

WEB-Training course on *Advanced genotyping*

June 2021, Tuscia University, Via S. Camillo de Lellis, snc – 01100 Viterbo – Italy

Program

Day 1

Monday 21 June 2021

9.00 **Welcome and introduction** from the course organizers: Mario A. Pagnotta

Welcome address:

Stefano Ubertini, Tuscia University Rector.

Nicola Lacetera, DAFNE Director.

Enrico Pè, President of the Italian Society of Agricultural Genetics (SIGA).

09.15 **Presentation of the ECOBREED project**, Vladimir Meglič, ECOBREED Coordinator

What is Genotyping, Mario A. Pagnotta, and Ljiljana Kuzmanovic (Tuscia University, Italy)

9.30 **Part I:** Markers and marker-assisted selection (MAS): Principles, procedures, advantages and shortcomings.

11.00 Coffee break

11.15 **Part II:** Overview of Quantitative Genetics, Population genetics and HW equilibrium.

12.45 Discussion and remarks

13.00 Lunch

14.00 DNA bank use and advantages. Marco Simeone (Tuscia University, Italy).

15.00 **From isoenzyme to NGS, the development of molecular markers in tomato.** Andrea Mazzucato (Tuscia University, Italy).

16.00 Coffee break

16:15 **Practical use of HRM Corbett Rotor-Gene machine.** Luca Bonfiglioli (Tuscia University, Italy)

17:30 Discussion and remarks

Day 2
Tuesday 22 June 2021

9.00 **Genotyping genome-wide based on SNP array, NGS, mapping-by-sequencing.** Silvio Salvi (University of Bologna, Italy)

10.00 **KASP, HRM to genotyping specific loci.** Silvio Salvi (University of Bologna, Italy)

11.00 Coffee break

11.15 **Practical approach to use of specific software for the design of essays.** Silvio Salvi (University of Bologna, Italy)

12.15 Discussion and remarks

12.45 Lunch

13.45 **Phylogenetic and NGS.** Marco Simeone (Tuscia University, Italy)

14.45 **How to manage the somaclonal variation.** Rosario Muleo (Tuscia University, Italy).

15:45 Coffee break

16.00 **Genetic-molecular detection of phytopathogenic microorganisms.** Giorgio Balestra and Sara Francesconi (Tuscia University, Italy)

17.00 **Biochemical and physiological mechanisms of resistance to stress and their identification** Stefania Astolfi (Tuscia University, Italy)

18:00 Discussion and remarks

Day 3
Wednesday 23 June 2021

09.00 **CRISPR/Cas experimental design and applications of plant genome editing -** Francesco Sestili and Francesco Camerlengo (Tuscia University, Italy)



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11.00 Coffee break

11.15 **Designing resource-efficient durum wheat ideotypes for organic farming systems.** Pasquale De Vita (CREA, Research Centre for Cereal and industrial Crops, Foggia, Italy) and Francesca Taranto (CNR-IBBR Institute of Bioscience and BioResources)

13.15 Lunch

14.15 **Practice: PCR on tissue and use of SCAR markers in tomato for mapping and marker assisted selection.** Andrea Mazzucato (Tuscia University, Italy) and Emidio Albertini (University of Perugia, Italy).

15.15 Coffee break

15.30 **Epi-breeding** Emidio Albertini (University of Perugia, Italy).

17:15 Discussion and remarks

Day 4

Wednesday 24 June 2021

8.45 **Diagnostics and advanced molecular characterization of plant pathogens.**
Angelo Mazzaglia (Tuscia University, Italy)

10.45 **Lab: Diagnostics and advanced molecular characterization of plant pathogens.**
Angelo Mazzaglia (Tuscia University, Italy)

11.30 Coffee break

Mass Spectrometry. Annamaria Timperio (Tuscia University, Italy)

11.45 **Part I:** Principles of mass spectrometry with application to proteomics and determination of the amino acid sequence with tandem mass spectrometry.

12.45 Lunch

13.45 **Continuing Part I**

15.15 Coffee break

15.30 **Part II: Mass Spectrometry, lab practices. Analysis and amino acid sequence**



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laboratory in bovine serum albumin mass spectrometry (BSA) using MASCOT Annamaria Timperio (Tuscia University, Italy)

17:30 Discussion and remarks

Day 5
Wednesday 25 June 2021

Bioinformatics. Silvia Turco (Tuscia University, Italy).

9.00 **Part I: Bioinformatics approach using R: a basic introduction**

11.00 Coffee break

11.15 **Continuing Part I**

13.00 Lunch

14.00 **Part II: Bioinformatics: case of studies.** Silvia Turco (Tuscia University, Italy).

16:00 Discussion and remarks

17.00 questionnaire

17.30 **Closing remarks.** Mario A. Pagnotta (Tuscia University, Italy)