

**XIII**

**EUCARPIA MEETING ON  
CUCURBIT GENETICS AND BREEDING**



**3 - 6 NOVEMBRE 2024**  
**VICO EQUENSE (NA) - ITALY**

**SCIENTIFIC PROGRAM**

# XIII

# EUCARPIA MEETING ON CUCURBIT GENETICS AND BREEDING

**SUNDAY, NOVEMBER 3<sup>rd</sup>**

- 14:30-18:00** Registration and Poster Setup  
**18:30** **OPENING CEREMONY**  
**18:30-18:45** Welcome and Opening of the Meeting  
**18:45-19:05** **Nadia Ficcadenti (Invited Speaker):**  
*Melon Genetic Research in Italy*  
**19:05-19:45** **Antonio J. Monforte (Invited Speaker):**  
*Introgression Lines in Melon Genetics Research*  
**19:45** **WELCOME COCKTAIL**

**MONDAY, NOVEMBER 4<sup>th</sup>**

## Session 1:

### CONSERVATION AND SUSTAINABLE USE OF GENETIC RESOURCES

Chairpersons: Rebecca Grumet, Tian Jiaying

- 09:00-09:40** **Ulrike Lohwasser (Invited Speaker)**  
*Plant Genetic Resources of Cucurbitaceae*  
**09:40-09:55** **Catherine Dogimont**  
*The selection of new valuable alleles during the melon domestication process in Sudan*  
**09:55-10:10** **Carlos Romero**  
*Phenotypic analysis of a Cucumis F2 interspecific population segregating for reproductive barriers*  
**10:10- 10:25** **Shigita Gentaro**  
*Museomics-based analyses reveal new crop wild relatives in the genus Cucumis*  
**10:25-10:40** **Concetta Lotti**  
*Management and valorization of germplasm of Apulian typical unripened melon*  
**10:40-11:00** **Harry S. Paris (Invited speaker)**  
*Southern Italy: Nativity of the Cocozelle Squash (Cucurbita pepo L. subsp. pepo, Cocozelle Group)*  
**11:00-11:30** **Coffee break and poster viewing (Session 1)**



## Session 2:

### GENOMICS APPROACHES FOR IMPROVING CUCURBIT CROPS

Chairpersons: Grzegorz Bartoszewski, Concetta Lotti

- 11:30-12:10 **Liu Wenge (Invited Speaker)**  
*Genetic Analysis of Nutrition, Texture and Flavor of Watermelon Fruits*
- 12:10-12:25 **Manuel Jamilena**  
*Development of a TILLING platform as a reverse genetic approach for functional genomics and plant breeding in Cucurbita pepo*
- 12:25-12:40 **Haibin Wu**  
*Luffa: Genome Sequencing, Germplasm Innovation, and Functional Gene Cloning*
- 12:40-12:55 **Shahar Nizan**  
*Expression of the melon NLR gene complement in response to multiple pathogens*
- 12:55-14:15 **Lunch Break**

## Session 2:

### GENOMICS APPROACHES FOR IMPROVING CUCURBIT CROPS (continued)

- 14:15-14:30 **Shuxia Chen**  
*Molecular mechanism analysis of aldehyde aroma in cucumber fruit*
- 14:30-14:45 **Daniele Liberti**  
*QTL stacking in Cucumis sativus to optimize resistance to ToLCNDV*
- 14:45-15:00 **Amit Gur**  
*Pan-genome and multi-parental framework for high-resolution trait dissection in melon (Cucumis melo)*
- 15:00-15:15 **Marta Pujol**  
*ETHQV8.1, encoded by ethylene-responsive transcription factor ERF024, regulates chromatin associated proteins before the onset of fruit ripening in melon*
- 15:15-15:30 **Prerna Sabharwal**  
*Exploration of Novel Genetic Resistance to Powdery Mildew in Cucurbita pepo Using Genome-Wide Association Studies*



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- 15:30-16:00 **Coffee Break and Poster viewing (Session2)**  
16:00-16:15 **Flavia Mascagni**  
*Comparative genome-wide analysis of repetitive DNA and its structural proximity to functional sequences in the genus Cucurbita*
- 16:15-16:30 **Jiaying Tian**  
*Global identification of fruit-related noncoding RNAs in pumpkin*
- 16:30-16:45 **Gregory Inzinna**  
*Mapping a Novel Resistance to Powdery Mildew in Cucurbita moschata Development of Markers for Varietal Improvement*
- 16:45-17:00 **Rita Dublino**  
*Unraveling powdery mildew resistance in Cucurbita pepo: a transcriptomic and genomic exploration of two contrasting cultivars*

