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3rd EPI-CATCH CONFERENCE

CA19125 - EPIGENETIC MECHANISMS OF CROP ADAPTATION TO CLIMATE CHANGE

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SOFIA, BULGARIA

ABSTRACT BOOK

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***CONFERENCE VENUE*:**

BULGARIAN ACADEMY OF SCIENCES
'PROF. MARIN DRINOV' HALL
15 NOEMVRI STR., NO1
SOFIA, BULGARIA

***LOCAL ORGANISER*:**

INSTITUTE OF PLANT PHYSIOLOGY AND GENETICS

***LOGISTIC SUPPORT*:**

JOINT INNOVATION CENTRE
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Dear Conference Participants,

A warm welcome to the 3rd EPI-CATCH Conference in the vibrant city of Sofia, Bulgaria!

EPI-CATCH is a COST action focused on advancing the understanding of epigenetic mechanisms underlying plant adaptation to environmental stresses driven by climate change. Our primary objective is to establish a pan-European framework for networking in the field of plant epigenetics. Through collaborative efforts, we aim to define and develop innovative knowledge and methodologies for investigating these epigenetic mechanisms.

EPI-CATCH operates through several Working Groups that focus on specific areas of research and collaboration:

WG1: Plant stress epigenetic responses

WG2: New frontiers and concepts

WG3: Methodologies and workflows

WG4: Dissemination and communication

The 3rd EPI-CATCH Conference presents an exceptional opportunity for researchers to share, discuss, connect and stay updated on the latest research in plant epigenetics. The conference will encompass several sessions focused on key aspects in the field:

1. Plant epigenetic responses to environmental stresses;
2. New concepts and frontiers in epigenetics;
3. Advances and approaches in plant epigenetics for crop improvement.

Following the conference, a Management Committee meeting will be held to review the activities throughout the third year of the Action. This meeting will also plan other EPI-CATCH events, such as training schools, workshops, and Short-Term Scientific Missions.

We wish all the attendees an inspiring conference and productive discussions!

COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. COST Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

Epigenetic drivers of sunfower drought tolerance

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Abstract

Drought as a major abiotic stress induces numerous, complex responses in plant cells. Those include gene expression alteration, accumulation of different metabolites, and synthesis of specific proteins. Changes on a molecular level are under the control of complex regulatory pathways that include epigenetic mechanisms responsible for suitable and fast reactions to newly occurring stress conditions. Epigenetic modifications cause gene expression alteration through histone posttranscriptional modifications, DNA methylation, and small RNAs and lncRNAs expression. Some of these epigenetic modifications might pass on to the next generation and thus providing a good basis for a quicker response to drought stress. Revealing the epigenetic mechanisms involved in stress response could be of use in breeding programs for a prompt adaptation of plants to stress conditions. Hence, we have tested 30 sunflower inbred lines created at the Institute of Field and Vegetable Crops (IFVCNS) in in vitro conditions using PEG 6000 for creating a smaller panel of genotypes for analyzing their transcriptome alterations induced by drought. Ultimately, we will explore non-coding RNAs, namely sRNA and lncRNA for the identification of differentially expressed non-coding transcripts associated with drought tolerance in sunflower. Moreover, we will investigate their potential target genes and identify important epiQTLs that may be promising in epi-breeding of drought tolerant sunflower.

Keywords: *Helianthus annuus* L., drought, small RNA, lncRNA, epiQTLs

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