



FunShield4Med  
SECURING FOOD

# NEWSLETTER

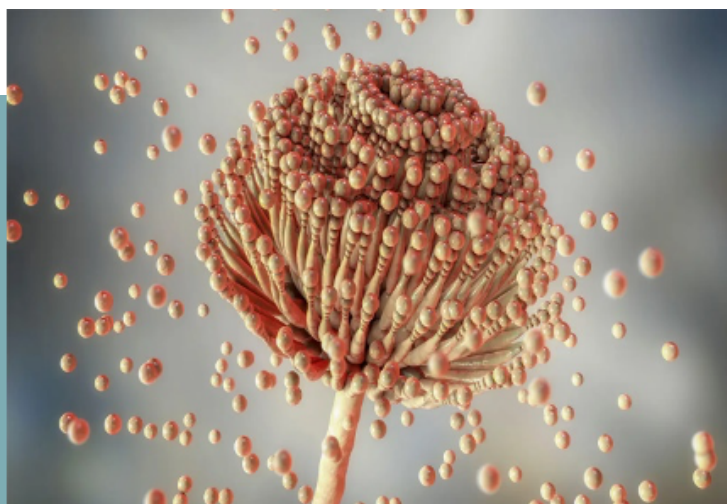
Volume 3



Dr P. Natskoulis  
(ELGO, COO)

## Short message from the Coordinator

Capability building through training and external engagement is at the heart of our mission. Together with our partners, we develop and deliver food safety training programs that raise awareness and promote best practices. By leveraging the expertise of a European network of universities and research institutions, we exchange knowledge and continuously elevate food safety standards.



Fungi play a major role in contaminating food due to their diverse nature and ability to grow at any stage of the food chain, while their mycotoxigenic potential is influenced by various factors such as environmental conditions, crop type, and storage conditions. The objective of the FunShield4Med project is to enhance the scientific excellence and innovation capacity of the Institute of Technology of Agricultural Products (ITAP) of Hellenic Agricultural Organisation – DIMITRA (ELGO-DIMITRA) in the domain of food safety against mycotoxigenic spoilage fungi and mycotoxins in the face of climate change challenges, through a strategic collaboration with advanced partners from Italy, Spain, the UK, and Greece, thereby facilitating the transfer of knowledge and expertise.



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In this project Cranfield University has received funding from the UKRI Horizon Europe Guarantee Funding Programme in the UK

SEMINAR 3, FRIDAY, JULY 21, 2023

ITAP CAMPUS, ATHENS, GREECE

The third seminar explored important issues related mycotoxin contamination, with distinguished speakers from the University of Parma (UNIPR) and the National and Kapodistrian University of Athens (NKUA) leading the discussions.



Figure 1: Attendees of Seminar held at ITAP campus

**Prof. C. Dall’Asta from UNIPR** focused on addressing the emerging concerns of certain mycotoxins that lack regulatory limits while she also talked about Fusarium mycotoxins, the involved food commodities and the evolving European legislation aimed at controlling them.



Figure 2: Prof. Chiara Dall’ Asta during her lecture at ITAP campus in the context of Seminar 3

**Dr. F. Roumani from NKUA** provided insights into cutting-edge techniques, focusing on innovative methods for the detection of mycotoxigenic fungi. She also led a hands-on experiment, giving participants practical experience in molecular biology techniques that are crucial for identifying harmful fungal strains in food products.



Figure 3: Dr. F. Roumani delivering her lecture during the seminar held at the ITAP campus

SEMINAR 4,

JUNE 25, 2024

ITAP CAMPUS, ATHENS, GREECE

This seminar focused on key aspects of the impact and management of mycotoxins in the agricultural sector, featuring insights from leading experts. Prof. F. Molino from the University of Lleida highlighted the effects of mycotoxins on livestock health and productivity, while Dr I. Texeido presented work of Prof. A.J. Ramos, also from the University of Lleida, exploring strategies to mitigate mycotoxin contamination in animal feed. Dr C. Cervini from Cranfield University, through a webinar session, provided an in-depth look at molecular biology techniques for fungal identification, with a focus on Aspergillus species.



