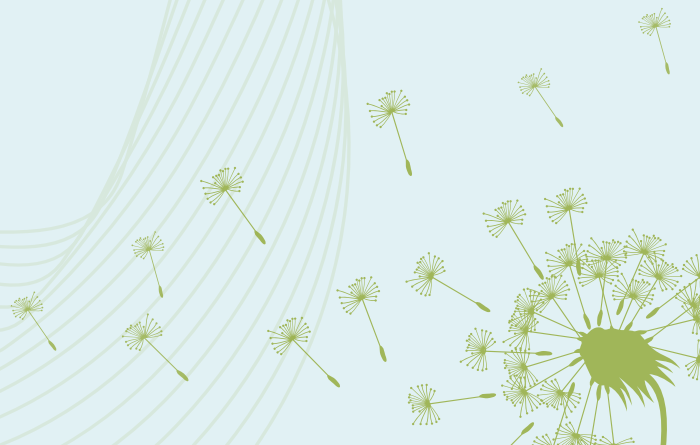


IV INTERNATIONAL CONGRESS ON APOMIXIS

December 3 - 7, 2023 • ROSARIO, ARGENTINA

Book of Abstracts



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The **IV International Congress on Apomixis Research** gave us the opportunity to celebrate 28 years of nonstop progress in this field since our first international meeting, which was held in Texas (USA) in 1995. After that, the apomixis community met in Como (Italy) in 2001, and Wernigerode (Germany) in 2007.

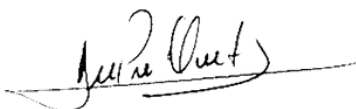
This conference brought together 80 participants coming from 18 different countries. The most represented communities were the argentinian and the italian ones, but there were also eminent professors and scientists from Albany, Australia, Bangladesh, Canada, China, Czechia, France, Germany, India, Mexico, Perú, Portugal, Switzerland, The Netherlands, The United Kingdom and The United States.

We discussed 47 scientific contributions and enjoyed the presentations of 16 invited speakers, 9 session talks selected from the submitted abstracts, 1 round table on scientific policies and a discussion session on perspectives. Finally, we organized an open-to-the-community session in order to share our work with the general public of all ages.

During their stay in Rosario, the attendees had the opportunity to visit some of the iconic places of the city. We hope they found this congress inspiring and went back home with creative new ideas, collaborations and friends, as well as an increased interest in their work.

We would like to thank the institutions and consortiums that provided financial and practical support to the event: the Italian Embassy in Argentina, the Italian General Consulate of Rosario, the Ministry of Foreign Affairs of Italy, the University of Milano, the Government of the Santa Fe Province, the National University of Rosario, the National Agency for the Promotion of Research, Technological Development and Innovation of Argentina, the National Council for Scientific and Technological Research of Argentina (CONICET), the Rosario Board of Trade and the Agricultural Science Foundation (FCA UNR). The congress organization has also received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No [872417], Project MAD and No No [101007438], Project POLYPLOID. We are also grateful for the support received from the Faculty of Agronomy of the National University of Rosario, the Research Institute of Agricultural Sciences of Rosario (IICAR), the Scientific and Technological Centre of CONICET Rosario (CCT Rosario) and the ROSCYTEC Foundation.

Finally, we would like to thank all the members of the Apomixis Argentina Group, for their valuable help during the organization of this event, and specially the people of the IICAR Plant Reproductive Development group.



Dr. Juan Pablo Ortiz
IICAR Director
Local Host



Dra. Silvina Pessino
IV International Congress on Apomixis
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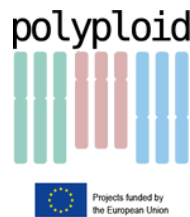
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P08

Development of KASP markers linked to apomixis in *Eragrostis curvula*

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Recently, our working group has built a new linkage map of the diplosporous grass *Eragrostis curvula*. For this purpose, a mapping population composed of 109 individuals was generated from the cross between the tetraploids OTA (sexual) and Don Walter (facultative apomictic pollen donor). This new population was genotyped with SNPs markers obtained through the DArT-seq technology. This technique has multiple advantages over other similar sequencing techniques (eg. GBS), since DArT-seq generates thousands of markers with high efficiency, due to the specific pipeline, the high fidelity restriction enzymes used and the intrinsic system of duplicate samples. Like other techniques, multiple pooled samples can be analyzed, reducing costs and time required, and it is possible to work without a reference genome.

In this new *E. curvula* linkage map it was possible to identify a region associated with apomeiosis (APO-locus) and three closely linked (100%) SNPs markers. Primers designed from the sequence of these SNPs allowed the development of KASP (Kompetitive allele specific PCR) markers able to differentiate between sexual and apomictic *E. curvula* plants (phenotyping).

KASP are codominant markers and the results obtained can be observed by fluorescence at the end of a PCR in a PHERAstar Plus equipment available at the GENeTyC laboratory (CERZOS-CONICET). First, the sequence of each SNP markers linked to the APO-locus was identified (69 bp) and the most appropriate regions for primer design were chosen. The Primer3Plus program was used and 5 sets of KASP primers were designed with specific "tails" for each one of the FAM and HEX alleles for the paternal and maternal alleles, respectively. These 5 sets of KASP markers were tested on the population parental lines and on a set of sexual and apomictic cultivars (20). Based on its efficiency one of these KASPs markers (K277) was selected and used to validate the phenotype of the offspring.

The KASP marker designed, despite being codominant, demonstrated its reliability to perform the phenotypic characterization, distinguishing between sexual and apomictic individuals. Sequences corresponding to SNP markers 100% linked to apomeiosis showed homology with genes, pointing at such genes as potential candidates to be involved in the regulation of the reproductive mode of this grass.

Keywords: KASP markers, phenotypic characterization, APO-locus.