**TUESDAY, NOVEMBER 5<sup>th</sup>**

## Session 3:

### PLANT RESPONSE TO BIOTIC AND ABIOTIC STRESS

Chairpersons: **Belen Pico, Giuseppe Andolfo**

- 08:30- 09:10 **Yuling Bai (Invited Speaker)**  
*Impairing plant susceptibility genes: what did/can we gain in cucurbits for resistance breeding*
- 09:10-09:25 **Henk Schouten**  
*DNA primase large subunit is an essential plant gene for geminiviruses, putatively priming viral ss-DNA replication*
- 09:25-09:40 **Shallu Thakur**  
*Genome editing strategies for improved powdery mildew resistance in cucurbits*
- 09:40-09:55 **Ana Montserrat Martín-Hernández**  
*Niemann-Pick C1 protein - A new player in Cucumber Mosaic virus infection in melon*
- 09:55-10:10 **Kevin Crosby**  
*Assessment of fruit quality and disease resistance in cantaloupe (Cucumis melo L.) hybrids developed at Texas A&M*
- 10:10-10:25 **William M. Wintermantel**  
*Emergence of watermelon chlorotic stunt virus and its impact on virus population structure and infection dynamics in southwestern U.S. melon and watermelon production*



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- 10:30-11:00 **Coffee Break and Poster viewing (Session3)**
- 11:00-11:15 **Božena Sedláková**  
*Application of a new differential set for virulence study on Czech cucurbit downy and powdery mildew populations*
- 11:15-11:30 **Onofrio Davide Palmitessa**  
*NFT with supplementary light as a technique to extend the production period of 'Scopatizzo' (Cucumis melo L.), even through the use of brackish water*
- 11:45-11:45 **Amnon Levi**  
*Genomic Prediction of Resistance to Fusarium Wilt (Fusarium oxysporum f. sp. niveum race 2) in Watermelon Using Parametric and Non-Parametric Approaches*
- 11:45-12:00 **Alejandro Flores-León**  
*Evaluation of cucumber (Cucumis sativus L.) for Drought Tolerance in Growth Chamber and Field Conditions*
- 12:00-13:30 **Lunch Break**
- 13:30 Departure for Excursion by Bus
- 19:00 Return to Hotel
- 20:30 Social Dinner



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WEDNESDAY, NOVEMBER 6<sup>th</sup>

## Session 4:

### QUALITY TRAITS IMPROVEMENT

Chairpersons: Antonio Monforte Manuel, Jamilena Quesada

- 09:00-09:40 **Bhimanagouda S. Patil**  
*(Invited Speaker): Evaluating Sensory Attributes and Health-Promoting Compounds in Hybrid Melon Varieties Across Different Cultivation Regions of the United States of America*
- 09:40- 09:55 **Rebecca Grumet**  
*Mining the cucumber core collection for genetic control of fruit quality traits*
- 09:55-10:10 **Jie Zhang**  
*Identification of flesh color controlling genes in watermelon*
- 10:10-10:25 **Xiaoxi Liu**  
*Fine mapping of McTu4.1 controlling fruit wart in bitter gourd*
- 10:25-10:40 **Cecilia Martínez**  
*GWAS and BSA-seq approaches reveal several genomic regions and candidate genes regulating carotenoid content in Cucurbita pepo fruit*
- 10:40-11:10 **Coffee Break and Poster viewing (Session4)**

## Session 5:

### INNOVATIVE TECHNIQUES FOR BREEDING

Chairpersons: Sara Sestili, Shuxia Chen

- 11:10-11:50 **Abdelhafid Bendahmane (Invited Speaker)**  
*Leveraging Translational Biology to Enhance Plant Breeding*
- 11:50-12:05 **Hiroshi Ezura**  
*In planta Particle Bombardment (iPB): A novel gene editing technology for efficient breeding of cucurbit crops*
- 12:05-12:20 **Yong Xu**  
*Application of Molecular Breeding in Watermelon*
- 12:20-12:35 **Geoffrey Meru**  
*Genetics and breeding of the hull-less seed pumpkin in Cucurbita*
- 12:35-13:00 **Closing Remarks**