Figure 4: Dr I. Teixido from University of Lleida



Figure 5: Members of the FunShield4Med project alongside the lecturers of Seminar 4



## WORKSHOP 3

**APRIL 25-26, 2024, CRANFIELD**

### CAMPUS

Workshop 3 was organized at CU premises with experts from NKUA, UdL and CU, covering subjects on “The impact of Climate Change Scenarios on Food Security Related to Mycotoxins”. Apart from ELGO-ITAP personnel (5) who travelled to participate, young researchers from CU, and UdL, attended the event. Moreover, the theoretical part of Workshop 3 was offered as a webinar with distance access for participants that could not attend in person. Of special interest was the presentation of non-destructive methods for detecting mycotoxins using IR spectroscopy and hyperspectral imaging and the Hands-on session where participants were exercised on a case study on AFs modelling in pistachio and relevant HACCP application

#### FunShield4Med Workshop 3 tutors

Prof. V. Valdramidis (NKUA); Prof. V. Sanchis & Prof. S. Marin (UdL); Prof. A. Medina (CU).



Figure 6: Members of the FunShield4Med project with the speakers during the workshop held at Cranfield University

## 2ND SECONDMENT OF ITAP PERSONNEL

**JUNE 16-24, 2024, UNIVERSITY OF PARMA**

**Mrs. Merkouri Paraskevi** and **Mrs. Panagopoulou Ioanna**, technical staff at ELGO, completed a 12-day visit to the **University of Parma from June 16th to 28th, 2024**. During their stay, they received training on the following: 1) determination of mycotoxins in sunflower using LC-MS, 2) analysis of volatile compounds in traditional parmesan cheese at different ripening stages using HS-SPME/GC-MS, and 3) profiling phenolic compounds in cherry tomatoes and cannabis using LC-MS. Additionally, they were trained on analyzing chromatography data for each of these techniques.



Figure 7: LC-MS instrument utilized by the technical staff of ELGO during their visit to the University of Parma

2ND SUMMER SCHOOL

JUNE 10-14 2024, AUA

The second Summer School of FunShield4Med project entitled “Tools & Strategies to manage the mycotoxins menace” took place during 10-14 June 2024 at AUA, Athens, Greece. Included broader and more advanced thematic matters, including multi-toxin detection protocols and their co-occurrence in foods, state-of-the-art techniques on fungal chemo-diversity, transcriptomics, molecular biology, smart diagnostics for mycotoxigenic fungi, importance of insects presence in food security and their interactions with toxigenic fungi and mycotoxins, among other.



Figure 8: Dr. Anthimia Batrinou (UniWA) with participants on a hands-on session for rapid immunoassay detection of mycotoxins



Figure 9: 2nd FunShield4Med Summer School's audience

Tutors were professors and researchers of the advanced partners of the project, UNIPR (Mrs I. Picicci; Mrs H. Gjoni; Dr R. Torrijos), CU (Dr C. Verheecke-Vaessen; Dr C. Cervini), and NKUA (Dr A. Panara; Prof. V. Valdramidis), as well as invited speakers from University of Thessaly (UTh, Prof. C. Athanasiou; Prof. M. Kakagianni), Agricultural University of Athens (AUA, Prof. D. Tsitsigiannis), University of West Attica (UniWA, Prof. A. Batrinou), and the French National Institute for Agricultural Research (INRAE, Dr J.-M. Membre).

The event was characterized by a very high participation! The 76 participants (70 of them ESRs) were members of the ELGO-ITAP personnel (15) and post-graduate students (61) from UNIPR, NKUA, AUA, UniWA, University of Tuscany - UoT, Norwegian University of Science and Technology - NTNU, University of Cordoba - UCO, and Hellenic Mediterranean University - ELMEPA



Figure10: Members of FunShield4Med and attendees of the Summer School held at the Agricultural University of Athens



## **2ND & 3RD OPEN DAYS DECEMBER 5, 2023, AND APRIL 17, 2024, ITAP CAMPUS, ATHENS, GREECE**

ITAP carried on the successful FunShield4Med Open days, organizing two more open days for students in ITAP campus. An open day offers numerous benefits for a research institute, allowing them to connect with the community, raise awareness about the institute's research and its contributions to society and build trust in their work and the scientific process. During open days, students can gain a real understanding of the research environment, connect with experts and learn about the latest advancements and current research trends.

