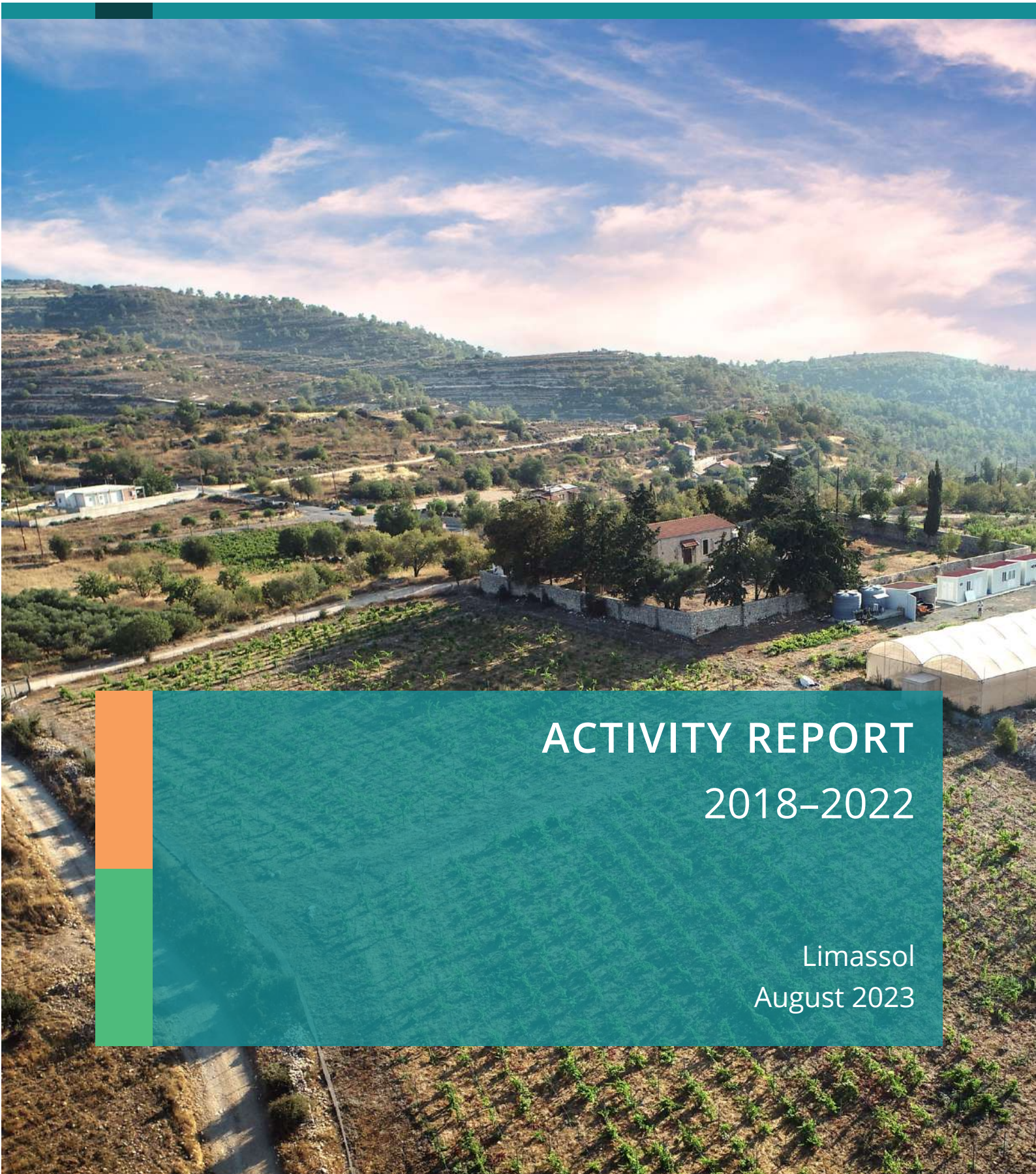
CYPRUS UNIVERSITY OF TECHNOLOGY

FACULTY OF GEOTECHNICAL SCIENCES
AND ENVIRONMENTAL MANAGEMENT



ACTIVITY REPORT
2018–2022

Limassol
August 2023

Faculty of Geotechnical Science and Environmental Management
Cyprus University of Technology
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Πίνακας Περιεχομένων

Welcome Message

The present report of the School of Geotechnical Sciences and Environmental Management covers a four-year period (2018 – 2022), and mainly presents the research activities of its two Departments. The previous reports were covering two-year periods, but due to the pandemic, which has affected so many social activities, including the daily activities of university life (teaching and research), this issue presents the activities of the last four years (2018-2022). Through these pages, we wish to highlight the continuous effort of the two academic Departments in education, research and excellence, regardless of the adverse and unprecedented conditions we experienced.

The Cyprus University of Technology founded the School of Geotechnical Sciences and Environmental Management, in view of the modern needs and requirements of the unified European market, contributing to the technological upgrading and modernization of the agri-food sector of the country, the improvement of the quality and quantity of the products produced in accordance with the requirements of modern technology and science, as well as the production procedures in a safe, sustainable and viable manner. The two Departments of the School are the Department of Agricultural Sciences, Biotechnology and Food Science; and the Department of Chemical Engineering.

The Department of Agricultural Sciences, Biotechnology and Food Science provides training in science and technology related to the safe and sustainable food production of plant and animal origin, as well as their processing. It constitutes an interdisciplinary field, whose main subject of research and teaching is the development of methods and the safe design and management of all stages of the food production process, employing the "farm to fork" approach, ensuring the production of safe and quality food, as well as the protection of resources and the environment through sustainable production methods.

The Department of Chemical Engineering was established in September 2017 and includes science and technology related to the production of products in a safe and sustainable manner. Chemical Engineering is an interdisciplinary field and its main object of research and study is the development of methods and the safe design and operation of production plants for the production or processing of chemical compounds. At this stage, students of the Department can choose between the two following streams for their undergraduate studies: Petrochemical Engineering and Environmental Chemical Engineering. Future plans of the Department include the two following new streams: “Biochemical Engineering” and “Energy and Materials”.

Cyprus University of Technology is a rather new university, but with an active teaching staff, with strong research activities and international collaborations. The continuous and increasing trend in national and international competitive research funded programmes affirm the dedication of all the academic-teaching staff of the School's Departments to quality research, which by extension is also transferred to our undergraduate and postgraduate students. As academics, we contribute to activities for the benefit of the wider society through our participation in expert committees, national and international scientific working groups, organization of conferences and informative events, providing direct information to the public, trying to contribute to the society. We are part of a Public University and have a duty to return this investment to society. We hope that the pages of this issue will highlight some of the work that has been accomplished in our School during these four challenging years.

Although this report emphasises the research work of the Faculty members, the main concern of us all is the education of our students. As in previous issues, the names of undergraduate and postgraduate students, as well as doctoral students, are included in the Appendices at the end of this issue. We hope that we have conveyed them, to the extent we were able to, a high level of knowledge, critical thinking and above all, love for the subject of their studies.

The Dean of the Faculty
Professor Andreas Katsiotis

Χαιρετισμός

Το παρόν τεύχος των πεπραγμένων της Σχολής Γεωτεχνικών Επιστημών και Διαχείρισης Περιβάλλοντος καλύπτει την τετραετία 2018 – 2022 και παρουσιάζει, κατά κύριο λόγο, τις ερευνητικές δραστηριότητες των Τμημάτων της Σχολής. Τα προηγούμενα τεύχη κάλυπταν διαστήματα διετίας, αλλά λόγω της πανδημίας, η οποία επηρέασε τόσες κοινωνικές δραστηριότητες, συμπεριλαμβανομένων και των δραστηριοτήτων της πανεπιστημιακής ζωής (διδασκαλία και έρευνα), σε αυτό το τεύχος παρουσιάζονται οι δραστηριότητες των τεσσάρων τελευταίων ετών (2018-2022). Ευχόμαστε μέσα από αυτές τις σελίδες να αναδειχθεί η συνεχής προσπάθεια, ανεξάρτητα από τις αντίξοες και πρωτόγνωρες συνθήκες που ζήσαμε, των δύο ακαδημαϊκών Τμημάτων που απαρτίζουν τη Σχολή, στην εκπαίδευση, στην έρευνα και στην αριστεία.

Το Τεχνολογικό Πανεπιστήμιο Κύπρου ίδρυσε τη Σχολή Γεωτεχνικών Επιστημών και Διαχείρισης Περιβάλλοντος με γνώμονα τις σύγχρονες ανάγκες και απαιτήσεις της ενιαίας Ευρωπαϊκής αγοράς, συμβάλλοντας στην τεχνολογική αναβάθμιση και εκσυγχρονισμό του αγροδιατροφικού τομέα του τόπου, τη βελτίωση της ποιότητας και ποσότητας των παραγόμενων προϊόντων σύμφωνα με τις απαιτήσεις της σύγχρονης τεχνολογίας και επιστήμης, καθώς και την παραγωγή προϊόντων με τρόπο ασφαλή, βιώσιμο και αειφόρο. Η Σχολή αποτελείται από το πρώτο και μοναδικό Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων (ΓΕΒΕΤ) και το πρώτο Τμήμα Χημικών Μηχανικών (ΧΜ) στην Κύπρο.

Το Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων πραγματεύεται την επιστήμη και τεχνολογία, οι οποίες σχετίζονται με την πρωτογενή παραγωγή τροφίμων φυτικής και ζωικής προέλευσης με τρόπο ασφαλή και βιώσιμο, καθώς και τη μεταποίησή τους. Πρόκειται για διεπιστημονικό κλάδο με κύριο αντικείμενο διδασκαλίας, έρευνας και μελέτης την ανάπτυξη μεθόδων και τον ασφαλή σχεδιασμό και διαχείριση όλων των σταδίων της παραγωγικής διαδικασίας τροφίμων, με τη λογική «από το Αγρόκτημα στο Πιάτο», ώστε να διασφαλίζεται η παραγωγή ασφαλών και ποιοτικών τροφίμων, καθώς και η προστασία των πόρων και του περιβάλλοντος μέσω αειφόρων μεθόδων παραγωγής.

Το μοναδικό πτυχίο Χημικής Μηχανικής στην Κύπρο που προσφέρεται από τον Σεπτέμβριο 2017, περιλαμβάνει την Επιστήμη και την Τεχνολογία που σχετίζονται με την παραγωγή προϊόντων με τρόπο ασφαλή και βιώσιμο. Ο κλάδος της Χημικής Μηχανικής αποτελεί διεπιστημονικό τομέα και έχει ως κύριο αντικείμενο έρευνας και μελέτης την ανάπτυξη μεθόδων και τον ασφαλή σχεδιασμό και εκμετάλλευση εργοστασίων παραγωγής ή μεταποίησης χημικών σκευασμάτων. Στο παρόν στάδιο, οι φοιτητές/φοιτήτριες του Τμήματος Χημικών Μηχανικών μπορούν να επιλέξουν μεταξύ δύο ροών για τις προπτυχιακές τους σπουδές, την Πετροχημική Μηχανική και την Περιβαλλοντική Χημική Μηχανική, έχοντας την ευκαιρία να διαλέξουν και μαθήματα επιλογής. Στα μελλοντικά σχέδια του Τμήματος εντάσσονται ακόμη δύο νέες ροές, η Βιοχημική Μηχανική, καθώς και η Ενέργεια και τα Υλικά.

Είμαστε ένα Πανεπιστήμιο με λίγα χρόνια λειτουργίας, αλλά με δραστήριο διδακτικό προσωπικό, που έχει έντονη ερευνητική δραστηριότητα και διεθνείς συνεργασίες. Η συνεχής και αυξητική τάση σε εθνικά και διεθνή ερευνητικά ανταγωνιστικά χρηματοδοτούμενα προγράμματα (όπως αυτά παρουσιάζονται στο Παράρτημα), επιβεβαιώνουν την αφοσίωση όλου του ακαδημαϊκού-εκπαιδευτικού προσωπικού των Τμημάτων της Σχολής στην ποιοτική έρευνα, η οποία κατ' επέκταση μεταφέρεται και στους/στις προπτυχιακούς/προπτυχιακές και μεταπτυχιακούς/μεταπτυχιακές μας φοιτητές/φοιτήτριες. Ως ακαδημαϊκοί, συμβάλλουμε σε δραστηριότητες για την ευρύτερη κοινωνία, με τη συμμετοχή μας σε επιτροπές ειδικών και εθνικές/διεθνείς ομάδες εργασίες, με παρουσία ή συμμετοχή στην οργάνωση συνεδρίων και ενημερωτικών εκδηλώσεων, καθώς και στην πληροφόρηση του κοινού. Είμαστε κομμάτι ενός Δημοσίου Πανεπιστημίου και έχουμε χρέος να ανταποδώσουμε στην κοινωνία αυτή την επένδυση. Ελπίζουμε ότι οι σελίδες του παρόντος τεύχους θα αναδείξουν ένα μέρος του έργου που επιτελέστηκε αυτή τη δύσκολη τετραετία στη Σχολή μας.

Παρόλο που η παρούσα έκδοση δίνει έμφαση στο ερευνητικό έργο των μελών της Σχολής, κύριο μέλημα όλων μας αποτελεί η εκπαίδευση των φοιτητών/φοιτητριών μας. Όπως και στα προηγούμενα τεύχη, τα ονόματα των προπτυχιακών και μεταπτυχιακών αποφοίτων, καθώς και των διδακτορικών απόφοιτων, περιλαμβάνονται σε ξεχωριστό Παράρτημα στο τέλος του παρόντος τεύχους. Ελπίζουμε να τους μεταδώσαμε, στο μέτρο που μπορούσαμε, ένα υψηλό επίπεδο γνώσεων, κριτικής σκέψης και κυρίως, αγάπη για το αντικείμενο των σπουδών τους.

Ο Κοσμήτορας της Σχολής
Καθηγητής Ανδρέας Κατσιώτης

The Faculty and its Departments

I. The University (www.cut.ac.cy)

The Cyprus University of Technology (CUT) is a newly established public university, which was founded by law in December 2003. It constitutes one of the three state universities operating in the Republic of Cyprus. CUT has seven (7) Faculties and fifteen (15) academic Departments, able to offer education and high-level research in primary fields of science and technology, at undergraduate and postgraduate levels. Currently, the university educates about 3,200 students and includes an academic and administrative staff of about 920 people.

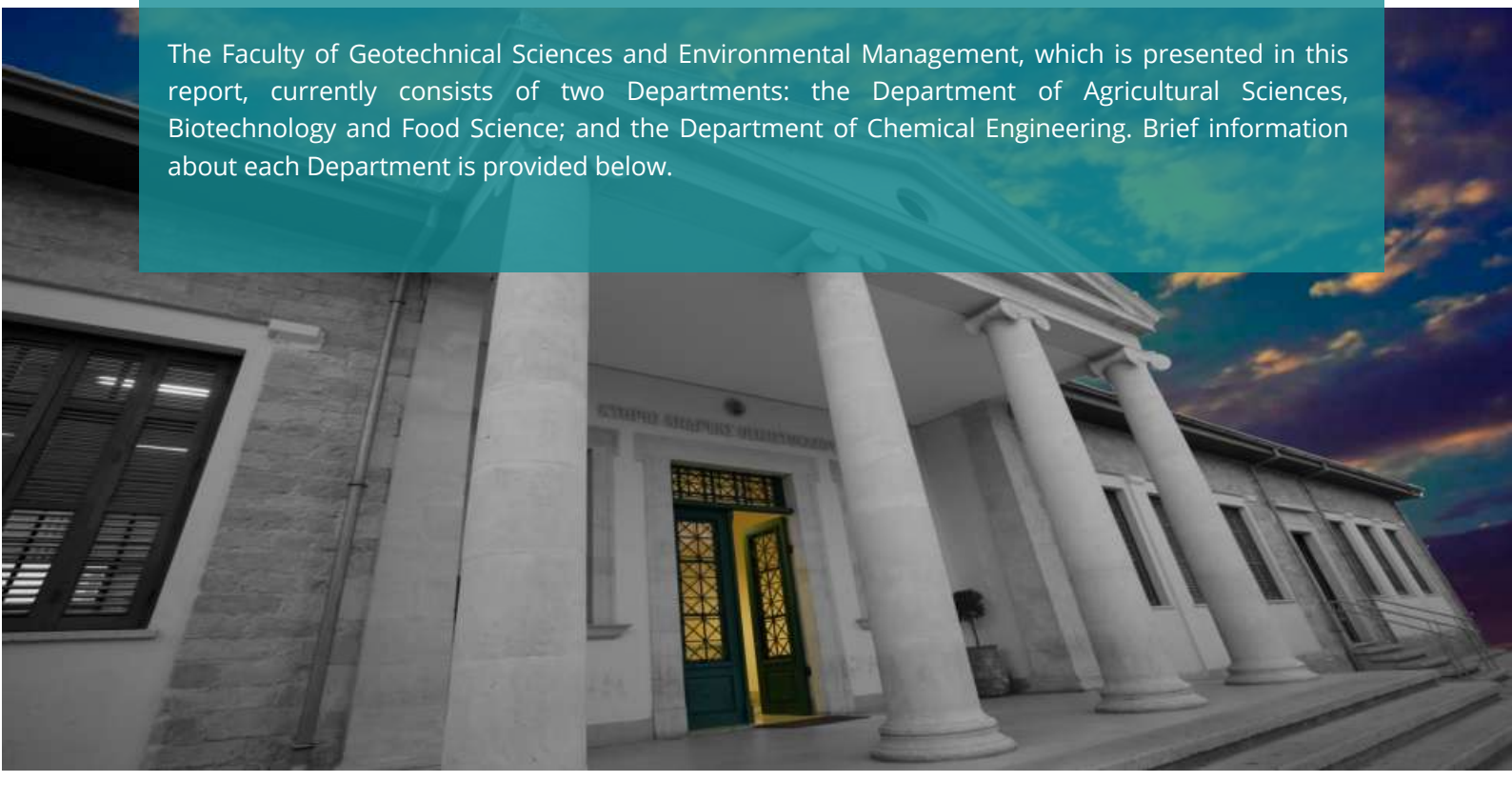
Although it initiated its research activity recently, CUT already participates in a significant number of research projects funded by national authorities and European programmes, such as Research Framework Programmes FP7, Horizon 2020 and Horizon Europe (including one prestigious grant from the European Research Council); the LIFE Programme, ERASMUS+, European Territorial Cooperation Programmes such as Interreg, Archimed, MED etc. The University has adopted research principles which conform to the European Union's declarations on the creation of the European Research Area (ERA).

Despite its short history, the University has already been ranked 601-800th in the Times Higher Education Impact Rankings 2022 and 126th in the Young University Rankings 2022. Moreover, it has been ranked in the highly honourable 30th place in the Times Higheer Education World's Best Small Universities 2022. This highlights the University's devotion to quality research and teaching, and motivates its staff for higher international achievements.

The University's Faculties are the following:

1. The Faculty of Geotechnical Sciences and Environmental Management
2. The Faculty of Management and Economics
3. The Faculty of Engineering and Technology
4. The Faculty of Health Sciences
5. The Faculty of Fine and Applied Arts
6. The Faculty of Communication and Media Studies
7. The Faculty of Tourism, Hospitality and Entrepreneurship

The Faculty of Geotechnical Sciences and Environmental Management, which is presented in this report, currently consists of two Departments: the Department of Agricultural Sciences, Biotechnology and Food Science; and the Department of Chemical Engineering. Brief information about each Department is provided below.



II. The Department of Agricultural Sciences, Biotechnology and Food Science (www.cut.ac.cy/abf)

The Department of Agricultural Sciences, Biotechnology and Food Science (ABF) was established and accepted its first students in 2007. By that time, the Department's staff comprised of two (2) faculty members, two (2) members of Special Teaching Staff and one (1) clerical officer. Professor Nicolas Ioannou, who retired since September 2013, acted as the first Coordinator and later as the first Chair of the Department, followed by Associate Professor Christakis Papachristoforou (2012-2014), Professor Andreas Katsiotis (2014-2020), and Associate Professor Despoina Miltiadou (2020-2022). Within the remit of the Department's first Coordinator was the appointment of additional faculty members, as well as the coordination with external advisory committees for the development of the Department's programmes of studies. The programmes have been accredited by the Council of Agriculturists and the Cyprus Registration Board for Food Scientists, Food Technologists and Dietitians.

