondary metabolome and Chinese medicinal components in rosehips based on widely targeted metabolome
P 2.3	Mehrdad Akbarzadeh, Ellen De Keyser, Stefaan Werbrouck, Johan Van Huylenbroeck, Emmy Dhooghe (Belgium): Compact hardy geranium by use of <i>Rhizobium rhizogenes</i> (YMA)
P 2.4	Leila Fazlikhani, Julia Schumache, Frauke Engel, Conny Tränkner (Germany): Identification of <i>Botrytis cinerea</i> tolerant plants of <i>Hydrangea macrophylla</i>
P 2.5	Shusheng Wang, Marie-Christine Van Labeke, Johan Van Huylenbroeck, Leen Leus (Belgium): Evaluation of pH tolerance in <i>Rhododendron</i> genotypes
P 2.6	Johan Van Huylenbroeck, Katrijn Van Laere, Leen Leus, Peter Lootens, Irene Borra-Serrano (Belgium): Woody ornamental breeding and selection assisted by UAV-imagery
P 2.7	Selene Citlalli Soria Arteaga, Rodrigo Barba Gonzalez (Mexico): Evaluation of the effect of Nitrous Oxide on the ploidy level of <i>Lisianthus (Eustoma grandiflorum)</i> (YMA)
P 2.8	Su Young Lee, Ka Youn Lee, Yae Jin Kim, Hye Ryun An, Se Jin Kim, O Hyeon Kwon (Korea-Republic of): Genetically modified ornamentals (ardisia, petunia, and rose) developed in National Institute of Horticultural and Herbal of Korea
P 2.9	Rodrigo Barba Gonzalez, Horacio Kenneth Vargas Merino, José Manuel Rodríguez-Domínguez, Ernesto Tapia-Campos (Mexico): Evaluation of the effect of nitrous oxide (N ₂ O) under pressure on the ploidy of <i>Tagetes erecta</i>
P 2.10	Federico Di Battista, Giulia D'Orazio, Marcello Militello (Italy): Rating <i>Eucalyptus</i> species for their adaptability as cut foliage production in Liguria
P 3.1	Ki-Byung Lim, Deepo Deen Mohamad (Korea- Republic of): Cytogenetic comparison of <i>Hibiscus syriacus</i> with <i>Hibiscus moscheutos</i> by FISH and Flowcytometry
P 3.2	Matteo Martina, Alberto Acquadro, Ezio Portis, Lorenzo Barchi, Sergio Lanteri (Italy): Application of K-seq genotyping protocol in <i>Ranunculus asiaticus</i> (L.) and <i>A. coronaria</i> (L.) (YMA)
P 3.3	Matteo Martina, Lorenzo Barchi, Davide Gulino, Fabio Brusco, Mario Rabaglio, Alberto Acquadro, Ezio Portis, Sergio Lanteri (Italy): Microsatellite-based identification of di-haploid plants by androgenesis in <i>Anemone coronaria</i> L.
P 3.4	Hilary Rogers, Rajhee Dhorajiwala, Paul Devlin, Walter Dewitte (UK): Approaches to understanding bud opening in lilies
P 3.5	Ka Youn Lee, Su Young Lee, Kyoung Ran Do, Se Jin kim, Hye Ryun An, O Hyeon Kwon, Yae Jin Kim (Korea- Republic of): Microscopic analysis of the stem surface and comparison of expression of MYB family transcription factors according to prickles formation stages in rose 'Pink Beauty'
P 3.6	Silvia Farinati, Angelo Betto, Gianni Barcaccia (Italy): How much is enough? Considerations on the use of microsatellite for genotyping ornamental plants
P 4.1	Mauro Mariotti, Costantino Bonomi, Sara Magrini, Gianluigi Bacchetta, Joe Bavcon, Valentino Casolo, Roberta Ceriani, Luciano Di Martino, Lara Dixon, Giuseppe Fabrini, Stefano Raimondi, Cristina Salmeri, Mariacristina Villani, Joseph Buhagiar, Antonia Cristaudo (Italy): Using selected Habitat European Directive species as garden plants: challenges and opportunities
P 4.2	Francesca Boero, Elena Zappa, Stefano Ferrari, Fernando Monroy, Mauro Mariotti (Italy): Role of botanic gardens for ornamental plants conservation through sustainable management: case studies at Hanbury Botanic Gardens (YMA)

P 4.3	Serena Viglione, Margherita Beruto (Italy): Succulent plant diversity as a boost for a sustainable Ligurian floriculture
P 4.4	Poonam Devi, Valeria Lobbi, Marina Laura, Andrea Copetta, Barbara Ruffoni, Angela Bisio (Italy): Metabolite production from hairy root biomass in <i>Salvia</i> spp (YMA)
P 4.5	Hanna Shin, Hae-Yun Kwon, Young-Im Choi (Korea- Republic of): Morphological characteristics of inflorescence and trunk in golden-rain trees (<i>Koelreuteria paniculata</i> Laxm.) selected for the development of novel street trees from six regions of Korea
P 4.6	Jose Merced Mejia-Muñoz, Miguel Rosales, Eliseo Sosa Montes, Claudio Flores Espinosa, Jesús A. Ramirez Vázquez (Mexico): <i>Dahlia parvibracteata</i> for agriculture and floriculture in Mexico