A group of Chalandri Public Institute of Vocational Training students visited Laboratories of Microbiology and Physicochemical Analyses at ITAP premises. The public and students learned about the dangers of mycotoxins in various food and the critical importance of food safety practices. The visit also included a guided tour highlighting the institute's rich history and ongoing research projects.



Figure 11: Dr. Olga Papadopoulou and students during the Open Day, ITAP Campus, Athens, Greece , December 5, 2023

A group of 14 students from the 'Human Biologist-Biotechnologist' course at Aegean College (Athens, Greece), along with two teachers, visited the ELGO-ITAP campus. The group attended a presentation by Dr. Dimitris Miliordos on the presence of mycotoxins in various foodstuffs, the associated health risks, and preventive measures. Additionally, attendees were informed by Dr. Olga Papadopoulou about the institute's past and current activities.



Figure 12: Dr. Dimitris Miliordos (left photo) and Dr. Olga Papadopoulou (right photo) with Aegean College students during their visit at the ITAP premises



## 5TH MS WINE DAY, MAY 22-24 , 2024 RESEARCH CENTER FOR OENOLOGY AND VITICULTURE, ASTI, ITALY

Dr. Dimitris Miliordos participated in the 5th MS Wine day held in Asti, where he presented the latest research of the project on the impact of rising temperatures and the occurrence of ochratoxin A in different types of commercial wines from the Greek territory. His presentation highlighted the potential effects of climate changes on the quality and safety of wine production, focusing on OTA contamination. This event was organized by the Mass Spectrometry Division of the Italian Chemical Society (SCI-DSM) and CREA - Viticulture and Enology Research Center. It included interesting topics related to the quality of wine and fermented beverages, traceability and counterfeiting, metabolomics and proteomics, advanced mass spectrometry techniques, monitoring of oenological processes, and the identification of contaminants.



Figure 13: Dr. D. Miliordos presenting his work in the framework of FunShield4Med project

Figure 14: Dr. D. Miliordos alongside Dr. A. Asproudi, a member of the organizing committee.



## NETWORKING WITH THE DITECT PROJECT 7-8 NOVEMBER 2023 SHANDONG UNIVERSITY, JINAN, CHINA

During the Project Summary Meeting of the DiTECT EU/China project at Shandong University in China, Dr. Chrysoula Tassou presented the main objectives of the FunShield4Med project. She also had the opportunity to gather valuable insights from the DiTECT project that could benefit the FunShield4Med project in multiple ways.



Figure 15: Dr. Chrysoula Tassou presenting FunShield4Med Project at Shandong University in China



## **SCHOOL AMBASSADORS FROM NKUA TO A HIGH SCHOOL OF THE ATTICA REGION (DRAPETSONA) - MAY 2024**

Dr Konstantina Pasvanka alongside PhD students from NKUA visited a high school in Drapetsona, located in Attica region (1st GEL Drapetsona) as part of an outreach initiative. These ambassadors had the opportunity to present the FS4M project aimed at inspiring the next generation of scientists and scholars. The visit offered the high school students an opportunity to engage with real-world scientific inquiries, learn about the research process, and explore potential academic pathways.



Figure 17: Students and teachers of the 1st high school of Drapetsona attending Dr. K. Pasvanka's lecture

## **OPEN DAY 4 AT NKUA, MARCH 7, 2024, NKUA CAMPUS, ATHENS, GREECE**

FunShield4Med partners from NKUA took over the successful Open Days organisation with the visiting of 1st Drapetsona High-School to the Food Chemistry Laboratory of Chemistry Dept of NKUA. Students got hands-on experience on food microbiology analyses with special focus on mycotoxigenic fungi and got informed about FunShield4Med objectives and achievements.