ABF offered its first undergraduate programme in 2007. The Department is admitting around 40 students per academic year through national examinations and offers a B.Sc. degree in Agricultural and Food Sciences with specialization in three basic areas: **(a) Crop Science & Technology, (b) Animal & Dairy Science and (c) Food Science & Technology.** For awarding the B.Sc. degree of the Department of Agricultural Sciences, Biotechnology and Food Science, students are required to complete 240 European Credit Units (ECTS).

In September 2011, the Department began offering its postgraduate programme leading to the award of the degree of **Master of Science (M.Sc.) in Agricultural Biotechnology.** The M.Sc. programme has a duration of 18 months (three semesters) and accepts around 15 students per year, distributed in the three main areas of Plant, Animal and Food Biotechnology.

The first undergraduate students successfully obtained their degrees in June 2011. The first M.Sc. degrees were awarded in 2013. The Department awarded the first doctoral title in 2012, followed by an additional two doctoral titles in 2014 and another seven during 2016-2018. By mid-2018 there were 22 PhD students in the Department.

ABF is housed in well-equipped and well-maintained **laboratory facilities**. Through public funding (approx. 2.5M Euro), adequate infrastructure was purchased to support both teaching and research. The Department is also using a greenhouse located in the broader area of Limassol. Furthermore, two experimental farms have been acquired in the area of Lofou and in the area of Acheleia.

III. The Department of Chemical Engineering

(https://www.cut.ac.cy/faculties/gem/est)

The Department was officially established in January 2008 under the name of 'Environmental Management'. In September 2010, the Department's name was formally changed to 'Department of Environmental Science and Technology' (EST), and its undergraduate degree was **B.Sc. in Environmental Science and Technology**. Until the discontinuity of the programme in 2017, two hundred and six (206) students graduated with a B.Sc.. In addition, the Department offered two M.Sc. programmes, with a hundred and four (104) graduates in Energy Resource and Management and fifty (50) graduated with an M.Sc. in Environmental Bioscience and Technology. In 2017, the Department joined forces with the University's Faculty of Engineering and Technology and started offering a **B.Sc. programme in Chemical Engineering**, the first University degree in Chemical Engineering offered in Cyprus, while the Department's name was formally established as 'Chemical Engineering' in 2019. The programme has been accredited by the Cyprus Agency of Quality Assurance and Accreditation in Higher Education (ΔΙΠΑΕ) and it has been recognised by the Technical Chamber of Cyprus (ETEK).

The Department currently admits 25-30 undergraduate students every year. The first Chemical Engineering students were admitted in September 2017 and graduated in June 2021. Since 2022, sixteen (16) students graduated with a B.Sc. in Chemical Engineering. The Department has built strong ties with the industry of Cyprus both in research and education, and includes a mandatory practical training of all senior students in industrial plants. The Department offers an impressive national and international network of industrial contacts and has strong collaborative links with other university departments in Cyprus and abroad. Furthermore, the Department offers doctoral degrees and until summer 2022, nineteen (19) doctoral students had graduated with a Ph.D. The M.Sc. programme is currently re-designed in order to be in line with the educational priorities of the undergraduate Chemical Engineering programme and with the research priorities of the Department's staff.

The Department of Chemical Engineering, although young, has a diverse portfolio of academic courses and research projects attracting high-calibre staff and students alike who wish to expand a career in chemical reaction engineering, biotechnology, fluid engineering, material science, the environment and the energy sector.

EST has extensive and modern **laboratory facilities** worth more than 1.5 million Euros. Adequate infrastructure was purchased to support both teaching and research needs, initially thanks to public funding and later as a combination of public University funds and research infrastructure acquired by the Department's academic staff through competitive research grants. These facilities are continuously upgraded, in order to address all educational needs of the new Chemical Engineering programme.

Personnel*

I. Department of Agricultural Sciences, Biotechnology and Food Science

Name	***Rank***	***Specialty***
Katsiotis, Andreas	Professor	Plant Breeding/Plant Genetics
Tsaltas, Dimitrios	Associate Professor	Agricultural Microbiology & Biotechnology
Miltiadou, Despoina	Associate Professor	Animal Science/Molecular Biology
Fotopoulos, Vasileios	Associate Professor	Plant Physiology
Manganaris, Georgios	Assocciate Professor	Arboriculture/Postharvest Physiology and Technology
Stavrinides, Menelaos	Associate Professor	Entomology/Acarology
Papademas, Photis	Associate Professor	Dairy Science and Technology
Tzamaloukas, Ouranios	Associate Professor	Animal Science/Nutrition
Tzortzakis, Nikolaos	Assistant Professor	Vegetable Crops/Aromatic plants/Postharvest Physiology and Technology
Kanetis, Loukas	Assistant Professor	Phytopathology/Crop Science
Botsaris, Georgios	Assistant Professor	Food Microbiology
Drouza, Chryssoula	Assistant Professor	Food Chemistry
Goulas, Vlasios	Assistant Professor	Physical Chemistry & Analysis
Pantelides, Iakovos	Assistant Professor	Phytopathology/Plant Biotechnology
Nikoloudakis, Nikolaos	Special Teaching Staff	Plant Biotechnology
Mitsiopoulou, Christina	Special Teaching Staff	Animal Science
Aspri, Maria	Special Teaching Staff	Dairy Science
Christoforou, Michalakis	Special Teaching Staff	Plant Science
Retired:		
Ioannou, Nicolas	Professor	Phytopathology
Gekas, Vassilis	Professor	Food Engineering & Technology
Papachristoforou, Christakis	Associate Professor	Animal Reproduction
Papachrisoforou, Christakis	Associate Professor	Animal Science/Reproductive Physiology
Georgiades, Costantinos	Academic Staff Member	Principal Instructor
Hadjimichael, Panagiotis	Academic Staff Member	Principal Instructor

* Contact details of each staff member can be found on the corresponding webpage of each Department, which is depicted in the previous Section.

Name	***Rank***	***Specialty***
Varotsis, Constantinos	Professor	Environmental Bio-Catalysis
Costa, Costas	Professor	Environmental Chemistry & Catalysis
Zachariadis, Theodoros	Associate Professor	Energy & Environmental Policy
Charalambides, Alexandros	Associate Professor	Renewable Energy Sources
Daskalakis, Evangelos	Associate Professor	Computational Physics of the Atmosphere
Koutinas, Michalis	Associate Professor	Environmental Biotechnology
Vyrides, Ioannis	Assistant Professor	Environmental Engineering
Antoniou, Maria	Assistant Professor	Water & wastewater treatment
Constantinou, Achilleas	Assistant Professor	Chemical Engineering
Stephanou, Pavlos	Assistant Professor	Chemical Engineering
Savva, Petros	Special Teaching Staff	Environmental Chemistry & Atmospheric Pollution
Andreou, Kostas	Special Teaching Staff	Soil Ecotoxicology
Koutsoupakis, Constantinos	Special Teaching Staff	Environmental Science
Vasquez, Marlen	Special Teaching Staff	Environmental Toxicology & Microbiology
Menelaou, Melita	Special Teaching Staff	Chemical Engineering

Retired:

Papadopoulos, Ioannis†	Professor	Water and Soil Science
Serghides, Despina	Professor	Bioclimatic Architecture
Theopemptou, Charalambos	Lecturer	Environmental Policy

Administrative Staff:

Pillatsi, Sonia	Secretary of the Department of Agricultural Sciences, Biotechnology and Food Science (2016-today)
Kiperesi, Zooula	Secretary of the Department of Chemical Engineering (2008-today)
Herodotou, Marina	Secretary of the Faculty (2012-today)
Nikolaidou, Fotini	Faculty Librarian
Eliza Theofanous	Faculty Officer (2022 – today)

International Recognition, Outreach Activities & Social Service

As a result of their heavy involvement in international collaboration, the academic staff of our Faculty participates in a large number of national and international associations, scientific committees and advisory groups, related to the topics of their research interests. For example, two Faculty members participated in the Domain Committees of the European COST programme (under its previous structure that changed in 2015), while several others take part as members of the Management Committees of individual COST Actions. Moreover, two members of the Faculty were national representatives of Cyprus in the Programme Committee of Food, Agriculture, Fisheries and Biotechnology of the European Commission's 7th Framework Programme, and in the Programme Committee on Climate Action, Environment, Resource Efficiency and Raw Materials of the European Commission's Horizon2020 Programme, respectively. The former Dean of the Faculty is a member of the Scientific Committee of the European Environment Agency, the EU organisation that to provides sound and independent information on the environment in order to enable the proper implementation and evaluation of environmental policy.

Moreover, at the initiative of the Faculty's Sustainable Energy Laboratory (SEL), CUT has become a member of the Knowledge and Innovation Community on Climate Change (Climate-KIC) of the European Institute of Innovation and Technology (EIT). Climate-KIC is the largest public-private climate change partnership and main EU initiative to build a low-carbon economy through education, entrepreneurship and innovation.

Similarly, at the initiative of the Faculty's Agricultural Microbiology and Biotechnology Laboratory (AMBL), CUT has become a member of the Knowledge and Innovation Community on Food (EIT Food) of the European Institute of Innovation and Technology (EIT). EIT Food participation mobilised the engagement of faculty and students in multiple projects for entrepreneurship and innovation in agrifood and supported the empowerment of women in agriculture and food production via multiple training initiatives.

In the national scene, due to their expertise, our academic staff is frequently invited to testify in front of Committees of the Parliament of Cyprus, assist the Cyprus Ministry of Education, Sport and Youth in the evaluation of educational programmes of private Universities, and participate in Committees set up by the national authority that is responsible for the recognition of higher education qualifications (ΚΥΣΑΤΣ). They also appear in national media offering expert opinions on topical issues related to agricultural, food, energy or environmental policy; and provide lectures to schools and professional associations on topics of their specialty.

Several members of our staff have gained international recognition and are therefore invited abroad to offer their expertise. For example, in recent years, some staff members have participated in the evaluation process of several Academic Institutions and Departments in Greece by contributing to the work of the Hellenic Quality Assurance Agency of Higher Education (HQAA). Moreover, Faculty staff have acted as evaluators of research proposals for the following organisations:

1. European Commission (COST, FP7, Horizon 2020)
2. European Science Foundation
3. Austrian Science Fund
4. Research Foundation of Flanders, Belgium
5. Research Council of the Katholieke University of Leuven, Belgium
6. Innovation Fund Denmark
7. National Research Agency of France
8. Agriculture and Agri-Food Canada
9. USA–Israel Binational Agricultural Research and Development Fund
10. Israel Science Foundation

11. Ministry of Education of Greece
12. General Secretariat for Research and Technology of Greece
13. National Commission of Scientific and Technological Research of Chile
14. Ministry of Education, University and Research of Italy
15. University of Insumbria, Italy
16. University of Pavia, Italy
17. University of Calabria, Italy
18. Investment and Development Agency, Latvia
19. National Science Centre, Poland
20. Foundation for Science and Technology, Portugal
21. Qatar National Research Fund

Members of our academic staff have also served as external examiners of MSc theses and PhD dissertations in the following institutions:

22. University of Antwerp, Belgium
23. Aristotle University of Thessaloniki, Greece
24. University of the Aegean, Greece
25. Sant' Anna School of Advance Studies, Pisa, Italy
26. University of Florence, Italy
27. University of Foggia, Italy
28. University of Teramo, Italy
29. University of Amsterdam, The Netherlands
30. Stellenbosch University, South Africa
31. Tshwane University of Technology, South Africa
32. KTH Royal Institute of Technology, Sweden
33. University of Cranfield, UK
34. University of Cyprus, Cyprus

Our academic staff are Associate Editors or members of the Editorial Board of the following international academic Journals:

35. Agronomy
36. Advances in Horticultural Science
37. Advances in Oceanography and Limnology
38. BMC Plant Biology
39. Energy Economics
40. Frontiers in Agricultural Biological Chemistry
41. Frontiers in Crop Science & Horticulture
42. Frontiers in Microbiology
43. Frontiers in Plant Abiotic Stress
44. Frontiers in Plant Physiology
45. Gene
46. Journal of Catalysis
47. Journal of Experimental Botany
48. Journal of Horticultural Science & Biotechnology
49. Journal of Plant Biology & Soil Health
50. Journal of Post-Harvest Technology
51. Phytoparasitica
52. Plant Gene
53. Plant Physiology and Biochemistry
54. Plant Signaling & Behavior
55. Postharvest Biology & Technology
56. Recent Patents on Biotechnology
57. Small Ruminant Research

Furthermore, several Faculty members have been invited to offer keynote lectures in international conferences and to deliver short academic or training courses abroad.

International conferences organised by Faculty members in Cyprus in 2018-2022

1. International Conference on Sustainable Biowaste Management (6th December 2019)
2. III International Symposium on Soilless Culture and Hydroponics: Innovation and Advanced Technology for Circular Horticulture (19th-21st March 2021)
3. ISEKI Food 2021 - Sustainable Development Goals in Food Systems – Challenges and Opportunities for the Future (23rd-25th June 2021)
4. 16th Mediterranean Phytopathological Union Congress – MPU2022 (4th-8th April 2022)
5. VI International Symposium on Post-harvest Pathology: Innovation and advanced technologies for managing postharvest pathogens (29th May – 2nd June 2022)

International patents owned in part by members of our Faculty

1. Efstathiou A.M., Costa C.N. & Fierro J.L.G., Novel Catalyst for the NO Reduction to N2 with the use of Hydrogen Under Lean De-NOx Conditions. International Patent Cooperation Treaty: WO 03068390 (2002); US Patent: US 2005/0090393 (2006); European Patent: EP 1475149 A1 (2008); Australian Patent: AU 2003206981 A1 (2005); Spanish Patent: ES 2192985 (2003); Japanese Patent: JP2005516767 (2005).
2. Efstathiou A.M., Savva P.G. & Costa C.N., Catalyst Containing Platinum on a Support Consisting of Nano-crystal Magnesium Oxide and Cerium Dioxide Towards H2-SCR. European Patent No. EP 08010888.8 (2010).
3. Efstathiou A.M., Savva P.G. & Costa C.N., Catalyst Containing Platinum and Palladium for the Selective Reduction of NOx with Hydrogen (H2-SCR). European Patent No. EP 08010887.0 (2010).
4. Costa C.N., Valanidou L., Savva P.G. & Theologides C., Novel Catalyst for the NO Reduction to N2 with the use of Ethanol or Ethanol-Hydrogen Mixtures Under Lean De-NOx Conditions. European Patent No. 10390001.5/EP10390001 (2010).
5. Kashfi K. & Fotopoulos V., Method of Priming Plants against Abiotic Stress Factors and Promoting Growth. International Patent No. PCT/US15/15380 (2015).
6. *Patent pending*: Tapakis R. & Charalambides A., System and Method for Predicting Solar Power Generation. International Patent Application No. PCT/EP2016/055889 (2016).

Overview

In spite of a substantial load of teaching, administrative work, as well as all the challenges that yielded as a result of COVID-19 pandemic, the academic staff of the Department has been actively involved in numerous research projects and the submission of competitive research grants. Research is additionally boosted thanks to internal funding from the available (though limited) financial resources of the University.

The strengths of ABF for research is the existence of a state-of-the-art analytical/molecular equipment, the willingness of all academic staff to be heavily involved in research initiatives and the existence of a critical mass of active research faculty. It is also noteworthy that the University provides incentives and support to faculty members to participate in competitive research. All these factors have led to a sizable number of publications in peer-reviewed journals with high impact factors, edited books and conference proceedings, as well as an international patent. ABF academic staff members have made a large number of presentations in international scientific conferences. Published results have been widely endorsed by the scientific community, as indicated by the large number of citations in the international literature.

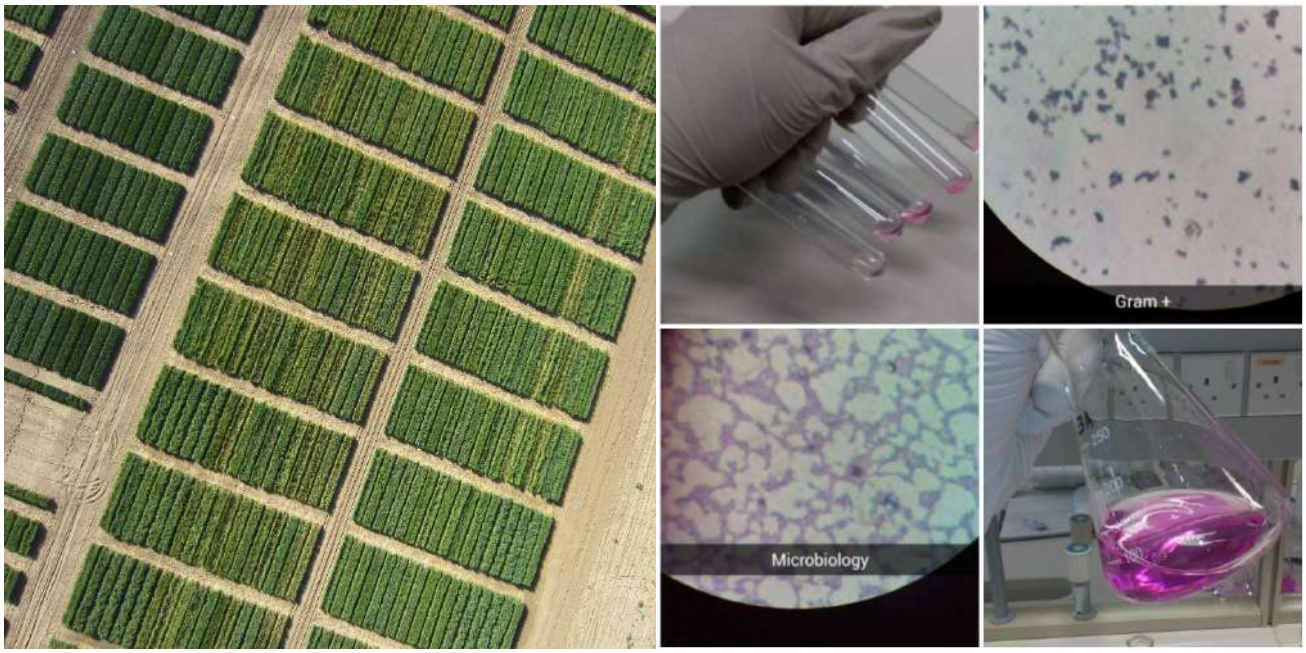
To support its focus on building strong interdisciplinary teams and generating world-class research, the ABF Department has established comprehensive research facilities, which can be broadly categorised according to its three divisions – Crop Science and Technology, Animal and Dairy Science, and Food Science and Technology. The specific divisions and their equipment are the following:

Crop Science and Technology: LiCor 6400 photosynthesis meter, porometer, fluorometer, two plant growth rooms, nitrate/nitrite probe, plant tissue culture incubators, EpiFluoresence Stereo Microscope, EpiFluoresence Microscope, VITEK, Laminar Flow Class II, ABI Genetic Analyser, spectrophotometer plate reader, fluorescence spectrophotometer, ELISA plate reader, PCR, two real time PCR, DNA electrophoresis, protein electrophoresis, 2D-protein electrophoresis, DNA hybridization oven, DNA cross linker, fermentor, nanodrop, gel documentation, MiSeq system for DNA sequencing.

Animal and Dairy Science: Dairy production Unit (cheese vat, cheese pressing equipment), incubator, flow cytometer, laminar flow class II, DNA electrophoresis, PCR, Milkoscan, nano filtration unit, homogenizer, inverted fluorescent microscope, CO_2 incubator.

Food Science and Technology: Soxhlet extractor, texture analyser, spectrophotometer, Gerber, distillators, vacuum packing machine, conductivity meter, water activity meter, automatic titrator, colorimeter, viscometer, fruit firmness tester, sample concentrator, Solid Phase Extraction Unit, Sonicator, bench top refractometer, Kjeldahl Unit, calorimeter, HPLC units (2x), GC-FID, GC-MS, FT-IR spectrophotometer, polarimeter, freeze-dryer.

Other general equipment includes various laminar flows Class I, fume hoods, electrophoresis fridges, incubators, centrifuges, shaker incubators, pH meters, vortexes, RO water, water distillation system, refrigerators and freezers -20°C, -40°C and -80°C. Finally, other Departmental facilities include a chemical storage room and a sterilisation room.



