

PlantEd



COST Action CA18111 "Genome Editing in Plants"

Book of Abstracts

3rd PlantEd conference

5 – 7 September 2022
Düsseldorf, Germany

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Logistics note

LOCAL ORGANIZERS



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Conference Program

3rd PlantEd conference

Dusseldorf, Germany – September 5-7, 2022

Monday September 5, 2022

Session Chair – Dennis Eriksson – Lecture Hall 6L

What do we know? – Technological advances

	Welcome Local Organizer Götz Hensel ; HHU Dusseldorf/Germany
09:00-09:15	Welcome Dean Faculty of Mathematics and Natural Sciences Peter Kleinebudde ; HHU Dusseldorf/Germany
	Welcome COST Action Chair Dennis Eriksson
09:15-09:40	Keynote Andreas PM Weber ; HHU Dusseldorf/Germany <i>Tackling grand challenges with plant sciences</i>
09:40-10:20	Keynote Jens Boch ; Hannover/Germany <i>TALEs, TALEN and TALE-base editors - tools, techniques and applications</i>
10:20-10:50	Coffee break – Botanical Garden
10:50-11:10	Ian Godwin ; QAAFI Centre for Crop Science/Australia <i>Editing the way to resilient high-value cereals</i>
11:10-11:30	Uriel Urquiza-Garcia , HHU Dusseldorf/Germany <i>BioDesign automation for optimal assembly of polycistronic sgRNAs and crRNAs</i>
11:30-11:50	Sruthy Maria Augustine ; Department of Plant Breeding, Giessen/Germany <i>Genome editing for crop improvement</i>
11:50-12:10	Sadiye Hayta ; John Innes Centre, Norwich/UK <i>Genotype Independent Wheat Transformation with GRF–GIF Protein Fusion</i>
12:10-12:30	José Hernandes-Lopes ; Universidade Estadual de Campinas/Brazil <i>Unlocking the genome editing potential for maize breeding in the tropics</i>
12:30-13:30	Lunch – Botanical Garden
13:30-13:50	Jan Schaart ; Wageningen University and Research, Wageningen/The Netherlands <i>Which Cas-enzymes work best for induction of targeted mutations?</i>
13:50-14:10	Virginia Zahn ; Thünen Institute of Forest Genetics, Grosshansdorf/Germany <i>Combining bacterial and viral elements for efficient gene targeting in poplar</i>
14:10-14:30	Mark Smedley ; John Innes Centre, Norwich/UK <i>Deploying CRISPR-Cas tools to design targeted mutagenesis in wheat</i>
14:30-14:50	Evelien Waegneer ; Institute of Agriculture, Fisheries and Food Research, Melle/Belgium <i>CRISPR and natural variation: complementary approaches for Cichorium haploid induction</i>
14:50-15:10	Jillis Grubben ; Wageningen University and Research, Wageningen/The Netherlands <i>Inducing kilobase to mega base-sized inversions in tomato using CRISPR/Cas9: The larger, the rarer?</i>
15:10-15:30	Teodoro Cardì ; National Research Council, Institute of Biosciences and Bioresources, Portici/Italy <i>Modification of potato mitochondrial DNA through mito-TALEN and targeted base editing</i>
15:30-16:00	Coffee break – Botanical Garden
16:00-18:00	PlantEd Working Group meetings (WG1-WG5)
18:30-22:00	Social dinner – Botanical Garden