Figure 16: Audience of the 1st high school of Drapetsona attending the presentation about the FS4Med project



Figure 18: Prof. C. Proestos and Dr Eleni Kolia with 1st GEL Drapetsona students



Figure 19: Students having hand-on practicing under the guidance of Dr Konstantina Pasvanka



## E-TUTORIALS AVAILABLE TO THE PUBLIC THROUGH THE ZENODO PLATFORM

Two e-tutorials have been organized so far in the framework of FunShield4Med project aiming to provide wider dissemination of expertise to scientific community

### COMPUTATIONAL METHODS IN TOXICOLOGY - LUCA DELLAFIORA, UNIPR, 5 APRIL 2024

This two-part presentation by Luca Dellafiora (UNIPR) introduces the use of computational methods in toxicology. The first module covers the basics of molecular modeling techniques for toxicology assessment. The second, using case studies on ochratoxin A, shows how *in silico* methods can be applied to study the toxicodynamics and toxicokinetics of mycotoxins, supporting the early risk assessment.

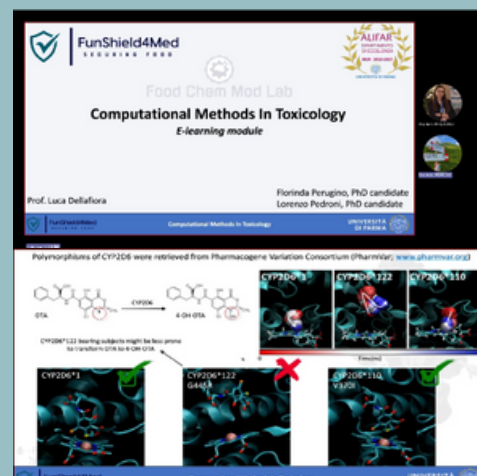


Figure 20: A snapshot of Luca Dellafiora's (UNIPR) e-tutorial on computational toxicology for mycotoxins

### MOLECULAR BIOLOGY TECHNIQUES FOR FUNGAL IDENTIFICATION: FOCUS ON ASPERGILLUS SPP. CARLA CERVINI, CU 22 JUNE 2024

The second tutorial by Carla Cervini (CU) outlines the key steps for identifying *Aspergillus* species in food samples using molecular techniques. It begins with an introduction to the *Aspergillus* genus, its significance, and recent taxonomy updates. The tutorial covers stages of molecular identification, including DNA extraction, PCR analysis with recommended primers, Sanger sequencing, and interpreting BLAST results.



Figure 21: A snapshot of Carla Cervini's e-tutorial on molecular identification of toxigenic fungi.

It is important to highlight that these tutorials are open access and available to the public. Sharing the knowledge produced during the project, as well as the expertise contributed by the partners, is crucial.



## ON GOING WORK: FUNSHIELD4MED JOINT RESEARCH PROJECT

During the current and upcoming periods, the investigation of mycotoxin presence in various foods will continue using modern analytical methods. The focus will be on grains, apple-based products, plant-based meats, as well as beer and its ingredients. Additionally, staff training will play a key role, primarily through visits to institutes and laboratories where these specific analyses are conducted.

## COMING SOON - STAY TUNED!



**Short-Term Staff Exchange** - In November 2024, Georgios Froudis will visit Cranfield University to receive training in molecular biology techniques for fungal identification.



**FunShield4Med on 6-8 November 2024 is proudly co-organizing with NKUA the International conference "Athens Conference on Advances in Chemistry" (ACAC 2024)** - The FunShield4Med project will showcase its latest research and developments in food safety and mycotoxin management.



**5th Seminar** on the improved selection and better preparation for Horizon Europe calls is planned for the 21st of November 2024.



**4th Workshop** of FunShield4Med is planned to take place during February 2025 at ELGO-ITAP premises.



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