The international committee that conducted an external evaluation of the ABF Department in June 2015 commented "the highly motivated, dedicated, enthusiastic faculty members who have established a very good track record resulting in national and international recognition of their Department" and the Department's "excellent research infrastructure". The international committee conducted another evaluation of the ABF Department in November 2020, stating that "the profile of the, relatively young, highly motivated teaching staff is broad and excellently suited to carry out the study programmes".

The following pages describe briefly the activities carried out by each research group of the ABF Department during the period 2018-2022. Interested parties may obtain more information by accessing the webpages of each group, or the general Departmental webpage (www.cut.ac.cy/abf).

Research Group on Plant Breeding, Plant Genetics and Experimental Design

Head: Andreas Katsiotis, Professor

Team: Andreas Pallides, Gregoris Monoyios

Plant breeding is an interdisciplinary science manipulating heritable traits and develop new varieties with desirable traits. The major objectives of any plant breeding programme target higher yields, improved quality, resistance in abiotic and biotic stresses, time of flowering and maturity, to name a few. Our work is aiming to integrate knowledge from plant breeding methodologies, molecular cytogenetics, incorporation of wild relatives in cultivated species, genome organization, plant phenotypes, plant biodiversification, molecular markers, plant evolution, biodiversity, field evaluations using NDVI Index Derived Photography etc.

Current research areas include:

- Development of pre-breeding populations using Multi-parent Advanced Generation Inter-Crosses (MAGIC) in durum wheat varieties,
- Genomic and chromosomal changes in progenies of interspecific crosses between wheat species,
- Evolutionary studies in oats, focusing mainly at the endemic species and their contribution to the development of the cultivated species,
- Biodiversity studies in relation to food security,
- Environmental impact on plant growth

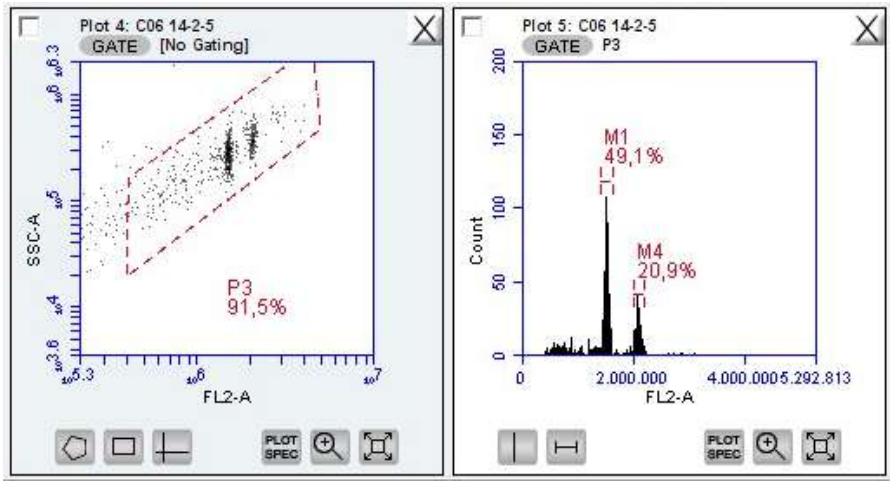
Part of the above research is funded through two HORIZON 2020 projects, namely:

BIOVALUE which aims to set-up a holistic perspective, under the “multi-actor” approach, to analyse the link between biodiversity, the agro-food value chain agents, the environment, consumer food preferences and health.

ECOREADY which aims to develop a real-time surveillance system, an Observatory offered as an e-platform and as a mobile application. This will function as the necessary singular source of information, provide real-time assessments for the food system, and update forecasts frequently and consistently in relation to biodiversity.

Members of the group have participated in international and local plant collection missions. The group is using a number of techniques to accomplish the research described above, including molecular markers, molecular and conventional cytogenetics, flow cytometry, development of interspecific hybrids, cloning, field experimental plots, Next Generation Sequencing etc.

Our group, through the years has participated in a number of national and international funded projects, and currently thorough the HORIZON 2020 projects is collaborating with a large consortium of partners, including a number of universities, research institutes, SMEs, and organizations, such as the Joint Research Centre.



Selected publications:

Kyratzis, A.C., Nikoloudakis, N. and Katsiotis, A., 2019. Genetic variability in landraces populations and the risk to lose genetic variation. The example of landrace 'Kyperounda' and its implications for ex situ conservation. PLOS ONE, 14(10), e0224255. **https://doi.org/10.1371/journal.pone.0224255**.

Kyratzis, A.C., Pallides, A. and Katsiotis, A., 2022. Investigating Stability Parameters for Agronomic and Quality Traits of Durum Wheat Grown under Mediterranean Conditions. Agronomy, [online] 12(8), 1774. https://doi.org/10.3390/agronomy12081774.

Research Group on Agricultural Microbiology and Biotechnology

Head: Dimitris Tsaltas, Associate Professor

Team: Michalakis Christoforou, Senior Researcher and Project Manager, Panayiota Polykarpou, Researcher and Project Manager, Ksenia Chekina, Researcher and Project Manager, Anna Sakkali, Administrative and Project Office, Eleni Xenofontos, Researcher and Project Manager, Maria Kosma, Research Associate, Faiza Ramzan, Research Assistant, Anna Sakkali, Administrative Support and Management

Webpage: https://www.facebook.com/MicrobeAtCUT

Microbes from the Farm to the Fork

Globalization of the food supply has increased the range of plant, animal and foodborne pathogens as well as amplified health and economic impacts of a single contamination incident. At the same time quality foods require the thorough analysis of the biological substrate and/or the living organisms participating and interacting in order to optimise production and prevent counterfeiting.

Production, processing, and distribution of food, increasingly takes place across vast and complex networks—each part or pathway of which must be working optimally—without the introduction of contaminants that could taint the final product. In parallel, microorganisms are responsible for the production of food in direct and indirect ways. Microorganisms are creating or transforming food to special food. Fermentations are responsible for a whole new list of products at all levels of agriculture and food production. From the farm to the fork, microbes orchestrate the transformation of biological matrices for the benefit of the environment, the plants, the animals and the humans. All fermentations are currently under deep exploration. From the soil and the rhizosphere to cheese, wine and the animal/human gut we need to unravel and understand the real role of microbes. Their role to Global Health.

“Farm to fork” is the global approach to reassure that food and feed has been traced from its very beginning steps of production in the field, the farm, the greenhouse, the sea or even the bioreactor, till the point is served to us. On the other hand “One Health” concept came to reinstate that all living organisms together with the environment require top level of health in order to positively affect each other’s health level.

Through a strong belief in “One Health” and “Farm to Fork” the Group of Agricultural Microbiology and Biotechnology at CUT is engaging in research all along the farm to fork chain. Microbiology research along the food supply chain while using all modern molecular biology techniques to study the microbial ecology and the interactions of microbes with their host and the food matrices, offers great opportunities for university training, research, collaboration and innovation in the industry.

Our Group is divided in three interacting divisions: Plant & Soil Microbiology, Food Safety and Food Fermentations. Recently we are also working towards the development of biosensors for microbial targets.

In parallel our group works towards understanding and supporting quality and safety of traditional fermented products of Cyprus. Characterizing their microbiota evolution, we are contributing to the full profiling of the products and the development of starter cultures and probiotic inocula. Modern tools of

molecular ecology and biotechnology such as Next Generation Sequencing offer new perspectives in microbial characterization. Contribution to scientific research and knowledge is summed up by the development of a culture collection from all the ongoing projects, fully supporting the European motto for "Knowledge Based Bio-Economy". Our culture collection will be our documented "knowledge trust" for the future, creating bio-based opportunities for the Group as well as for the society.

A snapshot of current work:

1. Composting and compost plant beneficial microbes along biochar interactions
2. Isolation and characterization of autochthonous microflora of Trahana (Fig. 1), Commandaria, Pitsilia Cured Meats (Fig. 2), Table Olives (Fig. 3) and Arkatena (Fig. 4) for the development of artisanal starter cultures
3. Microbiome analysis of various microbial ecosystems of food and agricultural importance (Fig. 5)
4. Development of microbial terroirs as an authentication and geographical origin fingerprint tool in various fermented products
5. Development of molecular techniques for detection and enumeration of *Brettanomyces* spp in wine
6. Potato cyst nematodes detection methods and potato cultivars resistance evaluation
7. Innovative protocols for reduction of pesticides use via DSS, resistance inducers, biostimulants and biocontrol agents

Funding and collaborations

Dr. Tsaltas is an American Society of Microbiology Ambassador and ASM International mentor. He is national representative of the International Food Association and leading the international efforts of the Association on research for Traditional Foods and national representative of the Global Harmonization Initiative. The group has extensive collaborations with researchers in Europe, Israel, China, South Africa and USA. Funding is secured from EU (H2020, Horizon Europe, ERASMUS+, LIFE+), Regional (INTERREG) and National funds (RPF, Ministry of Agriculture). The group is also securing funds from local industries through scholarships and offered services.

Selected publications

D.A. Anagnostopoulos, D. Tsaltas (2022). Current Status, Recent Advances, and Main Challenges on Table Olive Fermentation: The Present Meets the Future, Frontiers in Microbiology, 2022

E Kamilari, M Mina, C Karallis, D Tsaltas (2021). Metataxonomic Analysis of Grape Microbiota During Wine Fermentation Reveals the Distinction of Cyprus Regional terroirs, Frontiers in microbiology, 2021

DA Anagnostopoulos, E Kamilari, D Tsaltas (2020). Evolution of bacterial communities, physicochemical changes and sensorial attributes of natural whole and cracked picual table olives during spontaneous and inoculated fermentation. Frontiers in microbiology 11, 1128

A Hadjilouka, K Loizou, T Apostolou, L Dougiakis, A Inglezakis, D Tsaltas (2020). Newly Developed System for the Robust Detection of Listeria monocytogenes Based on a Bioelectric Cell Biosensor. Biosensors 10 (11), 178

M. Mina and D. Tsaltas (2017). Contribution of yeast in wine aroma and flavor. Yeast - Industrial Applications, ISBN 978-953-51-5782-3, Book edited by: Prof. Antonio Morata, PhD Iris Loira Calvar; https://www.intechopen.com/books/yeast-industrial-applications/contribution-of-yeast-in-wine-aroma-and-flavour

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Research Group on Animal Genetics

Head: Despoina Miltiadou, Associate Professor

Team: Christina Mitsiopoulou, Simoni Symeou, Marina Neofytou, Constantina Constantinou, Mikaella Kyriakou, Sotiroula Michael

Webpage: **http://ktisis.cut.ac.cy/cris/rp/rp00047**

The preservation of native ruminant breeds well adapted to the extreme climate conditions of Cyprus is of paramount importance, as the loss of genetic variability is irreversible with consequences in farming, land use and soil regeneration, and the extinction of genes resistant to diseases or to adverse environments. Additionally, ruminant production is currently the most important priority of the Ministry of Agriculture and the dairy industry of Cyprus, due to the amount of milk required to support the main agricultural export of the country, the halloumi cheese, recently certified as a protected designation of origin product. In parallel, ruminant production in Cyprus faces the challenge of a cost of feeding at least three times higher to EU average. Our group focuses on investigation of the genetic profile of native ruminant breeds, identification of genes associated with milk production and quality traits and investigation of the genetic-nutrition interplay when using alternative feeding strategies such as exploitation of industrial by-products.

During the last few years, we study the effects of diets, including ensiled olive cake by-products, on the expression of lipogenic genes involved in FA synthesis, FA uptake and/or translocation, FA desaturation and transcriptional regulation in mammary and adipose tissue in local ruminant breeds. Figures 1 and 2 show an increase of mammary expression of *SLC2A1* ($p < 0.05$), *VLDLR* ($p < 0.01$), *FABP3* ($p < 0.01$) and elevated *SLC2A1* ($p < 0.05$) and *FASN* ($p < 0.01$) gene expression in adipose tissue of goats when fed diets supplemented with ensiled olive cake, suggesting enhanced FA uptake and transocation.

Figure 1

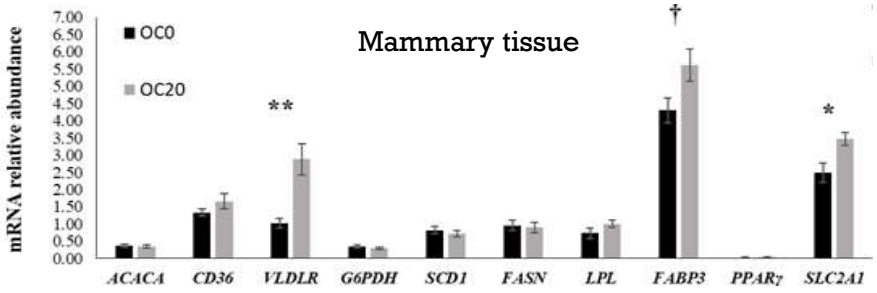
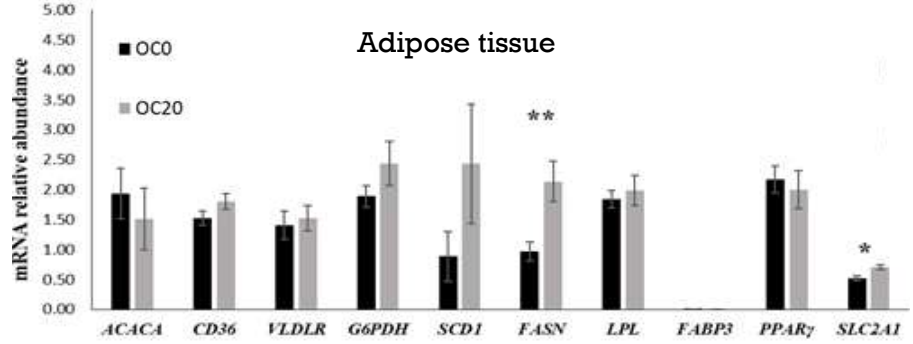


Figure 2

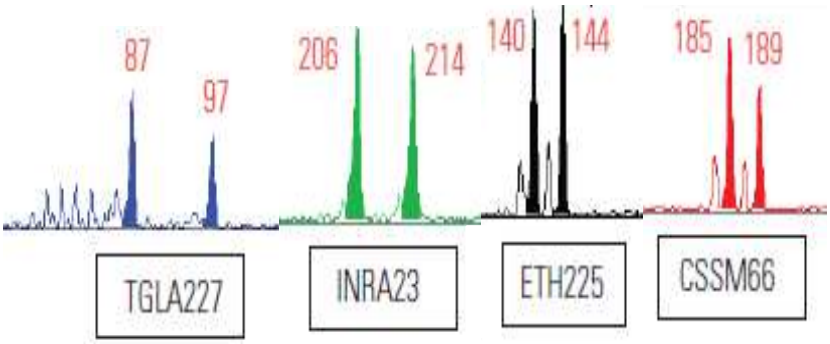


In another study we investigated candidate genes for their association with milk fat percentage and fatty acid content in the Chios sheep breed. These genes had either a functional role in lipid metabolism or where located in chromosomal regions associated with milk content. Three consecutive monthly milk samplings were obtained from a total of 429 purebred Chios ewes during mid-lactation. It was revealed that the FASN g.14777C>T SNP on exon 31 was associated with C13:0 and the ACAA2 g.2982T>C SNP on the 3'UTR was associated with C9:0, C11:0, C12:1 cis-9, C13:0 and the ω6/ω3 index. Our results could be useful for breeding programmes aiming to improve the quality and nutritional value of ovine milk.

Recently, we undertook the investigation of the genetic profile of the native cattle breed of Cyprus, Bos zebu, a non-dairy breed in danger of extinction, as the population is decreased due to replacement by high milk producing cattle, despite the excellent adaptability of the native breed to the local climatic conditions of the country (Figure 3). Our group aims to study the genetic diversity within the native breed and identify its evolutionary relationship with other breeds, thus contributing to its preservation by highlighting its uniqueness. We are involved in phylogenetic analysis with blood samplings from all over the country and microsatellite genotyping (Figure 4).

Figure 3

Figure 4



Selected publications

1. Symeou, S., O. Tzamaloukas, G. Banos, and D. Miltiadou. 2020. ACAA2 and FASN polymorphisms affect the fatty acid profile of Chios sheep milk. J. Dairy Res. 1–4.
2. Neofytou, M.C., D. Miltiadou, E. Sfakianaki, C. Constantinou, S. Symeou, D. Sparaggis, A.L. Hager-Theodorides, and O. Tzamaloukas. 2020. The use of ensiled olive cake in the diets of Friesian cows increases beneficial fatty acids in milk and Halloumi cheese and alters the expression of *SREBF1* in adipose tissue. J. Dairy Sci. 103: 8998-9011.

Research Group on Plant Stress Physiology

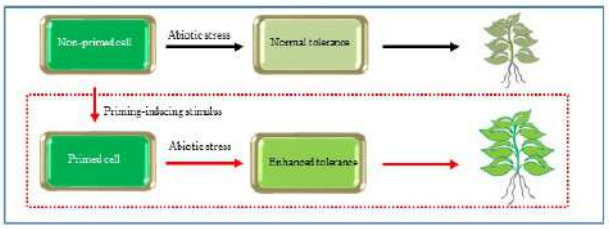
Head: Vasileios Fotopoulos, Associate Professor

Team: Gholamreza Gohari, Egli Georgiadou, Chrystalla Antoniou, Andreas Ioannou, Alexandros Spanos, Irene Nikolaou, Michaella Pieri

The increased frequency and extent of global climatic changes and associated extreme environmental events remarkably influence plant growth and development, ultimately affecting crop productivity throughout the world. Our research group has extensive research experience in plant stress physiology, biochemistry, molecular biology and biotechnology with emphasis on the study of oxidative and nitrosative signalling cascades involved in the plant's response to abiotic and biotic stress factors. Its staff and collaborators are comprised of plant physiologists, biochemists, molecular biologists and analytical chemists. Through our work we try to decipher the cellular mechanisms that orchestrate plant responses to such stress factors, while at the same time evaluating means of their amelioration. This is primarily done with chemical priming, which involves exposure to a priming agent such as a natural or synthetic chemical compound. Chemical priming presents opportunities for more effective use of plant priming in plant stress physiology studies and crop stress management. Furthermore, we are examining the potential use of chemical compounds and nanomaterials towards improved growth under normal conditions.

We participate in numerous national and EU-funded research projects and are members of international associations and networks such as the International Plant Proteomics Organization, as well as COST Actions FA0605, FA1106, FA1306 and CA19125. Our group also has extensive experience in hosting international exchange students through Erasmus+ and COST STSM programmes, including students from Poland, Greece, Austria and Spain.

Our network of collaborators extends globally, including partners at VIB in Belgium, Max Planck Institute in Germany, City University of New York in the US and CNR in Italy. In addition, we have experience in the establishment of intellectual property rights resulting from research carried out in our labs, leading to international patent WO 2015123273.A1. Attempts are currently being made to license the patented technology through a short-tech research project co-funded by the inventors' affiliating Institutes (CUT and CUNY; 'NOSH'-TEC').



Pretreatment using a priming-inducing stimulus (e.g., chemical compound) results in enhanced cell tolerance and amelioration of stress-induced plant growth inhibition.

Alfalfa plants (A) under drought stress, (B) well-watered, (C) pre-treated with melatonin and drought-stressed, (D) pre-treated with melatonin and watered.

Selected publications

1. Wang K, Cai S, Xing Q, Qi Z, Fotopoulos V, Yu J, Zhou J (2022). Melatonin delays dark-induced leaf senescence by inducing miR171b expression in tomato. Journal of Pineal Research 72, e12792.
2. Filippou P, Zarza X, Antoniou C, Obata T, Villarroel CA, Ganopoulos I, Harokopos V, Gohari G, Aidinis V, Madesis P, Christou A, Fernie AR, Tiburcio AF, Fotopoulos V (2021). Systems biology reveals key tissue-specific metabolic and transcriptional signatures involved in the response of Medicago truncatula genotypes to salt stress. Computational and Structural Biotechnology Journal 19, 2133-2147.
3. Antoniou C, Xenofontos R, Chatzimichail G, Christou A, Kashfi K, Fotopoulos V (2020). Exploring the potential of nitric oxide and hydrogen sulfide (NOSH)-releasing synthetic compounds as novel priming agents against drought stress in Medicago sativa plants. Biomolecules 10, 120.