## POSTER SESSION

## SESSION N. 1

## CONSERVATION AND SUSTAINABLE USE OF GENETIC RESOURCES

- P.1.1 Characterization & Preservation of Bottle Gourd Collections.**  
*Marlie Lukach, Zachary Stansell Moira Sheehan, Chutchamas Kanchana-udomkan, & Jean-Luc Jannink*
- P.1.2 Genetic diversity of the *Cucurbita maxima* accessions held at the Polish genebank.**  
*K. Kaźmińska, M. Mokrzycka, R. Słomnicka, G. Bartoszewski*
- P.1.3 Development of core collections for melon and cucumber in the NARO Genebank, Japan.**  
*Gentaro Shigita, Koichiro Shimomura, Tran Phuong Dung, Naznin Pervin Haque, Thuy Thanh Duong, Odirich Nnennaya Imoh, Yuki Monden, Hidetaka Nishida, Katsunori Tanaka, Mitsuhiro Sugiyama, Yoichi Kawazu, Norihiko Tomooka, Kenji Kato*
- P.1.4 Screening of cucurbits for resistance to *Neocosmospora falciformis* and genetic variation of *N. falciformis* isolates associated with Fusarium wilt disease in cucurbits.**  
*Ana Garcés-Claver, Oreto Fayos, Carmen Julián, R. Val, E. Sales, Wahida Gondi, Hela Chikh-Rouhou, Vicente González*
- P.1.5 Quality parameters of 'nugget' type *Cucurbita maxima* fruits under high-temperature stress.**  
*Milka Brdar-Jokanović, Biljana Kiproviski, Marko Kebert, Milana Matić, and Vladimir Sikor*
- P.1.6 Modulating the fruit morphology of traditional melon varieties through the introduction of genes identified in various introgression line libraries.**  
*Gorka Perpiña, Lorena Bellver, Carlos Alandes, Andrea Berruga, Manuel Campos, Cristina Esteras, Ana Pérez-de-Castro, Belén Picó, Antonio J. Monforte*
- P.1.7 Exploitation of traditional snake melon (*Cucumis melo* var. *flexuosus* L.) landraces cultivated in the Mediterranean basin.**  
*Al Achkar Nicolas, Arena Donata, Ben Ammar Hajer, Ciccarello Luca, Branca Ferdinando*



## SESSION N. 2

### GENOMICS APPROACHES FOR IMPROVING CUCURBIT CROPS

- P.2.1 Genetic mapping reveals candidate genes controlling plant architecture in cucumber.**  
*R. Słomnicka, K. Kaźmińska, M. Cieplak, D. Stokowiec, A. Korzeniewska, G. Bartoszewski*
- P.2.2 Analysis of the cucumber chloroplast genome and expression levels of plastid-encoded genes.**  
*Agnieszka Skarzyńska, Michalina Gałęziewska, Wojciech Pląder*
- P.2.3 Multi-omics characterization of cucumber line B10 in the context of male flower development.**  
*Szymon Turek, Aparna, Agnieszka Skarzyńska, Wojciech Pląder, Magdalena Pawełkowic*
- P.2.4 Interspecific hybridization in Cucurbita for improved disease resistance and novel traits.**  
*Yuqing Fu, Prerna Sabharwal, Swati Shrestha, Pamela Moon, Vincent N. Michael, Shallu Thakur, and Geoffrey Meru*
- P.2.5 Functional validation of the melon Fom-1 gene by CRISPR-Cas9 mutagenesis.**  
*Balasubramanian M, Nizan S, Bar-Ziv A, Perl-Treves R*
- P.2.6 Candidate genes in the melon Zym resistance locus: expression in transgenic cucumber and CRISPR-Cas9 mutagenesis.**  
*Simcha-Silverman Elleana, Mehlman Herschel, Adler-Berke Nastacia, Bar-Ziv Amalia, Perl-Treves Rafael*
- P.2.7 Developing Tm-shift markers for selected traits in Cucurbita spp.**  
*Sophie Banks, Jack Fabrizio, Gregor Inzinna, Michael Mazourek*
- P.2.8 The development of long shelf-life melon by using in planta Particle Bombardment (iPB), a genome editing technique.**  
*Kazuha Yamanaka, Naozumi Mimida, Kentaro Sasaki, Ryozo Imai, Hiroshi Ezura*