3rd PlantEd conference Dusseldorf, Germany – September 5-7, 2022

Tuesday September 6, 2022

Session Chair – Katrijn Van Laere – Lecture Hall 6L

What can we do? Applications of Genome Editing

09:00-09:40	Keynote Rene Smulders; Wageningen University & Research, Plant Breeding, Wageningen/The Netherlands <i>Applications of new genomic techniques in plant breeding</i>
09:40-10:20	Keynote Matin Qaim; Center for Development Research (ZEF), Bonn/Germany <i>Possible socioeconomic implications of plant genome editing</i>
10:20-10:50	Coffee break – Botanical Garden
10:50-11:10	Cintia Marchetti; Czech Advanced Technology and Research Institute (CATRIN), Palacký University, Olomouc, Czechia <i>Using CRISPR-Cas9 to study and modify root system architecture in barley (<i>Hordeum vulgare</i> L.)</i>
11:10-11:30	Angelo Santino; Institute of Sciences of Food Production, Lecce/Italy <i>CRISPR/Cas9 mediated genome editing to develop Vitamin D-biofortified tomatoes</i>
11:30-11:50	Per Hofvander; Swedish University of Agricultural Sciences, Plant Breeding, Alnarp/Sweden <i>Trait development for unique starch quality in potato by multiallelic, multigene CRISPR-Cas9 mutagenesis</i>
11:50-12:10	Musa Kavas; Ondokuz Mayıs University, Samsun/Turkiye <i>Application of genom-editing in tomato</i>
12:10-12:30	Mahdi Morad Pour; Tallinn University of Technology, Tallinn/Estonia <i>DNA-Free Transcriptional Activation of Heat Stress-Responsive Genes in Red Cabbage using CRISPR/dCas9 Ribonucleoprotein Activators to Enhance Heat Tolerance</i>
12:30-13:30	Lunch – Botanical Garden
13:30-13:50	Alexander Fendel; Thünen Institute of Forest Genetics, Grosshansdorf/Germany <i>Improvement of drought stress tolerance in poplars (<i>Populus</i>) by modification of candidate genes</i>
13:50-14:10	Jeny Jose; Centre for Agricultural Research, Martonvásár/Hungary <i>Harnessing S-gene candidates for conferring resistance against <i>Ralstonia solanacearum</i> in potato</i>
14:10-14:30	Loredana Moffa; Research Centre for Viticulture and Enology, Conegliano/Italy <i>New Plant Breeding Techniques to enhance grapevine sustainability</i>
14:30-14:50	Kyoka Kuroiwa; INRAE Avignon, Avignon/France <i>An iterative gene editing strategy broadens <i>elf4E1</i> genetic diversity in <i>Solanum lycopersicum</i>, triggering resistance to several potyvirus isolates</i>
14:50-15:10	Allah Bakhsh; Centre of Excellence in Molecular Biology, Lahore/Pakistan <i>Addressing cold induced sweetening of potato through knock out of vacuolar invertase gene</i>
15:10-15:40	Coffee break – Botanical Garden
15:40-16:25	Keynote Thomas Jacobs; VIB, University of Gent, Center for Plant Systems Biology, Gent/Belgium <i>Systematic optimization and development of plant genome editing techniques</i>
16:30-18:15	MC meeting

3rd PlantEd conference

Dusseldorf, Germany – September 5-7, 2022

Wednesday September 7, 2022

Session Chair – Götz Hensel – Lecture Hall 6L

What do we think? – GE perception	09:00-09:45	Keynote Gabi Waldhof ; Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Halle/Germany <i>A Message of Hope? – Mitigating Polarization of Moral Debates about Genetic Engineering</i>
	09:40-10:30	Keynote Ewa Woźniak-Gientka ; Institute of Bioorganic Chemistry, Polish Academy of Sciences, Poznan/Poland <i>Public perception of plant gene technologies worldwide in the light of food security</i>
	10:30-10:50	Ayrton André Rosado Huaynasi ; KU Leuven, Leuven/Belgium <i>Interpreting Precision Breeding: Key legal concepts under international law and current domestic regulatory approaches</i>
	10:50-11:15	Coffee break – Botanical Garden
	11:15-11:45	Ruth Fisher ; F1000 <i>Open Research Europe, the European Commission’s Diamond open access publishing platform</i>

Session Chair – Vladislava Galovic – Lecture Hall 6L

STSM Session	11:45-12:00	Aurelia Scarano ; CNR, Institute of Science of Food Production, Lecce/Italy <i>CRISPR/Cas9-mediated genome editing for Vitamin D biofortification in Solanaceous species</i>
	12:00-12:15	Pouneh Pouramini ; University of Osnabrueck, Osnabrueck/Germany <i>Increased recombinant protein accumulation by targeted mutagenesis of HorB1 using CRISPR/Cas technology</i>
	12:15-12:30	Tetiana Kyrpa ; Institute of Cell Biology and Genetic Engineering of NASU, Kyiv/Ukraine <i>Potato gene editing for improved pathogen resistance</i>
	12:30-12:45	Alessia Cuccurullo ; Italy <i>Characterization of root architecture and of interactions with AM fungi of tomato edited lines for the strigolactone biosynthesis</i>
	12:45-13:00	Poster prizes
	13:00-14:00	Lunch – Botanical Garden

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Abstracts

Poster 15

Dragana Miladinović, Sandra Cvejić, Siniša Jocić, Aleksandra Radanović, Milan Jocković, Boško Dedić, Sonja Gvozdenac, Nada Hladni, Ankica Kondić-Špika

Institute of Field and Vegetable Crops, Novi Sad, Serbia

(Epi)Genome Editing – Potential Tool for Increasing Crop Resilience

Recent progress in epigenetic studies paved the way for exploitation of epigenetic variation in crop breeding. Understanding epigenetic mechanisms and variation within a certain crop could potentially help plant breeders to generate new, more resilient varieties through the exploitation of the epigenetic variation existing in crop plants. In addition, environmental buffering effects of epigenetic mechanisms could be used to achieve yield stability in a fast-changing environment leading to more resilient agricultural production. For this purpose, within the framework of ongoing projects SmatSun and CROPINNO, we are developing two approaches for exploitation of epigenetic variation in IFVCNS breeding programs: (i) Epi-breeding, with identification of molecular markers and epigenetics marks for breeding of resilient genotypes by combining and integrating phenotyping and anatomical data with molecular and epigenetics data, along with introduction of epigenetic tools, such as epiQTLs and (ii) (Epi)genome editing and alteration of identified epigenetic marks at a specific locus using CRISPR-based genome editing protocols. These two approaches are expected to lead to the development of new, more resilient crop varieties that would ensure stable and sustainable agricultural production ready to meet future market and environmental challenges.

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