Research Group on Fruit Sciences/Postharvest

Head: George Manganaris, Associate Professor

Team: Egli Georgiadou (Research Associate), Nicolas Valanides (PhD student), Anna Taliadorou (PhD student)

Webpage: www.fruitsciences.eu

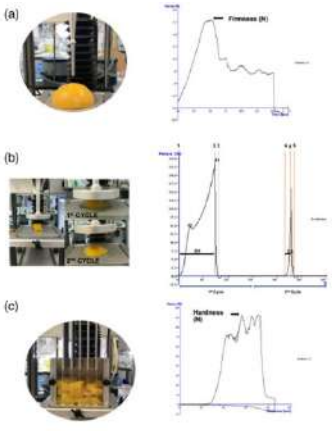
Our group is having extensive research experience in issues related to preharvest and postharvest factors affecting fresh produce with special reference to fruit crops and grapes. We can routinely run an array of assays related to qualitative, physicochemical, phytochemical and biochemical properties of fresh produce. We have additionally focusing our research activities towards:

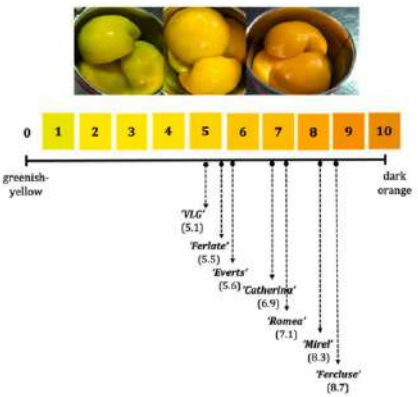
1. Optimization of production protocols/preharvest management practices
2. Control of physiological disorders both on- and off-vine
3. Characterization and valorization of indigenous cultivars, including the exploitation of underutilised fruit crops under Cypriot conditions
4. Incorporate innovative postharvest applications in the supply chain of fresh produce
5. Create a critical mass of interest and raise awareness among policy makers and end users for the deployment of the Group results at commercial scale
6. Identify market challenges and opportunities for the Cypriot horticultural sector with special reference to fruit crops and grapes

PhD projects

Over the period 2018-2022, our group awarded 3 PhDs, resulting in a total of 10 publications.

1. The effect of processing on sensorial attributes, textural properties and preservation of bioactive compounds of commercially important peach clingstone cultivars by Marina Christofl
2. The effect of pre- and postharvest factors on qualitative attributes, phytochemical properties and incidence of physiological disorders in loquat fruit by Margarita Hadjipieri
3. Effect of postharvest sun-drying process on qualitative attributes and bioactive composition of 'Xynisteri' and 'Mavro' grapes, destined for the production of sweet wine 'Commandaria' by Savvas Constantinou





Main research projects

1. Development of innovative priming technologies safeguarding yield security in soft fruit crops through a cutting-edge interdisciplinary approach, Call: HORIZON-WIDERA-2021-ACCESS-03-01 – Twinning, Budget: 894,000€
2. Sustainable optimization of the value chain of added-value fresh and dried berries through the integration of Precision Agriculture management strategies and innovative dehydration and edible coating processes, Call:H2020-MSCA-RISE-2020, CUT Budget: 193,200€
3. Valorization of the reference indigenous grape cultivar 'Xynisteri' under variable vineyard conditions through sensorial analyses and aromatic characterization, Call: Didaktor (Post-Doctoral Researchers) - Pillar: Sustainable growth, Funding Agent: RIF, CUT Budget: 54,000€

Organisation of Conferences

1. 10th ISHS Peach Conference (www.fruitsciences.eu/peach2021), 30 May – 3 June, 2022.
2. Carotenoid research and applications in agro-food & health (https://www.eurocaroten.eu/limassol), 25-25 November, 2019.
3. Data integration for grapevine research in the context of environmental transition (https://integrape.eu/event/integrape-2022/), 14-16 March, 2022.

Selected publications

(available through the link: https://www.fruitsciences.eu/research-papers.html)

1. Christofi M, Mauromoustakos A, Mourtzinos I, Lazaridou A, Drogoudi P, Theodoulidis S, Biliaderis CG, Manganaris GA. The effect of genotype and storage on compositional, sensorial and textural attributes of canned fruit from commercially important non-melting peach cultivars. Journal of Food Composition & Analysis 2021, 103:104080.

2. Hadjipieri M, Georgiadou E, Costa F, Fotopoulos V, Manganaris GA. Dissection of the incidence and severity of purple spot physiological disorder in loquat fruit through a physiological and molecular approach. Plant Physiology & Biochemistry 2020, 155, 980-986.

3. Brizzolara S, Manganaris GA, Fotopoulos V, Watkins C, Tonutti P. Primary metabolism in fresh fruits during storage. Frontiers in Plant Science 2020, 11:80.

4. Manganaris GA, Vincente AR, Martinez P, Crisosto CH. 2019. Postharvest physiological disorders in peach and nectarine. In: Physiological disorders in fruits and vegetables (eds. S. Tonetto de Freitas, S. Pareek). CRC press, pp. 253-264.

Research Group on Sustainable Agriculture **(SAG)**

Head: Menelaos Stavrinides, Associate Professor

Team: Andri Varnava, Athanasia Mandoulaki, Vassiliki Michael

Webpage: http://sustagric.com/

Research in the Sustainable Agriculture Group (SAG) focuses on improving the sustainability of crop protection and agricultural production in the face of a changing climate. Our work encompasses three main interlinked areas:

1) **Agri-environmental Research**

One of the key ecosystem services, pollination, is essential for maintaining the productivity of agricultural ecosystems. Andri Varnava, a PhD student in our group (co-supervised by Assoc. Professor D. Michez of the University of Mons, Belgium) published the first modern updated checklist of the wild bees of Cyprus. We found that Cyprus hosts 369 species of bees, of which 21 are endemic. In addition, through the COST ACTION SUPER-B, we participated in research showing that almost half of the surveyed farmers believed they had pollination service deficits for at least one of their crops. Furthermore, in another multi-collaborative work we evaluated the effectiveness of ecological focus areas for pollinator conservation and recommended that to improve habitat quality for pollinators an effective monitoring framework is needed.

The new Farm to Fork Strategy and the Post-2020 Common Agricultural Policy (CAP) place tremendous importance on the environment. Guided by our interests and the permeating sustainability environment, we coordinated the EU funded AgroLIFE project, the first effort in Cyprus to promote the conservation of High Nature Farmland (HNVF). HNVF represents agricultural fields and interwoven surrounding areas, which are of high importance for the conservation of biodiversity, and the preservation of traditional landscapes. Collaborating with Prof. Vogiatzakis of the Open University in Cyprus we characterised and mapped HNVF, showing that 35% of the area of the island is potentially HNVF. Key findings from AgroLIFE were used to design a new set of agri-environmental measures to provide support to farmers within the Cyprus Agricultural Development Programme. In a subsequent study we used HNVFs as an indicator for the provision of ecosystem services, and we are currently refining refine this work through our participation in a successful Integrated LIFE Project application (LIFE IP PHYSIS - https://pandoteira.cy/) coordinated by the Cyprus Department of Environment.

b) Sustainable pest management

Essential oils from various plant species exhibit promising effectiveness against pests. Working with Assist. Professor N. Tzortzakis at CUT, we showed that essential oil produced from lavender grown under water stress caused higher mortality to *T. urticae* than essential oil from plants grown under regular irrigation. Through collaboration with a Cypriot SME, we secured funding from the Research and Innovation Foundation of Cyprus (RIFCy) and evaluated the potential of an essential oil-based biopesticide against *T. urticae*, whiteflies (*Bemisia tabaci*) and aphids (*Myzus persicae*), and to test its effects to the predator *P. persimils* – the PLANTSAFE project. We found that the product shows promising results in the lab, while appropriate formulation seems to be required for adequate effectiveness in the field.

c) The environmental footprint of agricultural products

In an effort to establish a single market for green products across the EU, the Union has been developing the concept of the Product Environmental Footprint (PEF). The idea behind the PEF is simple: Enable consumers to compare the environmental performance of products based on a comprehensive assessment of environmental impacts over the life-cycle. The PEF for wine includes four impact categories: Carbon emissions (the carbon footprint), water use, eutrophication potential (fertilizer use) and biodiversity impacts. Working independently but in parallel to the EU initiative, we determined for the first time the carbon footprint of grapes from native and introduced varieties in Cyprus, showing that the CF of grapes from native varieties is three times lower than that of introduced varieties. In a subsequent study we showed that 73% of the CF is due to winery practices. Along similar lines, we established for the first time the CF for important medicinal and aromatic plants grown in Cyprus. The work in vineyards was funded by the RIFCy funded project ECOWINERY, where we worked closely with the SME Nicolaides winery, the National and Technical University of Athens, the University of Aberdeen and a global player, the NGO Cool Farm Alliance to estimate for the first time the PEF for Cypriot wine and develop a methodology for determining the biodiversity impact score. Athanasia Mandoulaki, a PhD student in my group focuses her research on evaluating the biodiversity effects of viticultural management practices and developing a scoring system for quantifying their impact.

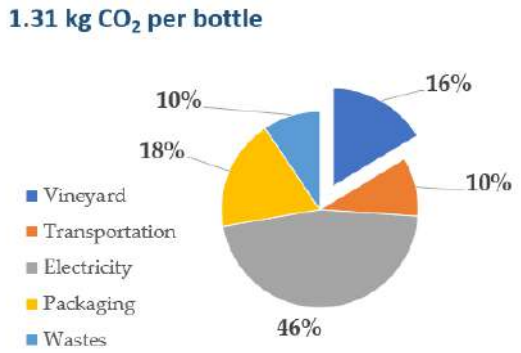


Fig. 1. *Wild bee of Genus Melecta sp.* (left) and collecting bees with the net (right).

Fig. 2. The carbon footprint for a Cypriot wine.

Fig. 3. Lowering pesticide use in vineyards through modern spraying technologies

Selected publications

Pe'er, G., Finn, J. A., Díaz, M., Birkenstock, M., Lakner, S., Röder, N., … , Stavrinides, M., Targetti, S., Viaggi, D., Vogiatzakis, I. N., & Guyomard, H. (2022). How can the European Common Agricultural Policy help halt biodiversity loss? Recommendations by over 300 experts. *Conservation Letters*, 00, e12901. https://doi.org/10.1111/conl.12901

Ioannidou, S. C., Litskas, V. D., Stavrinides, M. C., & Vogiatzakis, I. N. (2022). Linking management practices and soil properties to Ecosystem Services in Mediterranean mixed orchards. *Ecosystem Services*, *53*, 101378. https://doi.org/10.1016/J.ECOSER.2021.101378

Michael, C., Gil, E., Gallart, M., & Stavrinides, M. C. (2020). Influence of spray technology and application rate on leaf deposit and ground losses in mountain viticulture. *Agriculture (Switzerland)*, *10*(12), 1–18. https://doi.org/10.3390/agriculture10120615

Varnava, A., Roberts, S.P.M, Michez, D., Ascher, J., Petanidou, T., Dimitriou, S., Devalez, J., Pittara, M., Stavrinides, M.C. The wild bees (Hymenoptera: Apoidea) of the island of Cyprus. ZooKeys. Accepted November 2019.

More publications available at: http://sustagric.weebly.com/publications.html

Research Group on Dairy Science and Technology

Head: Photis Papademas, Associate Professor

Team: Panayiotis Mousikos, Lina Kotsaki, Ioanna Neokleous

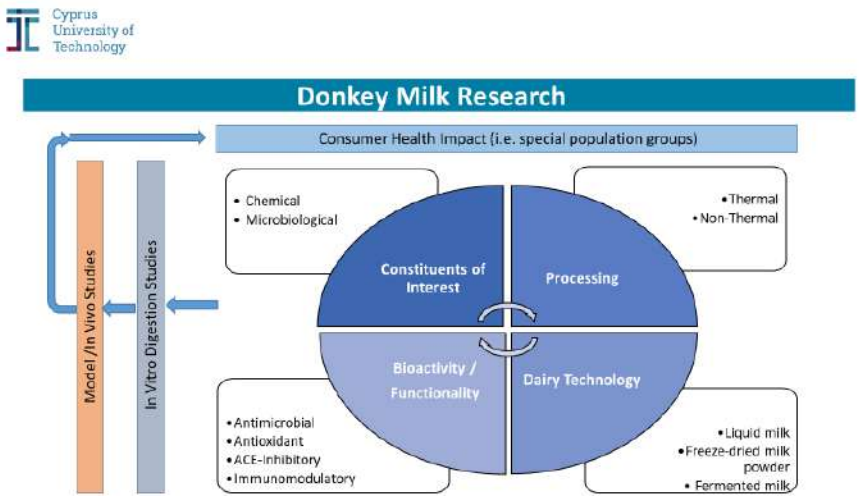
Webpage: https://ppapademas.wixsite.com/dstech

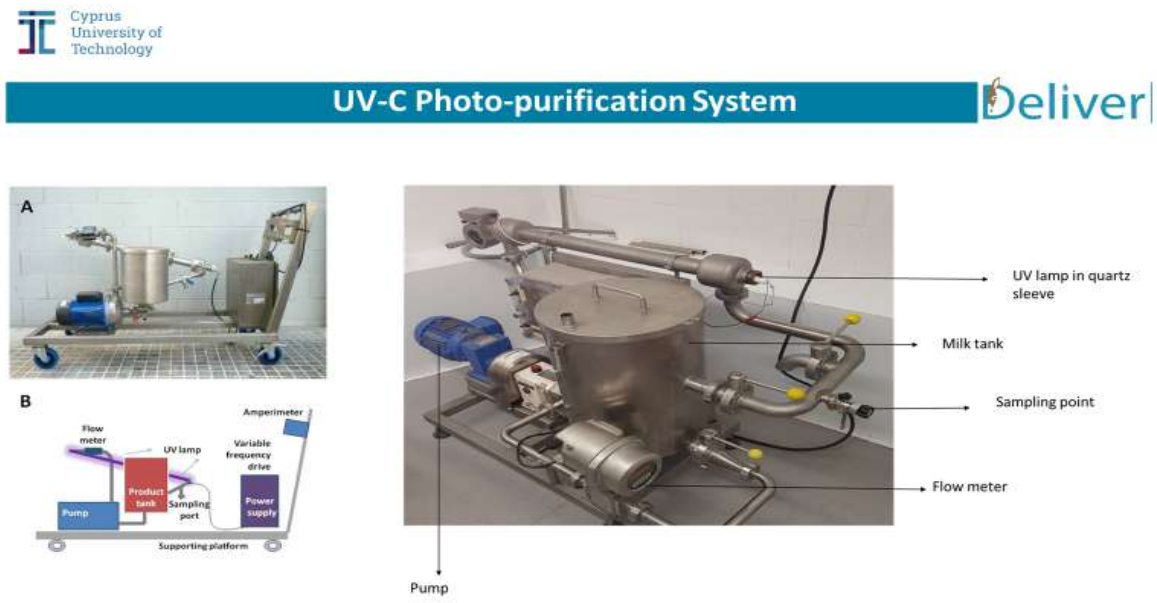
Dairy Products hold a major share of the worldwide food production and the dairy industry is considered a gigantic business. It is inevitable that research on Dairy Science and Technology is essential in producing high-quality safe, nutritious products. As we are situated in the Eastern part of the Mediterranean we have the opportunity to work with milk types other than cow. Therefore, our group has extensive research experience in non-cow milks such as goat, sheep and donkey milk. We are very much interested in characterising and "adding-value" through research to traditional dairy products and we have worked significantly over the years on sheep/goat Halloumi cheese (i.e. authentication, feeding regimes/areas of production, characterisation of the product). More recently, we were involved in the study/characterisation of a Cyprus white-brined cheese named Halitzi.

Over the last years the study of donkey milk is a major research objective of our group, where the potential positive health impact of donkey milk to population suffering from health issues (i.e. immunity related disorders) are studied through an international multi-disciplinary approach. We have also extensively studied the microbiome of donkey milk and used some of the isolated lactic acid bacteria to produce fermented products with functional properties.

Recently our group has successfully completed the research project "Deliver" funded by the Research and Innovation Foundation of Cyprus. We partnered with a local enterprise to produce a novel, bioactive donkey milk powder by a non-thermal processing method (UV-C) that has a minimal impact on the product's bioactivity.

More recently, we have been awarded the MILI project in collaboration with other partners from the Dept. The main objective of the project is to design and develop a novel method and related prototype to simultaneously detect in less than 10 minutes a selected panel of common milk contaminants (Aflatoxin-M1 and Antibiotics) at farm level.





Our network of collaborators includes academic partners at Parma University and Molise University in Italy, University College Dublin in Ireland, Queen's University Belfast in the UK, the Agricultural University of Athens, Aristotle University Thessaloniki, in Greece. In addition, members of our group participate as experts in projects on donkey milk (Veterinary School, University of Milan, Italy), and in Special Interest Groups, such as the "Traditional Products" of the ISEKI Food Association.

Additionally, we have participated/organised numerous outreach activities such as public talks, science fairs and others, in an attempt to promote Dairy Science and Technology research and education in Cyprus. Our group has extensive experience in hosting international conferences such as the IDF 7th IDF International Symposium on Sheep, Goat and another non-Cow Milk which was hosted in Limassol, Cyprus in 2015.

Some selected publications

Papademas, P., Aspri, M., Malissiova, E., Fantuz, F., Salimei, E. (2022) Donkey Milk. In: McSweeney, P.L.H., McNamara, J.P. (Eds.), Encyclopedia of Dairy Sciences, vol. 5. Elsevier, Academic Press, pp. 522–529.

Papademas, P., Bintsis, T. (2022) Cheese from Non-Bovine Milk. In: McSweeney, P.L.H., McNamara, J.P. (Eds.), Encyclopedia of Dairy Sciences, vol. 3. Elsevier, Academic Press, pp. 91–100.

Research Group on Hydro-Aromatic Plants

Head: Nikolaos Tzortzakis, Assistant Professor

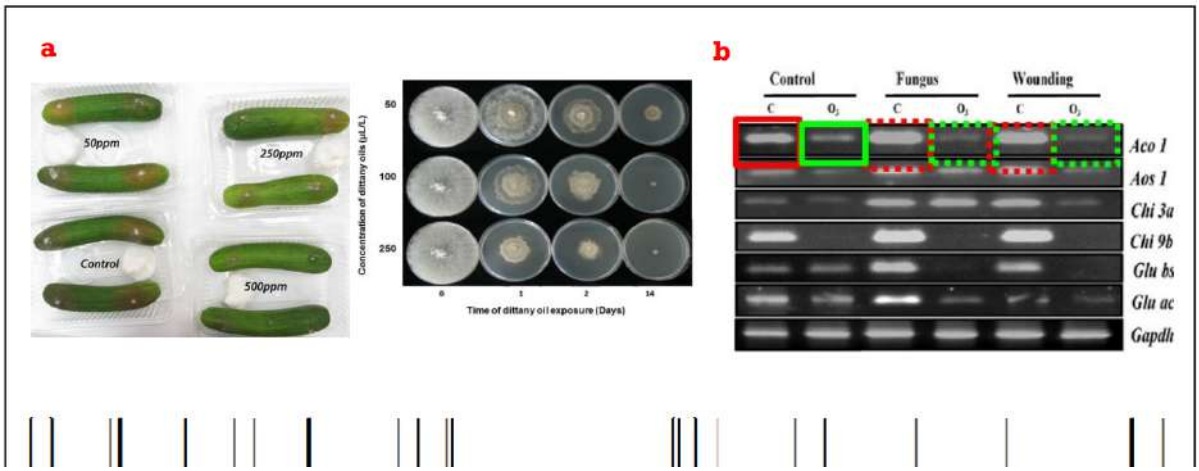
Team: Antonios Chrysargyris, Panayiota Xylia, Munoo Prasad, Vassilios Litskas, Constantinos Stefanou, Michalis Makrygiorgis, Christos Goumenos, Stavros Louka, Giorgos Toumazou, Efraimia Hajisolomou, Afroditi Pachniotou

Webpage: http://www.cut.ac.cy/hydro-aromatic-plants

Plant nutrition and food safety is of great concern nowadays, attracting scientists' research interests, while crop adaptation to several abiotic and biotic factors is evidenced due to climatic changes. Our group has extensive research experience in plant nutrition and plant physiology/ biochemistry in soil and hydroponics for vegetables and aromatic/medicinal plants. Additionally, the group has more than 20 years of experience in Postharvest Science, dealing with fresh produce preservation under natural sanitizers, essential oils and ozone, evaluating antimicrobial properties under pathogenic, physiological and biochemical/molecular approaches. Group's staff and collaborators is comprised of plant physiologists, plant pathologists, biologists, food scientists, biochemists, and analytical chemists.