## SESSION N.3 - PLANT RESPONSE TO BIOTIC AND ABIOTIC STRESS

- P.3.1 The Emerging Viruses in Cucurbits Working Group: expanding stakeholder knowledge of cucurbit viruses in the United States.**  
*Rebecca A. Melanson and William M. Wintermantel*
- P.3.2 Screening cucurbit germplasm for resistance to *Macrophomina phaseolina*.**  
*Pérez-Moro Clara, Perpiñá Gorka, Pérez-de-Castro Ana, Picó Belén*
- P.3.3 Study of essential oils efficacy against pathogens occurred on cucurbit plants.**  
*Božena Sedláková, Markéta Hrabcová, Karolína Poláková and Aleš Lebeda*
- P.3.4 Screening a watermelon (*Citrullus lanatus*) germplasm collection for resistance to *Alternaria cucumerina*.**  
*Cristina Paredes-Machado, Dávid Papp, Gábor Balázs*
- P.3.5 Characterization and determination of aggressiveness of isolates of the fungus *Macrophomina phaseolina* identified in cucurbits.**  
*Paula Galarza-Jiménez, Eva María Martínez-Pérez, Virginia Hidalgo-Vargas, Vicente González-García, Ana Garcés-Claver, Belén Picó Sirvent, Ana Pérez-de-Castro*
- P.3.6 Occurrence of yellowing viruses infecting melons in Korea and molecular characterization of CCYV isolates.**  
*Hae-Ryun Kwak, Jong-Woo Han and Mikyeong Kim*
- P.3.7 Breeding program for the introgression of resistance to viral and fungal pathogens in traditional melon backgrounds.**  
*C. Pérez-Moro<sup>1</sup>, M. López-Martín, G. Perpiñá, L. Prósper, Á. López, L. Bellver, A. Berruga, C. Aandes, J. Cebolla-Cornejo, N.P.S. Dhillon, M.L. Gómez-Guillamón, B. Picó, A. Pérez-de-Castro*
- P.3.8 NAD: a case study of breeding for resistance to FOM in melon.**  
*Sara Sestili & Nadia Ficcadenti*
- P.3.9 High-throughput screening for salt tolerance in an EMS mutant collection of *Cucurbita pepo* and QTL-seq analysis of salt-tolerant mutants .**  
*Sonsoles Alonso, Keshav Gautam, Jessica Iglesias-Moya, Álvaro Benítez, María Segura, Alicia García, María del Mar Reboloso, Cecilia Martínez and Manuel Jamilena*



**P.3.10 - RNA-Seq analysis of salt-tolerant mutants reveals potential mechanisms responsible for salt tolerance in *Cucurbita pepo*.**

*Keshav Gautam, Sonsoles Alonso, Alicia García, María Segura, Álvaro Benítez, Cecilia Martínez and Manuel Jamilena*

**P.3.11 Deciphering the biosynthesis, regulation and distribution of cucurbitacins in *Cucurbita pepo*.**

*Alicia García, Alejandro Castro-Cegría, Ainhoa Ortegaa, Cecilia Martínezb, Francisco Palmaa, Manuel Jamilenab, Dolores Garridoa*

## SESSION N.4 - QUALITY TRAITS IMPROVEMENT

**P.4.1 Specialty Pumpkin Cultivars for Organic and Conventional Resilient Cropping Systems in Southern Puerto Rico.**

*Angela Linares-Ramírez*

**P.4.2 Unraveling the Interplay between Ethylene Synthesis, Aroma Volatiles and Respiration in Melon Fruit Ripening.**

*Sergio García-Carbonell, Miguel Santo Domingo, Jordi García-Mas, Igor Florez-Sarasa, Marta Pujol*

**P.4.3 CRISPR/Cas9 mutation of CmOFP13, a gene controlling fruit shape in *Cucumis melo* L.**

*Carlos Mayobre, Jordi Garcia-Mas, Marta Pujol*

**P.4.4 First results on the occurrence of cucurbitacins in an Apulian landrace of unripe melon (*Cucumis melo* L.).**

*Onofrio Davide Palmitessa, Andrea Castellaneta, Annalisa Somma, Adriano Didonna, Massimiliano Renna, Ilario Losito, Cosima Damiana Calvano, Tommaso R.I. Cataldi, Pietro Santamaria*

**P.4.5 The genetic mapping and candidate gene analysis of the major QTL controlling fruit length in *Luffa*.**

*Haibin Wu, Gangjun Zhao, Meng Wang, Caixia Luo, Junxing Li, Hao Gong, Xiaoming Zheng, Xiaoxi Liu, Jianning Luo*

- P.4.6** Recurrent excision of a hAT-like transposable element in CmAPRR2 leads to the 'Shooting Star' melon phenotype.  
*Wei Zhang, Shengjin Liao, Huolin Shen<sup>1</sup>, Yong Xu*
- P.4.7** Fruit qualitative evaluation of Chinese watermelon cultivar adapted for the mediterranean cold greenhouse conditions for the early production.  
*Al Achkar N., Grosso G., Spatafora M., Di Dio S., Ciccarello C., Garcia G., Branca F.*
- P.4.8** QTL Analysis of Major Effective Locus Related to Melon Seed Size.  
*Liu Shi, Fang Xufeng, Liu Hongyu, Luan Feishi.*
- P.4.9** Identification of genomic regions and candidate genes controlling postharvest cold tolerance in Cucurbita pepo.  
*Alejandro Castro-Cegría, Alicia García, Francisco Palma, Cecilia Martínez, Dolores Garrido, Manuel Jamilena*
- P.4.10** A mutation leads to the production of stenospermocarpic melon fruit " has been successfully completed and your data have been recorded properly.  
*Maria Florencia Cocaliadis*
- P.4.11** Agronomic Performance of DH Winter Type Melons (Cucumis melo L. var. inodorus).  
*Ilknur Solmaz, Pınar Adıgüzel, Mihriban Namlı and Nebahat Sari*









# XIII

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## SPONSORS



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