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 (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,
15.00 From isoenzymes 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)

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

17:30 Discussion and remarks

Day 5
Friday 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)