Through our work we try to optimise appropriate nutrition for crop needs as well as to alleviate induced resistance occurred mainly by abiotic stresses. Moreover, natural products are examined as putative sanitizers against postharvest disease with possible enhancing inputs in fresh produce quality and storability. We have recently constructed a fully automated greenhouse, examining crops in various hydroponic systems (both horizontal and vertical).

We participate/coordinate numerous national and EU-funded research projects such as AGROLABS, VITISMART, STOPMEDWASTE, VALUEFARM, MIDIVINE, OPTIAROMAQ, LIFE EBP, CYANOTECH, SUSTAPONICS, BASICS, NUTRISENCE PLANTSAFE projects. Our network of collaborators extends globally, EU, USA, S. Africa, Asia and Africa. We are members of international associations and networks such as COST Actions FA1106, CA 17133 and EUVRIN. We have great experience in farmers and agronomists training and short courses/ summer schools. Members of the group are also members of the scientific committee's at int. conferences (2nd QMAP, WWPR2012, IWA Regional Workshop, WWMST2013, Postharvest Unlimited., SHE2016, 4^{th} -9^{th} Int. Conference on SSWM). We organised the "III International Symposium on Soilless Culture and Hydroponics" and the "VI International Symposium on Postharvest Pathology" in Cyprus. Tzortzakis N (2020,2021) received high quality & intern. recognition as ranked in the 2% of his main subfield discipline.



(a) Spearmint in DFT, (b) Lettuce in Zig-Zag, (c) Lettuce in pumice and sawdust, (d) Tomato in perlite, (e) Lettuce in NFT

Selected publications

Xylia P, Fasko KG, Chrysargyris A, Tzortzakis N, 2022. Heat treatment, sodium carbonate, ascorbic acid and rosemary essential oil application for the preservation of fresh *Rosmarinus officinalis.* Postharvest Biology Technol. 187: 111868.

Vink SN, Chrysargyris A, Tzortzakis N, Salles JF, 2021. Bacterial community dynamics varies with soil management and irrigation practices in grapevines (*Vitis vinifera* L.). Appl Soil Ecol. 158:103807.

Massa D, Magán JJ, Montesano, F, Tzortzakis N. 2020. Minimizing water and nutrient losses from soilless cropping in southern Europe. Agric. Water Manag. 241: 106395.

Chrysargyris A, Kloukina C, Vassiliou R, Tomou EM, Skaltsa H, Tzortzakis N. 2019. Cultivation strategy to improve chemical profile and anti-oxidant activity of *Sideritis perfoliata* L. subsp. perfoliata. Ind. Crops Prod. 140: article 111694.

Chrysargyris A, Papakyriakou E, Petropoulos SA, Tzortzakis N. 2019. The combined and single effect of salinity and copper stress on growth and quality of *Mentha spicata* plants. J. Hazard. Mater. 368: 584-593.

Research Group on Food Technology and Microbiology

Head: George Botsaris, Assistant Professor

Team: Nikolas Markantonis, Christodoulos Michael, Maria Liapi, Dimitris Zinonos, Loizou Ioanna, Avgousti Filios, Ioakeim Androulla

The research of our group focuses in three interrelated areas within Food Technology / Biotechnology and Food Microbiology:

1. Application of bacteriophage in food and veterinary diagnostics and in the biological control of bacterial diseases
2. Detection and control of foodborne pathogens and other important microorganisms in the food supply chain
3. Development of novel functional foods and their shelf-life evaluation.

The detection of food borne pathogens via the application of a combine bacteriophage detection and molecular confirmation by PCR is a very promising tool in food and veterinary diagnostics. The philosophy of this method is based on the detection of the targeted species of bacteria with the use of bacteriophage and the molecular identification of the species by PCR. This method has the ability to identify viable cells in less than 24 hours. The methodology we use for detecting MAP is schematically presented in Figure 1.

The phage amplification assay is faster and more sensitive compared to the conventional culture and

other immunological detection methods. These advantages are shared with molecular detection methods like the PCR and qPCR. The phage amplification assay though, has the vital advantage of being able to differentiate between live and dead cells. This advantage is of critical importance when analysing processed food samples.

Following the successful application and validation of our method in milk, dairy products and powder infant formulas, we are now investigating the possibility of applying strictly lytic bacteriophage in an attempt to biologically control paratuberculosis and other mycobacterial diseases.

Towards the effort to improve food borne pathogen detection and monitoring in the food chain in Cyprus, we have recently completed a study reporting the detection of *Mycoplasma bovis*, *Staphylococcus aureus* and *Streptococcus agalactiae* in cattle bulk tank milk and the relations with somatic cell counts. Other projects are also initiated aiming at recording the prevalence of other important foodborne bacterial pathogens and viruses.

More recently the rise of antimicrobial resistance alongside the shift in the consumers' demand for safer and healthier products directed our group's research towards the pivotal need of investigating natural products and their potential antimicrobial activity against foodborne pathogens. We are currently investigating the antimicrobial effect of pure phenols as carvacrol, eugenol, catechin, quercetin, gallic acid, and extracts namely carob leaves, pomegranate peels, *Capparis spinosa* leaves, *Geranium purpureum* leaves, *Glycyrrhiza glabra* leaves and roots vine and liquorice industry by-products as well as *Pistacia lentiscus* essential oil against different strains of *Listeria monocytogenes*, *Salmonella* Enteritidis, *Escherichia coli* and *Staphylococcus aureus*.

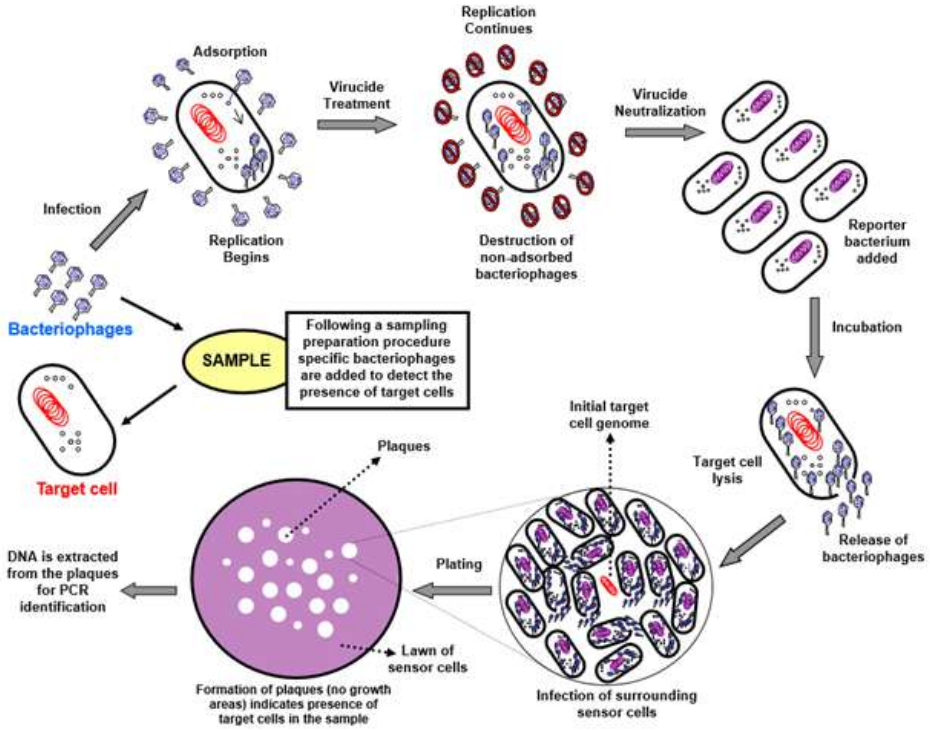


Figure 1. Diagram of phage amplification assay. Phage are added to sample and infects any target cells present in the sample. After time for infection, any remaining intact phage are destroyed using a virucide. This is neutralized by dilution and then new phage produced from the infected cell are detected by plating the sample in a lawn of phage-sensitive 'sensor' cells. To increase specificity, DNA can be extracted from plaques for PCR amplification of genomic signature sequences from the target cell.

Finally, the technological development and shelf-life evaluation of novel functional foods is gaining major interest, considering the shift towards healthier products in the developed countries and the resulting increase of the functional food market. Our research interests in the area, focus on the development of novel yoghurt-based products assessing the effects of functional ingredients on the viability of probiotic microorganisms and on the organoleptic quality.

Collaborating with the local industry in a number of small projects we have managed to produce results that merited publication in scientific journals, whilst offering also solutions to problems encountered. We will continue working in close association with government services and the local industry in an attempt to provide solutions to the industry and assist the authorities in their efforts to monitor and control the prevalence of foodborne pathogens throughout the food chai

Selected publications

1. Liapi, M., Botsaris, G., Arsenoglou, C., Markantonis, N., Michael, C., Antoniou, A., Pipis, C., 2021. Rapid Detection of *Mycoplasma bovis*, *Staphylococcus aureus* and *Streptococcus agalactiae* in Cattle Bulk Tank Milk in Cyprus and Relations with Somatic Cell Counts. Pathogens 10, 841
2. Hadjimbei, E., Botsaris, G., Goulas, V., Alexandri, E., Gekas, V., & Gerothanassis, I. P. 2020.. Functional stability of goats' milk yoghurt supplemented with *Pistacia atlantica* resin extracts and *Saccharomyces boulardii* International Journal of Dairy Technology 73, 134-143
3. Xylia, P., Botsaris, G., Chrysargyris, A., Skandamis, P., Tzortzakis, N. 2019. Variation of microbial load and biochemical activity of ready-to-eat salads in Cyprus as affected by vegetable type, season, and producer Food microbiology 83, 200-210

Research Group on Phytopathology & Integrated Management of Plant Diseases

Head: Loukas Kanetis, Assistant Professor

Team: Chrysostomos Oplos, Styliana Efstathiou, Georgios Makris

The research of our group focuses mainly on the following interrelated areas of Plant Pathology:

1. Etiology, epidemiology and population dynamics of existing and emerging plant pathogens, with a focus on grapevine and tree-fruit trunk diseases.
2. Integrated plant disease management.
3. Development of alternative/eco-friendly management solutions, alternative to synthetic pesticides.

Our group has highlighted the significance of grapevine trunk diseases (GTDs) in the country, suggesting that the Cyprus vineyard is severely affected by these complex diseases, threatening the productivity and longevity of the local viticulture and the winemaking industry. More specifically, our research has focused on (a) the etiology of the implicated fungal species, describing novel fungal species associated with GTDs, (b) their pathogenicity, and (c) disease epidemiology under Cyprus conditions. Furthermore, we have already assessed the indigenous grapevine cultivars for their sensitivity status to GTD-related pathogens and we are advancing towards the development on novel biocontrol agents for disease management of esca.

Yield losses caused by the oomycetous pathogen *Phytophthora infestans* pose a continuous challenge for the local potato industry. During a 3-year study, our results revealed the predominance of a highly aggressive mefenoxam-insensitive EU_13_A2 lineage across the country (>79%), suggesting introduction events of the microorganism from major tuber-exporting countries. Thus, improved seed certification programmes should be undertaken to minimise inoculum importation and current disease management strategies should be refined.

Disentangling pathogen population structure in anthropogenic agroecosystems is crucial to designing more effective management schemes. We recently studied how evolutionary forces exerted in different farming systems, in terms of agrochemicals-input, shape *Botrytis cinerea* populations. Results highlighted widespread fungicide resistance in conventional farms, while a considerable frequency was also detected in organic. Genotyping analyses were able to detect population structure associated with resistance to fungicides. However, genetic variance among strawberry and tomato populations of this significant pathogen was high, ranking host specificity higher than other selection forces studied.

Our group participates in national and international research projects, COST Actions, and scientific organizations. We also hold a collaborative network with other research labs in Cyprus, Greece, and the USA. At the same time, we have established numerous synergies with governmental services and the local industry to provide consultation and promote novel and sound solutions to plant disease management.

Selected publications

1. Ioos R., Aloi F., Piškur B., Guinet C., Mullett M., Berbegal M., Bragança H., Cacciola S. O., Oskay F., Cornejo C., Adamson K., Douanla-Meli C., Kačergius., Martínez-Álvarez P., Nowakowska J. A., Luchi N., Vettraino A. M., Ahumada R., Pasquali M., Fourie G., Kanetis L. I., Alves A., Ghelardini L., Dvořák M., Sanz-Ros A., Diez J. J., Baskarathevan J., Aguayo J. (2019). Transferability of PCR-based diagnostic protocols: An international collaborative case study assessing protocols targeting the quarantine pine pathogen *Fusarium circinatum.* Scientific reports, 9:8195.

2. Makris G., Solonos, S., Christodoulou, M., Kanetis, L. I. (2022). First report of *Diaporthe foeniculina* associated with grapevine trunk diseases on *Vitis vinifera* in Cyprus. Plant Disease, 106(4):1294.

3. Kanetis L. I., Pittas, L., Nikoloudakis N., Cooke, D. E. L., Ioannou N. (2021). Characterization of *Phytophthora infestans* populations in Cyprus, the southernmost potato-producing European country. Plant Disease, 105(11):3407-3417.

4. Makris G., Nikoloudakis N., Samaras A., Karaoglanidis G., Kanetis L. I. (2022). Under pressure: A comparative study of *Botrytis cinerea* populations from conventional and organic farms in Cyprus and Greece. Phytopathology (accepted: doi.org/10.1094/PHYTO-12-21-0510-R).

Research Group on Food Chemistry and Analysis and Magnetic Resonance Spectroscopies

Head: Chryssoula Drouza, Assistant Professor

Team: Smaragda Spanou (PhD student) Eleni Michailidou (PhD student);

Webpage: http://www.cut.ac.cy/abf/staff//chryssoula.drouza

Food quality has direct impact on human health consisting a major concern of the consumers worldwide. Food chemistry is involved in both elucidating the composition of the raw material / final products and the changes occurring in food during its production, processing, storage and cooking.

A comprehensive evaluation of foods requires that analytical techniques are evolved with the available technology. As a result, a major objective in food chemistry is concerned with the application and continuous development of analytical methods. This aspect is particularly important when following possible contamination of foods with substances which may involve a health risk or interfere with the fraud in nutrient evaluation of food. Food authenticity and classification is of high concern for the consumers, the government and the public financial sector of a country. Furthermore, our group has developed new technology in the preparation of new radical initiators for the investigation of the stability of food using Electron Paramagnetic Spectroscopy (EPR) as well for use as chemoprevention / anticancer agents

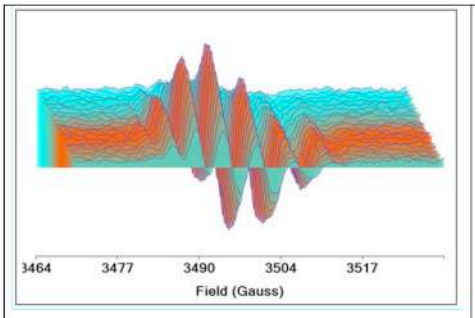
Our research group has extensive research experience in issues related to food composition, chemical changes of food as part of processing or storage, and developing methods to trace important biomolecules in the food matrix, and classification of food, and radical initiators' development. Therefore, our research group has been involved in the following research projects:

(a) Investigation for the determination of markers for the discrimination/authenticity of food, such as olive oil, wine, honey and other food products (b) Study of the mechanisms of food oxidation (c) Study of the changes in the composition of food and its metabolites during processing, aging and/or storage (d) Development of new methods for the analysis of food components with high impact to the adulteration, authenticity and deterioration of food (e) development of new radical initiators based on food components for chemoprevention /anticancer studies

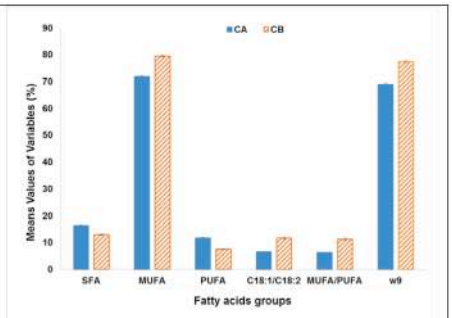
To match these targets in our group we utilise several advanced techniques such (i) chromatographic: gas chromatography (GC-MS/FID), High Performance liquid chromatography (HPLC-PDA/fluorescence/RI/UV, and (ii) spectroscopic: ^{1}H (1 and 2D), ^{13}C, ^{51}V, ^{19}F, ^{31}P Nuclear Magnetic spectroscopy (NMR), Electron Paramagnetic spectroscopy (EPR) UV-vis spectroscopy (iii) electrochemical: CV-voltammetry.

We have recently developed a new experimental approach for recording the composition of edible oils, by labeling its components with ^{19}F nuclei which is active in ^{19}F NMR spectroscopy providing the ability for measuring several bioactive components of edible oils in few minutes. Another new approach has been applied for the detection of bioactive components in food by utilizing new metal-organic probes to induce paramagnetic signal in the complex food matrix characteristic of its components providing quantification and/or information for the mechanism of the food deterioration under study. These new methods are being exploited to food characterization and to discriminate it on the base of the botanical and/or geographical origin, with high economic impact to the local and the international community.

Classification studies of our group have revealed the specific markers for botanical and geographical origin of Cypriot olive oils, and wines from olive trees and vines respectively of indigenous varieties.



Kinetics of the Formation and degradation of a-Tocopheryl radical at the presence of novel metal-organic initiators for EPR study of the quality of olive oils.



Molecular markers from Cluster Analysis for the Botanical discrimination of Cypriot Virgin Olive Oils (Cypriot and Koroneiki) based on the fatty acid content.

Our network of collaborators includes partners at Aristotle University of Thessaloniki, Agricultural University of Athens, University of Ioannina, and University of Patras, Greece; University of Cyprus, Cyprus; University of Sussex, University of Limerick, Ireland; University of Lleida, Spain; and academic members from the departments of Cyprus University of Technology.

We have participated in several national and EU-funded research projects while Dr. C. Drouza has experience in coordinating funded Infrastructure research programme, which funded the purchase of an EPR spectrometer. We are members of international associations and networks including COST Action CM1305, COST Action TD1203, the International Forum on Industrial Bioprocesses (IFIBiop), and the Pancypriot Union of Chemists.

Selected publications

1. Loizou, M.; Papaphilippou, P.; Vlasiou, M.; Spilia, M.; Peschos, D.; Simos, Y. V.; Keramidas, A. D.; Drouza, C., Binuclear VIV/V, MoVI and ZnII - hydroquinonate complexes: Synthesis, stability, oxidative activity and anticancer properties. *Journal of Inorganic Biochemistry* 2022, 235, 111911
2. Hadjiadamou, I.; Vlasiou, M.; Spanou, S.; Simos, Y.; Papanastasiou, G.; Kontargiris, E.; Dhima, I.; Ragos, V.; Karkabounas, S.; Drouza, C.; Keramidas, A. D., Synthesis of vitamin E and aliphatic lipid vanadium(IV) and (V) complexes, and their cytotoxic properties. *Journal of Inorganic Biochemistry* **2020**, 208, 111074.
3. Loizou, M.; Hadjiadamou, I.; Drouza, C.; Keramidas, A. D.; Simos, Y. V.; Peschos, D., Vanadium(V) Complexes with Siderophore Vitamin E-Hydroxylamino-Triazine Ligands, *Inorganics* **2021,** 9(10), 73; https://doi.org/10.3390/inorganics9100073, 73
4. Drouza, C.; Dieronitou, A.; Hadjiadamou, I.; Stylianou, M., Investigation of Phenols Activity in Early Stage Oxidation of Edible Oils by Electron Paramagnetic Resonance and 19F NMR Spectroscopies Using Novel Lipid Vanadium Complexes As Radical Initiators. *Journal of Agricultural and Food Chemistry* **2017,** *65*, 4942-4951.
5. Kritioti, A.; Menexes, G.; Drouza, C., Chemometric characterization of virgin olive oils of the two major Cypriot cultivars based on their fatty acid composition. *Food Research International* **2018,** *103*, 426-437.
6. Karabagias, I. K.; Vlasiou, M.; Kontakos, S.; Drouza, C.; Kontominas, M. G.; Keramidas, A. D., Geographical discrimination of pine and fir honeys using multivariate analyses of major and minor honey components identified by 1H NMR and HPLC along with physicochemical data. *European Food Research and Technology* **2018,** *244*, 1249-1259.

Research Group on Sustainable Dairy Production and Animal Nutrition

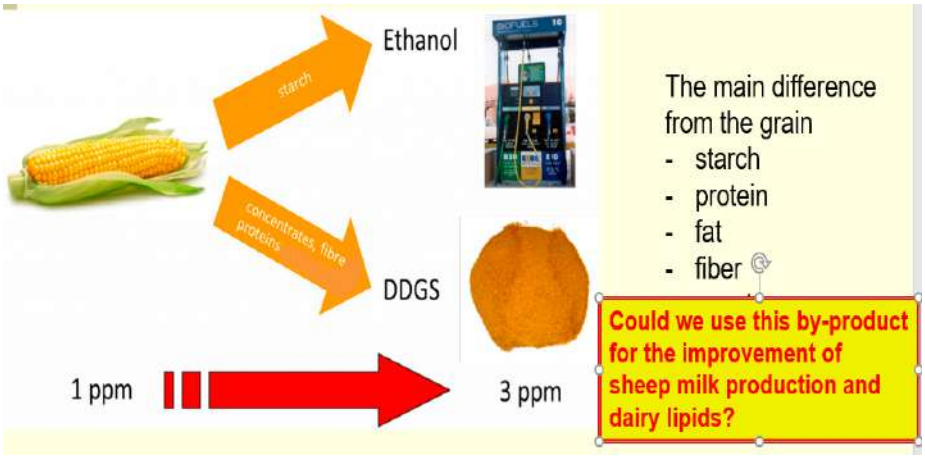
Head: Ouranios Tzamaloukas, Associate Professor

Team: Christina Mitsiopoulou, Simoni Symeou, Marina Neofytou and Mikaella Kyriakou (PhD candidate)

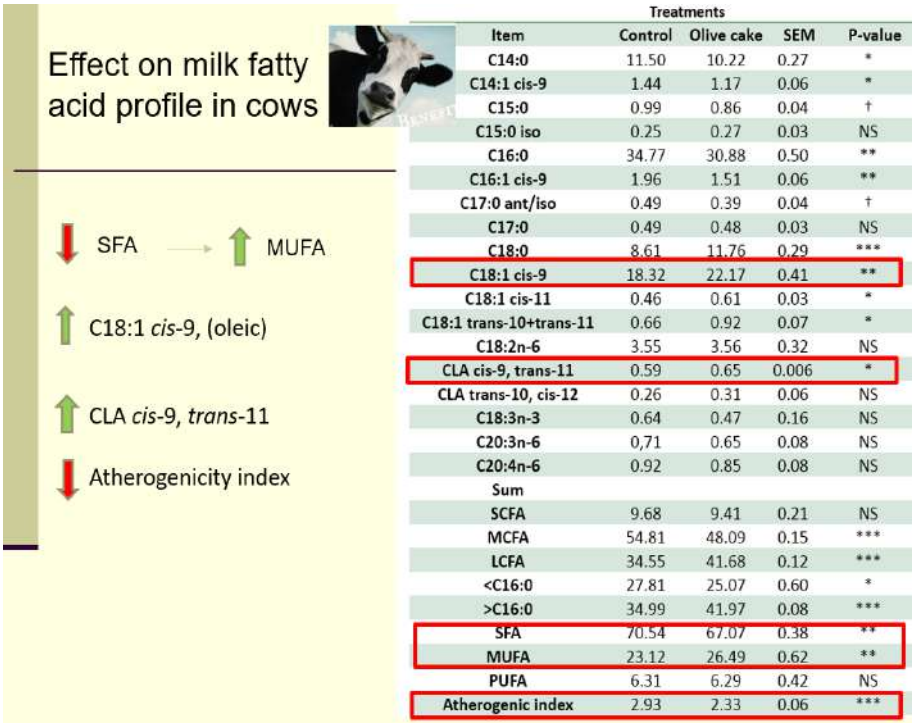
Website: Orcid ID: 0000-0001-7675-6718

Ruminant production and quality of its product is currently priority in Cyprus for both the private sector (farmers and dairy industry) and the Ministry of Agriculture. Dairy production in Cyprus needs to improve its productivity, competitiveness and sustainability by the means of best management practices, nutrition, and improved quality of the products produced. Within these objectives the research currently undertaken by our group has a significant impact on issues related to dairy production of Cyprus and the results have been presented in national and international conferences and published in high impact peer reviewed journals. This research activity can be summarised in the following subject areas and projects:

1. using by-products of olive oil production (olive cake) as a feed in the main ruminant breeds of the island (Chios sheep and Damascus goat and Holstein – Friesian cattle) and study the effect on milk production and quality
2. study the effects of nutritional supplementation with alternative feeds, such as the by-product of bioethanol production (dried distillers' grains), on milk yield and quality in Chios sheep
3. investigate the interplay of nutrition and expression of genes related to metabolism in mammary and adipose tissues in ruminants
4. research on lipids of milk and halloumi cheese produced with focus on the fatty acids that have been associated with beneficial effects on consumers' health
5. impact of organic farming, as compared to conventional one, on the quality of dairy products of the island
6. research on endangered local Cyprus cattle breed regarding the management practices applied in different areas of the island and the quality of meat produced
7. investigate the optimum management practices and precision livestock farming systems for sustainability, animal well-being and quality of the products



Example of the by-products used in our experiments for the improvement of lipid content of sheep milk. Here the inclusion of DDGS improved the lipid profile and the atherogenic index of milk produced.



	Treatments			
Item	Control	Olive cake	SEM	P-value
C14:0	11.50	10.22	0.27	*
C14:1 cis-9	1.44	1.17	0.06	*
C15:0	0.99	0.86	0.04	†
C15:0 iso	0.25	0.27	0.03	NS
C16:0	34.77	30.88	0.50	**
C16:1 cis-9	1.96	1.51	0.06	**
C17:0 ant/iso	0.49	0.39	0.04	†
C17:0	0.49	0.48	0.03	NS
C18:0	8.61	11.76	0.29	***
C18:1 cis-9	18.32	22.17	0.41	**
C18:1 cis-11	0.46	0.61	0.03	*
C18:1 trans-10+trans-11	0.66	0.92	0.07	*
C18:2n-6	3.55	3.56	0.32	NS
CLA cis-9, trans-11	0.59	0.65	0.006	*
CLA trans-10, cis-12	0.26	0.31	0.06	NS
C18:3n-3	0.64	0.47	0.16	NS
C20:3n-6	0,71	0.65	0.08	NS
C20:4n-6	0.92	0.85	0.08	NS
Sum				
SCFA	9.68	9.41	0.21	NS
MCFA	54.81	48.09	0.15	***
LCFA	34.55	41.68	0.12	***
<C16:0	27.81	25.07	0.60	*
>C16:0	34.99	41.97	0.08	***
SFA	70.54	67.07	0.38	**
MUFA	23.12	26.49	0.62	**
PUFA	6.31	6.29	0.42	NS
Atherogenic index	2.93	2.33	0.06	***

Example of the improvement of lipid content of milk when cows fed ensiled olive oil by-product. The results showed that milk was enriched with beneficial for human health lipids (MUFA, oleic, CLA) on the expense of saturated lipids (SFA) and these attributes were transferred to the Halloumi cheese

Members of our research group on Sustainable Dairy Production and Animal Nutrition have participated in several national and international projects, funded by the Cyprus Research and Innovation Foundation and co-funded by EU as well as projects funded and supported by the local dairy and feed industry, the ministry of Agriculture and non-governmental organizations. We have developed an extensive network of local farmers and research institutes and we are acting as members in committees of national bodies (Ministry of Agriculture) and internationally, in associations and networks involved in animal and dairy science (European Association of Animal Production). Our group also has extensive activities in exchanging knowledge, students and research associates for the needs of collaborative research through Erasmus+, COST actions and other funding bodies, while the interaction is very active between our group and globally known institutions.

Selected publications

1. Simitzis, P.; Tzanidakis, C.; Tzamaloukas, O.; Sossidou, E. (2022). *Contribution of Precision Livestock Farming Systems to the Improvement of Welfare Status and Productivity of Dairy Animals*. **Dairy** 3(1), 12-28.
2. Neofytou M. C., Michael C., Constantinou C, Sparaggis D., Tzamaloukas O. (2021) *Feeding wheat dried distillers' grains with solubles increases conjugated linoleic acid and unsaturated lipids in ovine milk without adversely affecting milk yield.* ***Journal of Dairy Research*** 88(2), 128–133.
3. Tzamaloukas, O., Neofytou, M. C., Simitzis, P. E. (2021). *Review Article: Application of olive by-products in livestock with emphasis on small ruminants: Implications on rumen function, growth performance, milk and meat quality.* ***Animals***, 11 (2), 1-14.
4. Neofytou M.C., Miltiadou D., et al Tzamaloukas, O. (2020). *The use of ensiled olive cake in the diets of Friesian cows increases beneficial fatty acids in milk and Halloumi cheese and alters the expression of SREBF1 in adipose tissue.* ***Journal of Dairy Science***, 103 (10), 8998-9011.

Research Group on Natural Products Analysis & Processing

Head: Vlasios Goulas, Assistant Professor

Team: Constantina Stavrou, Eva Georgiou, Aristi Alkiviadi, Argiro Evlavi, Athena Constantinou, Alexandros Kosti

Website: https://npap-lab.com/

The Natural Products Analysis and Processing Research Group performs profound research with the state-of-the-art equipment in the field of natural products and plant-based foods. The research activity of group involves three interrelated areas pillars:

1. evaluation of the bioactive composition and bioactivity of natural products and plant-based foods
2. discovering novel bioactive compounds and/or extracts for food industry and pharmaceutics
3. the impact of processing on stability of bioactive compounds and bioactivity in natural products and plant-based foods

An array of advanced chromatographic, spectroscopic and physicochemical methods has been developed/modified to achieve our research objectives. Furthermore, *in vitro* and *in silico* methods are used for the assessment of bioactivity of natural products and foods of plant origin.

The elucidation of phytochemical composition of natural products and plant-based foods is one the major objectives of the research group. The phytochemical analysis is of great importance for these products as phytochemicals are linked with health effects and quality attributes eg taste, color etc. They also can be exploited as markers for the authenticity and origin of food. In period 2018-2022, the polyphenolic composition of carob and grape products was mainly investigated.

Another current topic of interest is to discover new multifunctional agents from natural products since they are considered as an extraordinary reservoir of novel chemodiverse molecules. Especially, the natural products are explored to pinpoint antioxidant, antimicrobial anti-hypertensive and antidiabetic compounds/ extracts. The utilization of the bioactive compounds/ extracts to produce innovative food formulations or food packaging coatings is also investigated. In this attempt, we contemplate Mediterranean flora as numerous phytochemicals with potential preventive and possibly therapeutic potential are comprised.

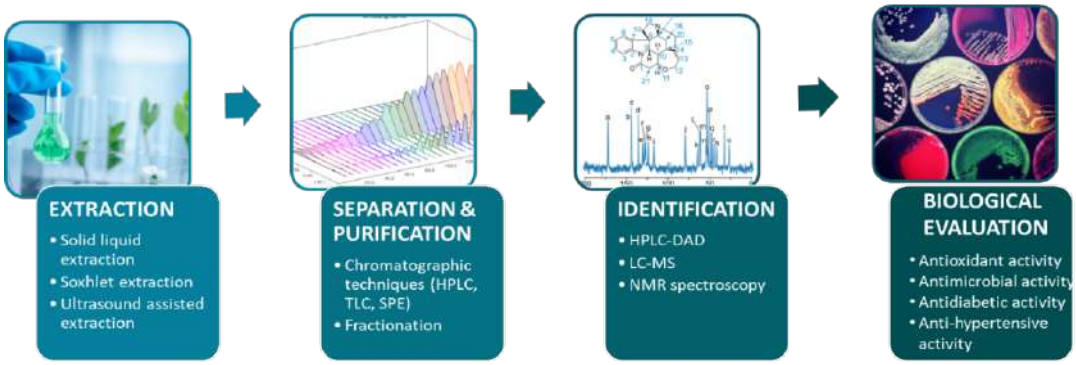


Fig 1*. Integrated approaches for discovering novel bioactive compounds from natural products and plant-based foods*

Over the past few years, there has been an increasing consumer's interest toward functional food which, beyond the basic function of supplying nutrients, claims to have health-promoting or disease-preventing properties. Thus, the stability of bioactive phytochemicals during processing operations such as drying/dehydration, ultrasound irradiation, extraction etc is of great importance. The impact of processing and cooking methods on bioactive composition of plant-based foods has been studied by our research group.

A network of collaborators including partners at Research and Development of Functional Food Centre (CIDAF) and UCAM Universidad Católica de Murcia in Spain, Faculty of Medicine and Department of Chemistry in Ioannina (Greece) and International Center for Chemical and Biological Sciences in Pakistan has been established. In addition, synergies with other members of Academic staff at ABF Department and local organizations such as Department of Agriculture (Quality Products Section) have been established. Finally, the Natural Products Analysis and Processing Research Group participate in national and international funded research projects and active members of international associations and networks.

Selected Publications

1. **Goulas V*,** Stavrou K, Michael C, Botsaris G, Barbouti A. The potential of sun-dried grape pomace as a multi-functional ingredient for herbal infusion: Effects of brewing parameters on composition and bioactivity. *Antioxidants*, 2021, 10, 586.
2. **Goulas V***, Georgiou E. Utilization of carob fruit as sources of phenolic compounds with antioxidant potential: Extraction optimization and application in food models. *Foods*, 2020, 9, 20.
3. **Goulas V***, Hadjivasileiou L, Primikyri A, Michael C, Botsaris G, Tzakos AG, Gerothanassis IP. Valorization of carob fruit residues for the preparation of novel bi-functional polyphenolic coating for food packaging applications. *Molecules*, 2019, 24, 3162.
4. **Goulas V***, Hadjisolomou A. Dynamic changes in targeted phenolic compounds and antioxidant potency of carob fruit (*Ceratonia siliqua* L.) products during *in vitro* digestion. *LWT-Food Science and Technology*, 2019, 101, 269-275.
5. **Goulas V***, Nicolaou D, Botsaris G, Barbouti A. Straw wine melanoidins as potential multifunctional agents: Insight into antioxidant, antibacterial, and angiotensin-I-converting enzyme inhibition effects. *Biomedicines*, 2018, 6, 83.

Research Group on Plant Pathology, Plant Microbe Interactions

Head: Iakovos Pantelides, Assistant Professor

Team: Antria Tsalakou, Iliana Charalambous, Krystallia Komninaki, Antonis Tzionis, Giorgos Artymatas, Christodoulos Panagiotou, Stavroula Dimitriadi

Plant pathogenic microbes as well as unfavorable growth conditions can be a threat for plant growth. Approximately 25% of the world's crop yield is lost every year due to diseases caused by fungi, bacteria, viruses and other pathogens and pests. Protection of plants is mainly based on chemical products. Their use can potentially threaten humans' health and pollute the environment. In order to reduce our dependence on chemical pesticides new strategies have been developed.

Today Integrated Management plans are being widely adopted. This strategy brings together the understanding of pathogens' life cycles and their interactions with the plants and the environment. The protection plans combine a variety of non-chemical methods for managing plant diseases such as biological control. These strategies demand in depth knowledge of the plant-microbe encounters which can be friendly or hostile.

Our research focuses in interrelated areas within Plant Pathology and Biotechnology:

1. Detection, evaluation and exploitation of beneficial microbes, which associate with plant aerial parts and roots and provide plants with an array of antimicrobial metabolites, hormones and plant growth promoting enzymes.

2. Investigation of pathogenic or beneficial interactions between microorganisms and their plant host at molecular level in order to decipher the mechanisms of plant immunity and pathogen virulence or symbiotic cooperation.

3. Evaluation and application of eco-friendly methods to control plant pathogens.

4. Development of novel and effective strategies to manipulate networks and interactions existing between the plant, the plant microbial community and the environment to sustainably improve plant health and agricultural productivity.

Our recent findings have been announced in international conferences and published in peer reviewed journals.

We participate in numerous research projects at national and international level and the senior researcher is an active member of international associations and networks such as The American Phytopathological Society (APS, member), International Society for Molecular Plant-Microbe Interactions (IS-MPMI, Member), Mediterranean Phytopathological Union (MPU, member), Hellenic Phytopathological Society (HPS, board member).

Our group also has experience in hosting international exchange students through Erasmus+ programmes.

Further, we have established a global network of collaborators including partners at Utrecht University in the Netherlands, Pennsylvania State University in the US and Agricultural University of Athens in Greece.

We have also established collaborations with the local industry in an effort to offer solutions to practical problems encountered. We work in close association with plant protection agronomists of governmental services and the private sector in an attempt to provide appropriate measures and solutions and assist their efforts to monitor and control the diseases caused by plant pathogens.

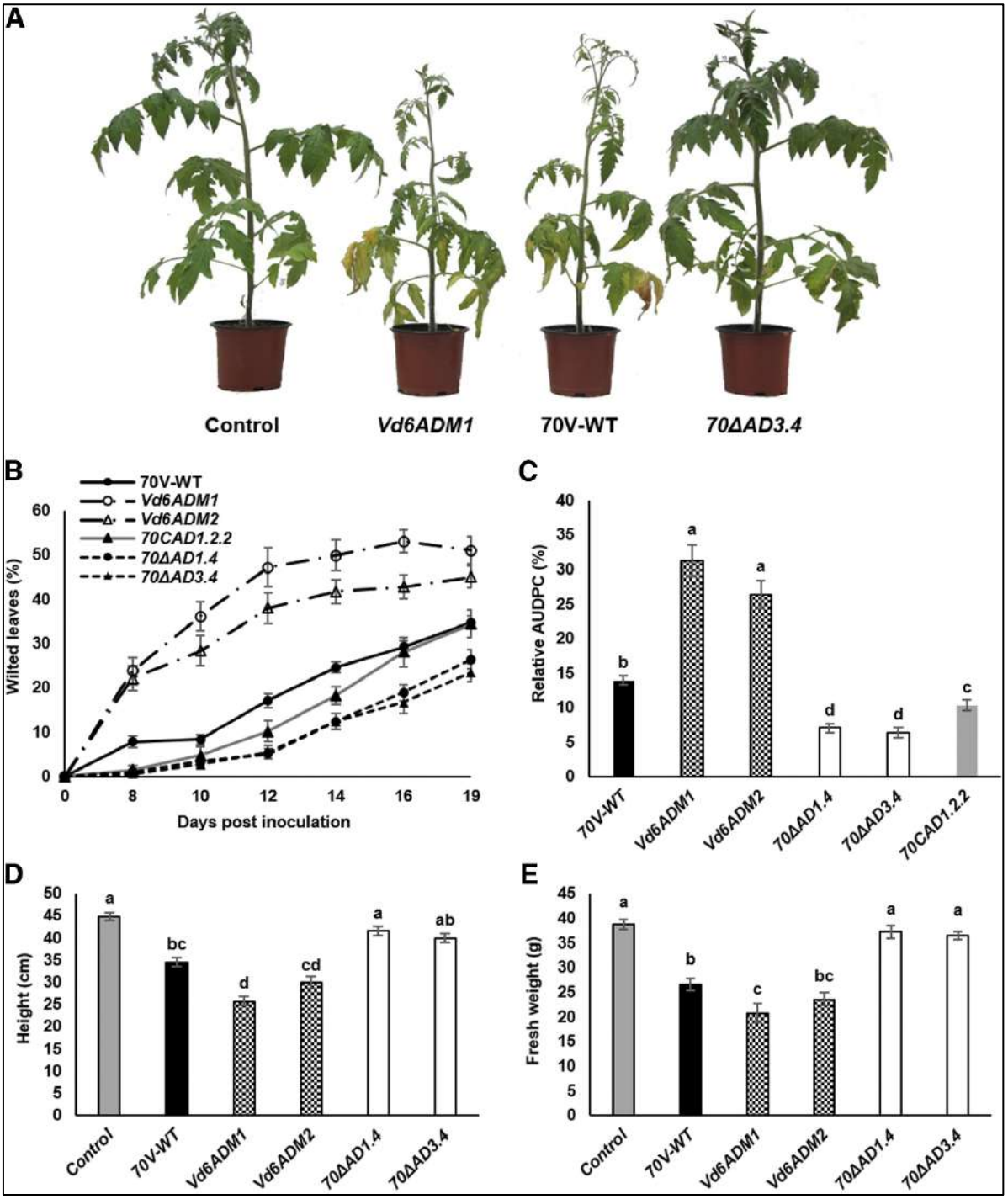


Figure 1: Disease severity of tomato plants infected with 70V-WT and 1-aminocyclopropane-1-carboxylic acid deaminase (*ACCd*) mutants. Tomato plants were inoculated with 70V-WT, deletion mutants (*70ΔAD1.4* and *70ΔAD3.4*), overexpression strains (*Vd6ADM1* and *Vd6ADM2*), and complemented deletion mutant *70CAD1.2.2*. **A,** Representative tomato plants at 19 days after inoculation. **B,** Disease progress over time, **C,** amount of disease expressed as relative area under the disease progress curve, **D,** height, and **E,** fresh weight of plants. Vertical bars indicate the standard errors based on 24 replicates. All values were subjected to analysis of variance. Different letters in C, D, and E note statistically significant differences according to Tukey's multiple range test at $P \leq 0.05$.

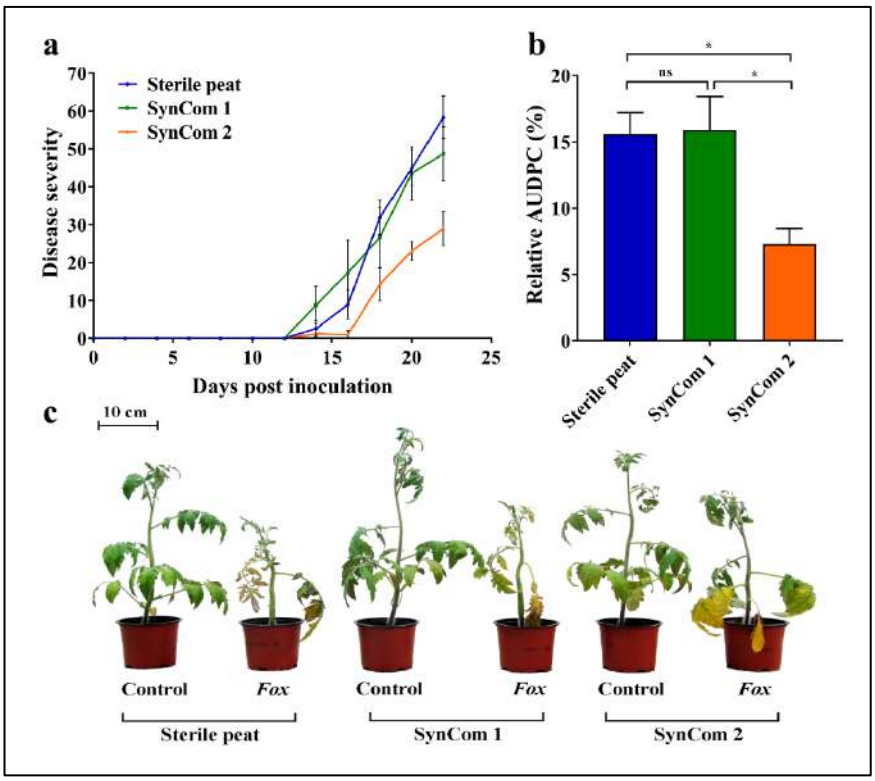


Figure 2: **SynCom2 has a protective effect on tomato plants against *F. oxysporum* f. sp. *lycopersici.*** (a) Disease progress over time and (b) amount of disease expressed as relative AUDPC. Error bars indicate the SE of mean (n = 8 replicates). Asterisks indicate statistically significant differences: *P < 0.05; ns, not significant, one-way ANOVA, Tukey's test. (c) Fusarium wilt symptoms on tomato plants grown in sterile peat (left), sterile peat inoculated with SynCom1 (middle) and with SynCom2 (right), at 22 d post inoculation.

Selected publications

Poulaki, E.G., Tsolakidou, M.-D., Gkizi, D., Pantelides, I.S., Tjamos, S.E. (2020) The ethylene biosynthesis genes ACS2 and ACS6 modulate disease severity of *Verticillium dahliae. Plants*, 9 (7), art. no. 907, pp. 1-12.

Pascale, A., Proietti, S., Pantelides, I.S., Stringlis, I.A. (2020) Modulation of the root microbiome by plant molecules: the basis for targeted disease suppression and plant growth promotion. *Frontiers in Plant Science*, 10, art. no. 1741.

Tsolakidou, M.-D., Stringlis, I.A., Fanega-Sleziak, N., Papageorgiou, S., Tsalakou, A., Pantelides, I.S. (2019). Rhizosphere-enriched microbes as a pool to design synthetic communities for reproducible beneficial outputs. *FEMS Microbiology Ecology*, 95 (10), art. no. fiz138.

Tsolakidou, M.-D., Pantelides, I., Tzima, A.K., Kang, S., Paplomatas, E.J., Tsaltas, D. (2019). Disruption and overexpression of the gene encoding ACC (1-Aminocyclopropane-1-Carboxylic Acid) deaminase in soil-borne fungal pathogen *Verticillium dahliae* revealed the role of ACC as a potential regulator of virulence and plant defense. *Molecular Plant-Microbe Interactions*, 32 (6), pp. 639-653.

Research Group on Agricultural Biotechnology/ Genetic Resources & Crop Evolution

Head: Nikolaos Nikoloudakis, Special Teaching Staff

Team: Vasilis Polyviou (MSc student), Anastasia Markou, Constantina Andreou, Christina Naziri (BSc students)

Webpage: https://www.researchgate.net/profile/Nikolaos_Nikoloudakis

Preface

Plant genetic resources constitute a protective sheath for crops against the escalating climate change and against biotic and abiotic stresses; mainly since their diverse germplasm acts as a genetic pool of discrete alleles contributing to crop stability. Besides its use as an arsenal for food security, the flora of a region is irreversibly a vibrant component of its cultural history, and needs to be celebrated as such.

Cyprus is an unexploited treasury for diversity, due to its geographic location. The many microclimatic and soil types (in a restricted island area), as well as, to the proximity of eastern Mediterranean continental areas, have shaped a diversification boost. As a result, Cyprus is currently home to more than 1700 plant species, many of them being endemic (140). Besides wild species, plants having an agricultural potential can be classified as Crops Wild Relatives (CWRs) and local populations (Landraces). Hence, the dynamic for researching and exploiting this largely understudied genetic material, seems vast.

Dr Nikoloudakis is an experienced Agricultural Biotechnologist and was a member (technical manager) of the national reference laboratories of the Hellenic Ministry of Rural Development and Food, regarding (I) GMO detection in seed lots and (II) the control of pathogenic viruses in plant reproductive material. He has also worked as a field-agronomist and has extensive research experience. Hitherto, he has participated in a number of research projects and peer-reviewed publications.

Present engagements and future goals

Our recently founded team (2017) aims to decipher the genetic and biochemical conceptions of the above agricultural important species, in correlation to the genomic dissection of the regional genetic structure. Moreover, we aspire to drive robust evolutionary conclusions affiliated to adaptation in specific edaphoclimatic attributes. This will allow as to target specific traits, thus allowing the re-introduction of local neglected germplasm to agricultural production and enhancing the quality of crops. On the other hand, it will deepen our understanding for the genomic interplay of evolutionary versus adaptational forces and promote our understanding for genomic and phenotypic plasticity.

In the current period (2018-2022) previous projects were completed, and novel goals were initiated:

1. The molecular and phenotypic characterization of traditional Cypriot tomato varieties (Filio Athinodorou, Petros Foukas)
2. The genomic dynamics of the legume Tribe (Fabeae) in Cyprus (including *Vicia* spp, *Lens* spp and *Pissum* spp.) via flow cytometry (Iliana Charalambous, Nektaria Ioannou)
3. The varietal demarcation of the Cypriot vineyard and the dissection of its genetic, morphological and biochemical distinctiveness (Apostolis Grigoriou, Aggelos Kouparis)
4. C-values delineation in indigenous grapevines (Anastasia Markou, Constantina Andreou)

5. Flow cytometry/Novel buffer composition for species which produce recalcitrant metabolites (Kyriakos Michael)
6. Use of defensins' γ-core peptides and screening of antimicrobial properties via flow cytometry (Stephanos Michael, Dimitrios Galanis)
7. Cloning and heterologous expression of defensin protein isoforms (Vasilis Polyviou)
8. Cypriot bean germplasm characterization (Christina Naziri)

Funding

We actively participate in competitive EU funded/National projects

1. Horizon 2020: BIOVALUE, ECOREADY;
2. PRIMA: REVINE;
3. ECPGR: UMORPHEAS;
4. RIS: NATURA

Selected publications

Athinodorou, F.; Foukas, P.; Tsaniklidis, G.; Kotsiras, A.; Chrysargyris, A.; Delis, C.; Kyratzis, A.C.; Tzortzakis, N.; Nikoloudakis, N.* Morphological Diversity, Genetic Characterization, and Phytochemical Assessment of the Cypriot Tomato Germplasm. (2021) Plants, 10, 1698.

Nikoloudakis, N.*, Pappi, P., Markakis, E.A., Charova, S.N., Fanourakis, D., Paschalidis, K., Delis, C., Tzortzakakis, E.A., Tsaniklidis, G.* Structural diversity and highly specific host-pathogen transcriptional regulation of defensin genes is revealed in tomato (2020) International Journal of Molecular Sciences, 21 (24), art. no. 9380, pp. 1-18.

Grigoriou, A., Tsaniklidis, G., Hagidimitriou, M., Nikoloudakis, N.* The Cypriot indigenous grapevine germplasm is a multi-clonal varietal mixture (2020) Plants, 9 (8), art. no. 1034, pp. -15.

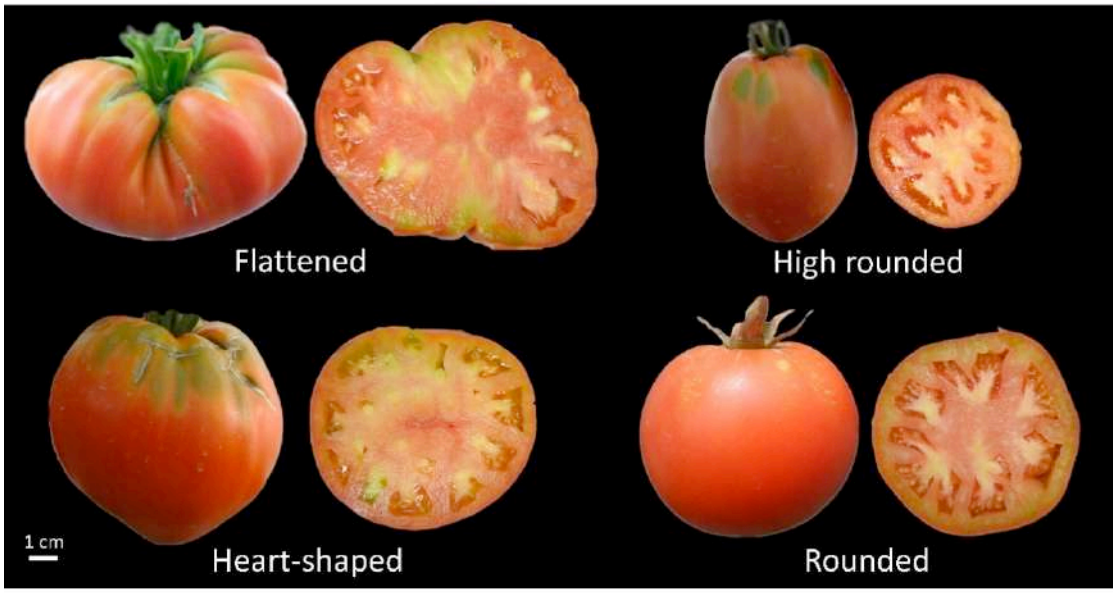


Figure 1: Examples of fruit types (red ripe stage) in the Cypriot tomato landraces panel.

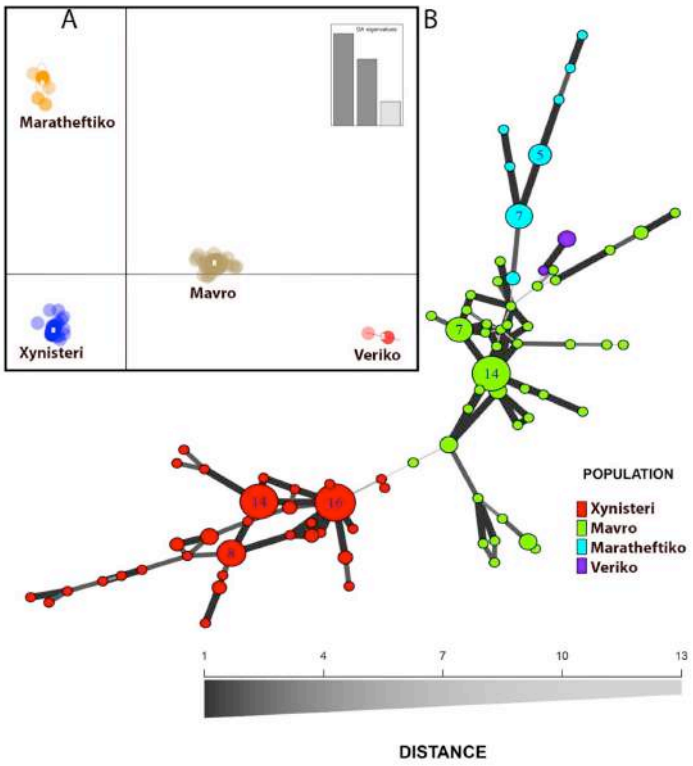


Figure 2: (A) Discriminant analysis of principal components (DAPC) depicting a clear cut-off across populations (DAPC cross-validation values indicated that the proportion of successful prediction (larger than 0.8) was optimum for 10 PCA axes). (B) Minimum spanning network (MSN) of the Cypriot grapevine varieties studied. Linear and reticulated affiliations are evident across Xynisteri (red), Mavro (green), Veriko (blue), and Maratheftiko (purple) clusters. Nodal size is proportional to the number of accessions sharing an MLG.

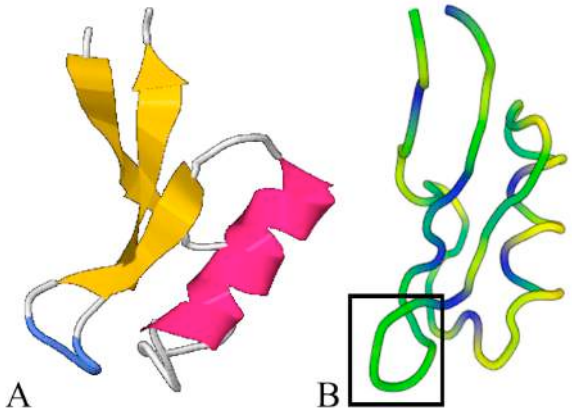


Figure 3: Structural similarity across tomato defensins. (A). Example of the conserved secondary structure (beta-strands, alpha-helix, and loops) as depicted for the SlDEF8 accession. (B). Sequence conservation across the superimposed tomato defensins (blue color denotes the conserved amino acids depicting the cysteine residues). The less conserved loop between the second and third beta-strand is also designated (black box).

Research Group on Food Microbiology and Bioactivities

Head: Maria Aspri, Special Teaching Staff

Team: Marina Christofi

The research of our group focuses in three interrelated areas within the field of Food Science and Microbiology. More specifically we are working on the following areas:

1. Isolation, characterization and application of bacteriocins in food products.
2. Development of potential functional fermented beverages and assess their bioactivities
3. Study the impact of food processing and gastrointestinal digestion using in vitro methods on food bioactivities and bioactive compounds

Bacteria are a vital part of our bodies, both inside and outside of us. However, some bacteria (pathogens) can be harmful and cause disease. Antibiotics have been used in the fight against pathogens and in the treatment of diseases, and the development of antibiotic-resistant strains around the world poses challenges in these treatments. Therefore, there is an urgent need to develop new antimicrobial agents to combat antibiotic resistance. Our research group studies antimicrobial peptides (bacteriocins) produced by lactic acid bacteria. These peptides are of great interest because they are produced by "food-grade" bacteria and thus can be used as relatively safe agents to prevent the growth of pathogenic/harmful bacteria. Given the dramatic increase in antibiotic-resistant pathogens and the potentially undesirable side effects of many chemical preservatives, the development of bacteriocins as new antimicrobials is clearly of considerable interest.

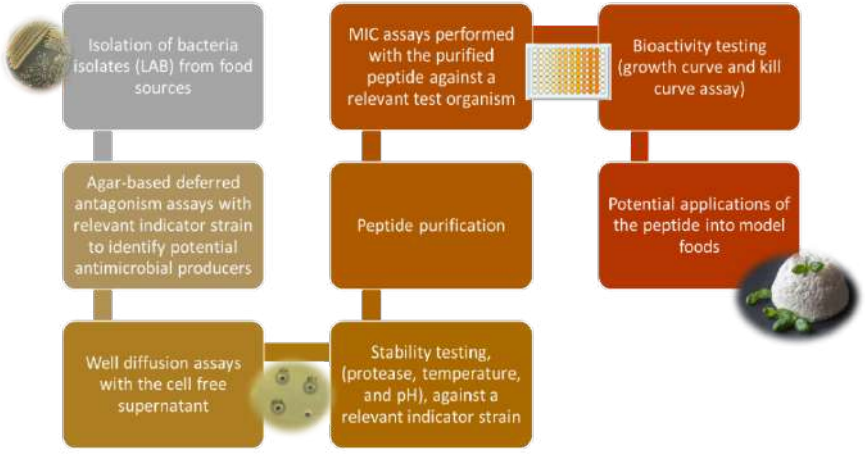


Figure 1: Protocol for the isolation and characterization of

The notion that food could serve as medicine was first conceived thousands of years ago by the Greek philosopher and father of medicine, Hippocrates, who once wrote: 'Let food be thy medicine, and let medicine be the food'. Over the past several years, the focus of nutritional studies has shifted from nutrient deficiency diseases to optimizing health and prevents chronic diseases. Thus, our group is focused in the development of potential functional fermented beverages using probiotic bacteria. Functional food are foods that may provide a health benefit beyond the basic function of provide nutrients. Finally, the influence of technological treatments and novel technologies on the profile of

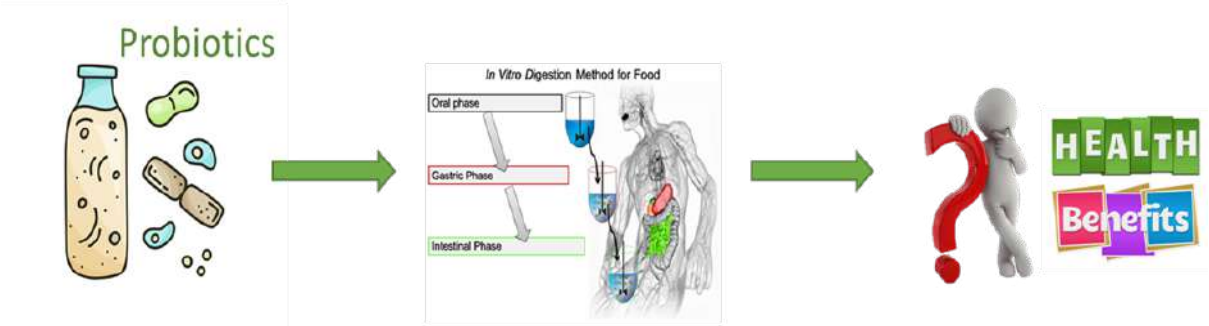


Figure 2: Development of potential functional beverages and assess their bioactivities after in vitro digestion

bioactive compounds in functional foods, as well as the bioactivity characterization of potential functional foods using in vitro digestion models are also studied by our group.

Recently, our group in collaboration with other organisms has received a funding through the Research and Innovation Foundation for the design and development of novel method and related prototype to simultaneously detect in a rapid (<10 minutes), cheap and effective way a selected panel of common milk contaminants (Aflatoxin-M1 and 2 antibiotics, namely Penicillin and Enrofloxacin) at the farm level (before loading milk in the truck), without the need of time-consuming laboratory methods or using highly skilled personnel. The technology is based on state-of-the-art bio-photonics, combining customized biosensors, optical analysis, electronics and software modules.

Selected publications

1. Aspri, M., O'Connor, P. M., Field, D., Cotter, P. D., Ross, P., Hill, C., & Papademas, P. (2017). Application of bacteriocin-producing Enterococcus faecium isolated from donkey milk, in the bio-control of Listeria monocytogenes in fresh whey cheese. *International Dairy Journal*, *73*, 1-9.

2. Aspri, M., Leni, G., Galaverna, G., & Papademas, P. (2018). Bioactive properties of fermented donkey milk, before and after in vitro simulated gastrointestinal digestion. *Food Chemistry*, *268*, 476-484.

3. Papademas P, Mousikos P, Aspri M. (2021) Optimization of UV-C Processing of Donkey Milk: An Alternative to Pasteurization? *Animals*. 11(1):42. https://doi.org/10.3390/ani11010042

Overview

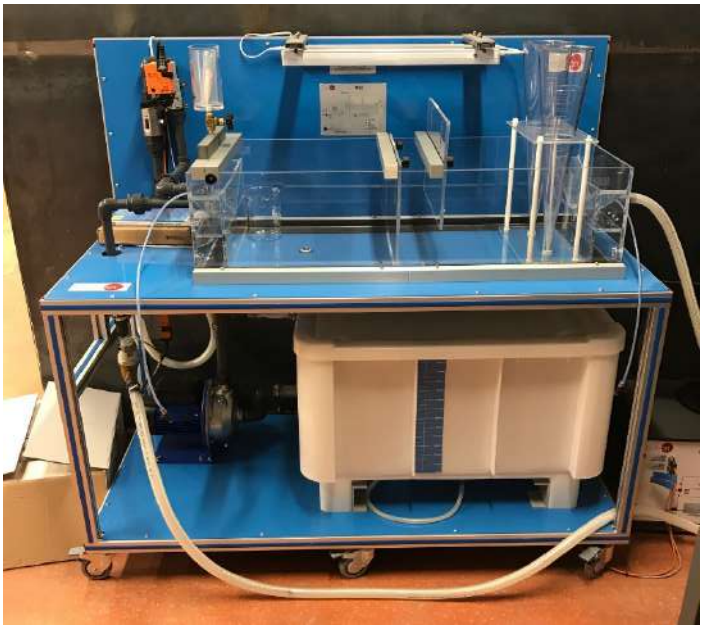
One of the main missions of the EST Department so far has been to promote basic and applied research in the field of Environmental Sciences and Technology, and to facilitate the mobility of its students, researchers and academics through international research cooperation. Having started offering the B.Sc. Programme in Chemical Engineering in collaboration with the University's Faculty of Engineering and Technology, the Department is gradually evolving into a Chemical Engineering Department, recruiting new academic faculty members who specialise in fields of Chemical Engineering, so that by the end of 2019 half of the academic staff is expected to consist of Chemical Engineers.

Despite the small size of the Department and the considerable teaching and administrative workload faced by all academic staff members, EST's collective research output has been very substantial and internationally recognised. The very satisfactory research performance has been acknowledged by the international committee of renowned academics who conducted an external evaluation of the Department in December 2014. In its concluding statement of their evaluation report that was submitted to the University's Rector, the Committee wrote that the University 'should be proud' of the EST Department in view of its research achievements and prospects.

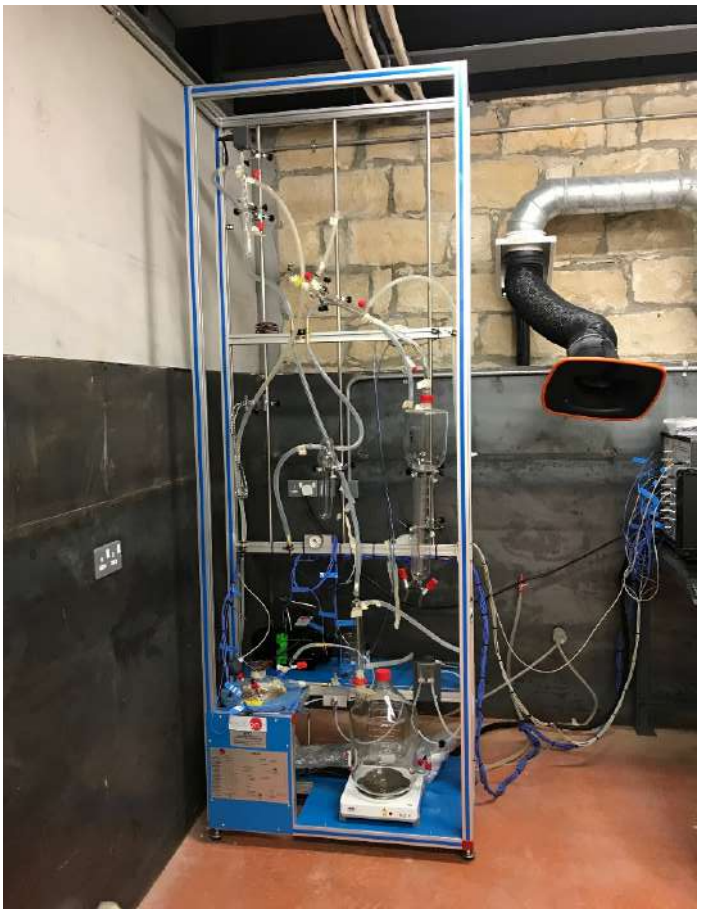
The Department's laboratories possess state-of-the-art equipment such as:

1. Atomic Absorption Spectrophotometer (AAS)
2. Inductively Coupled Plasma – Mass Spectrometer (ICP-MS)
3. Ion Chromatograph (IC)
4. High Performance Liquid Chromatograph (HPLC)
5. Gas Chromatograph – Mass Spectrometer (GC-MS)
6. Surface and Pore Analyser (BET)
7. Fourier Transform Infrared Spectrophotometer (FTIR) coupled with DRIFTS Cell
8. TOC/TON analyser
9. Gas Chromatograph (GC)
10. Fermentors
11. Ultraviolet-Visible Spectrophotometers
12. Microscopes
13. Fluorescence Spectrophotometer
14. Fats, Oils and Grease (FOG) portable analyser
15. Gas emissions analyser
16. Material Printer
17. Freeze dryer
18. Fully automated and computerized gas and liquid flow panels
19. Low and High temp ovens
20. Incubators
21. Portable gas analysers (NO_x, CO/CO_2, VOCs, Microbial load, H_2S, NH_3, O_3, CH_4)
22. IR and thermal cameras
23. Fast Cameras
24. Centrifuges
25. Sound meters
26. pH meters
27. Vortexes
28. RO water
29. Water distillation system
30. Conductivity meters
31. Soil sampling equipment
32. Refrigerators and freezers
33. Equipment for educational laboratories in Physics
34. Computer controlled gaseous mass transfer and diffusion coefficient unit
35. Computer controlled fixed bed adsorption unit
36. Computer controlled chemical reactors (Batch, Continuous Stirred Tank, Plug-Flow and Fixed Bed reactors)
37. Computer controlled catalytic reactor

38. Corrosion study unit
39. Computer controlled sedimentation tank
40. Computer controlled continuous distillation unit
41. UV/Vis and FTIR spectroelectroche-mical cells for REDOX active samples
42. Calorimeter set for thermodynamic experiments



The following pages describe in more detail the major activities carried out during 2016-2018 in the Department's research groups and laboratories. Interested readers may obtain more information by accessing the webpages of each group, or the general webpage of the Department: www.cut.ac.cy/est

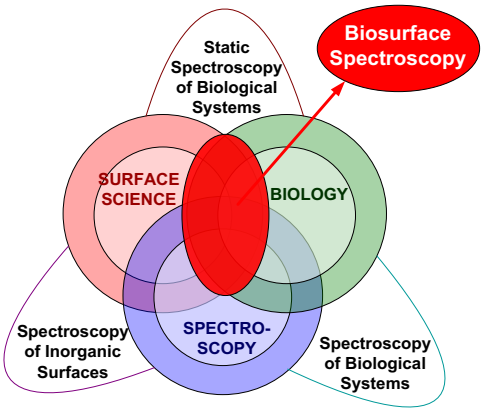


Research Group on Environmental Biocatalysis and Biotechnology (LEBB)

Head: Constantinos Varotsis, Professor

Research projects

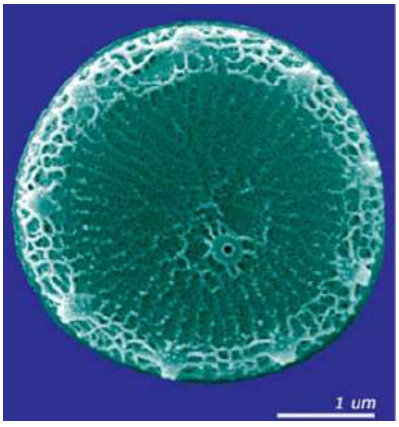
Biosurface spectroscopy



New research field: the red area in the center indicates the field of biosurface spectroscopy at the intersection of three established fields of research.

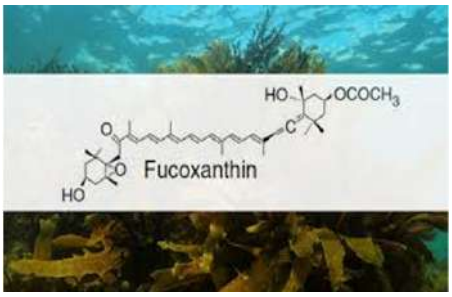
Research interests

Marine Diatoms



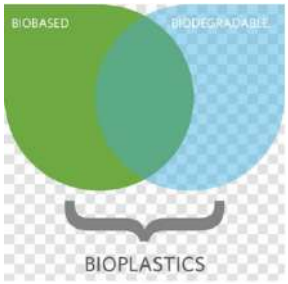
Thalassiosira pseudonana is a marine centric diatom. Diatoms are unicellular, eukaryotic, phytoplankton that display a unique evolutionary history and provide major ecological contributions in marine environments. Having evolved 91.5 million years ago during the Upper Turonian period, analyses of these organisms display long-term contributions to deposits of diatomite, carbon cycling, global climate, and petroleum reserves. Today diatoms continue to have major ecological implications by playing a fundamental role in global carbon cycling and global climate. Growth under different light conditions – Characterization and Function of a number of Marine diatoms are investigated in our laboratory.

Biotechnology of Marine Anoxygenic Phototrophic bacteria and Diatoms



Roseobacter clade represents one of the most abundant, metabolically versatile and ecologically important bacterial groups found in marine habitats. A detailed molecular investigation of the regulatory and metabolic networks of these organisms is currently limited for many strains by missing suitable genetic tools. Scientific interest in this bacterial group increased steadily since the description of its first representatives *Roseobacter denitrificans* and *Roseobacter litoralis*. Marine habitats represent a prolific source for molecules of biotechnological interest. In particular, marine bacteria have attracted attention and were successfully exploited for industrial applications. The newly established Marine *Roseobacter* lineage consists of several bacterial species which possess the capacity to produce biomolecules of biotechnological interest. Growth/Isolation /Characterization and Function of a number of Marine Anoxygenic Phototrophic bacteria by a variety of Advanced Analytical-Spectroscopic techniques.

Biodegradation of bio-plastics in the marine environment



The biodegradability of bioplastics is highly affected by their physical and chemical structure. We have initiated research on the biodegradation of compastable-starch bioplastic and oxo biodegradable plastics present in the marine environment by Sufitobacter Mediterraneus and Sagitulla Stellata (Lignin-biodegradation) by laser induced Breakdown spectroscopy and Raman spectroscopy. The Alterations of Biofilm Formation and extracellular polymeric substances (EPSs) on the surfaces of bio-plastics is investigated by FTIR mapping techniques.

Structure and function of proteins

Electron transfer coupled to proton translocation is the basic mechanism of energy generation in most living organisms, but the molecular mechanism is not understood. A key enzyme in all eukaryotic and most prokaryotic electron transfer systems is cytochrome *c* oxidase, which accepts electrons derived from food and donates them to oxygen, generating a pH and electrical gradient to drive ATP synthesis. We are studying the bacterial cytochrome *c* oxidases ba_3 from *Thermus thermophilus* which differ in peptide composition from the mammalian cytochrome c oxidase but carry out the reduction of Oxygen (O_2) to water (H_2O), the oxidation of carbon monoxide (CO) to carbon dioxide (CO_2) and the reduction of Nitric oxide (NO) to laughing gas (N_2O) by using the same metal centers to catalyze the process.

Teaching: CEN 204 (Applied Thermodynamics), CEN 304 Physical Chemisty II. Graduate: CEN 702 Advanced Biotechnology and Biocatalysis.

Research Group on Sustainable Energy (SEL)

Head: Alexandros G. Charalambides, Assistant Professor

Team: Olympia Nisiforou, Ian Cole, Stefani Peratikou, Antigoni Komodiki, Sofia Papadopoulou, Mariza Vryonidi, Eliza Nikolaou, Stavros Stylianou

Webpage: www.energylab.ac.cy and www.climatehub.org.cy

The research work/interests of the Sustainable Energy Laboratory (SEL) lie primarily in three main areas: (a) developing cleantech ecosystems and promoting entrepreneurship, (b) predicting energy production from solar systems and (c) promoting the use of renewable energy and energy saving. Over the past five years, the staff of SEL has successfully completed/currently running 30+ research and consulting projects (from EU, national and private funding sources), resulting in more than €3,000,000 in funding and a plethora of publications.

Solar Energy Predictions

One of the major problems of meteorological forecasts, is the low temporal and spatial resolution of solar irradiance forecasts, which are unable to estimate the sudden fluctuations of irradiance over a specific relatively small area, caused by clouds obscuring the sun. So far, traditional approaches regarding forecasting of the state of the sky or incident solar irradiance have been developed using either meteorological data from satellite imagery or specialised equipment. The use of meteorological data cannot give the desired results as it would be required to use real time images from geostationary satellites to cover a specific area. Apart from the high cost of the data, satellite images have very low temporal (~30 min) and temporal (1km2) resolution which are inadequate for accurate forecasting. Alternatively, incident solar irradiance and cloud/dust motion measurements could be forecasted using accurate specialised equipment such as a grid of ground based cameras or irradiance sensors to record the state

of the sky. Contrary to existing methodologies, SEL is working on a novel, innovative approach in nowcasting the state of the sky and incident solar irradiance using data from the metering systems of grid connected PVs, without the necessity of using additional equipment. A dense network of PVs providing continuous data will enable very high temporal and spatial resolution of forecasts. However, due to the nature of clouds, the nowcasting horizon will be intra hour (1-60 minutes).

Green Entrepreneurship

Since 2008, Europe has been suffering the effects of the economic crisis and entrepreneurship has been set as a no.1 priority by the European Council, as it seems to be the only way to deal with high unemployment rates of young people. To this regard, the EC has developed the Entrepreneurship 2020 Action Plan, and in 2008 has created the European Institute of Innovation and Technology (EIT). SEL staff have been working closely with EIT Climate-KIC, one of the bodies funded by EIT, on (a) developing innovative entrepreneurship programmes for PhD STEM (Science, Technology, Engineering and Mathematics) students/graduates and entrepreneurs, (b) on analyzing existing entrepreneurship programmes, accelerators, science /technological hubs and incubators in the EU and beyond and (c) on identifying existing gap in South EU countries and the best practices from North EU countries.

Selected projects

1. Quick Challenge-driven, Human-centered Co-Creation mechanism for INDUStry-Academia Collaborations (INSUSAC), 2022-2025, Horizon Europe (€114,100)
2. Mediterranean Island Cleantech Innovation Ecosystem (MICIE), 2022-2023, Horizon 2020 (€482,000)
3. Climate Resilient-Regions through Systemic Solutions and Innovations (ARSINOE), 2021-2025, Horizon 2020 (€321,500)
4. Towards innovative methods for energy performance assessment and certification of buildings (TIMEPAC), 2022-2024, Horizon 2020 (€22,727.50)
5. Climate Risk Information for SupportIngADAptation Planning and operaTion– Phase II (CRISI-ADAPT II), 2019-2022, EIT Climate-KIC (€150,738)
6. Intra-hour prediction of solar electricity generation from Photovoltaics, 2018-2020, Solar-ERA.net (€168,000)
7. A knowledge Alliance in Eco-Innovation Entrepreneurship to Boost SMEs Competitiveness, 2017-2020, Interreg (€101,150.50)

Selected publications

1. Peratikou, S. and Charalambides, A.G., 2022, "*Estimating Clear-Sky PV Electricity Production Without Exogenous Data*", Solar Energy Advances, Vol. 2, (https://doi.org/10.1016/j.seja.2022.100015).
2. Nisoforou, O., Shakou, L.M., Magou, A. and Charalambides, A.G., 2022, "A Roadmap towards the Decarbonization of Shipping: A Participatory Approach in Cyprus", Sustainability, Vol. 14, (https://doi.org/10.3390/su14042185).
3. Kyprianidou, I., Worrell, E. and Charalambides, A.G., 2021 "The cost-effectiveness of CO2 mitigation measures for the decarbonisation of shipping. The case study of a globally operating ship-management company", Journal of Cleaner Production, Vol. 316, (https://doi.org/10.1016/j.jclepro.2021.128094).
4. Konstantinou, M., Peratikou, S. and Charalambides, A.G., 2021, "Solar Photovoltaic Forecasting of Power Output Using LSTM Networks", Atmosphere, Vol. 12, No. 124 (https://doi.org/10.3390/atmos12010124)
5. Geissler, S, Charalambides, A.G. and Hanratty, M., 2019, "Public Access to Building Related Energy Data for Better Decision Making in Implementing Energy Efficiency Strategies: Legal Barriers and Technical Challenges", Energies, Vol 12 (https://doi.org/10.3390/en12102029).

Research Group on Environmental Computational Modelling
(CEM)

Head: Vangelis Daskalakis, Associate Professor

Team: *Current Ph.D Candidates: Demetra G. Katechaki*

Webpage: https://orcid.org/0000-0001-8870-0850

During the past four years (2018-2022) our lab has been engaged into numerous projects on two major research fields: (a) the **Photoprotection** of higher plants and diatoms that is closely related to the increase of crop yields and biomass, the atmospheric CO_2 assimilation and artificial photosynthesis, and (b) the fight against the severe acute respiratory syndrome coronavirus 2, or **SARS-CoV-2** that is associated with the **COVID-19** pandemic. The projects include:

(1) The 13th Allocation on **Cyclone** (The Cyprus Institute) project CfP13 - "Molecular Dynamics of LHCII trimer complex at quenched and light harvesting states based on Free Energy Minima" (~1.0mn std-cpu core hrs), as coordinator (Apr 2021 – March 2022); **(2) PRACE DECI-16** 16DECI0015 DynLHCX "The structure and dynamics of the photoprotective protein LHCX1 in diatoms", 5.0mn std-cpu core hrs, as coordinator (June 2020 – May 2021); **(3) PRACE COVID-19** COVID19-41 "Epitope vaccines based on the dynamics of mutated SARS-CoV-2 proteins at all atom resolution", 18.0mn std-cpu core hrs @Joliot-Curie Rome (CEA/GENCI, France) (May 2020 – Nov 2021); **(4) PRACE DECI-15** 15DECI0328 LHCPSSalt "LHCII-PsbS complex conformations under varying salt content" ~4.0mn std-cpu core hrs, as coordinator (June 2019 – May 2020); **(5) PRACE** Project 2018194641 17.0mn std-cpu core hrs @SuperMUC HPC (Leibniz Supercomputing Centre). "CDynLHCII - Clustering Dynamics of the major Light Harvesting Complexes (LHCII) of Photosystem II under Photoprotection", as coordinator (April 2019 – March 2020); **(6) Research and Innovation Foundation** (RIF) (Cyprus) project POST-DOC/0916/0049 "Triggering Photoprotection in Photosystem II Antenna by Molecular Simulations and Raman Spectroscopy" (~160.000 Euros), as coordinator (Oct 2018 – March 2022).

A. Photoprotection of higher plants and diatoms

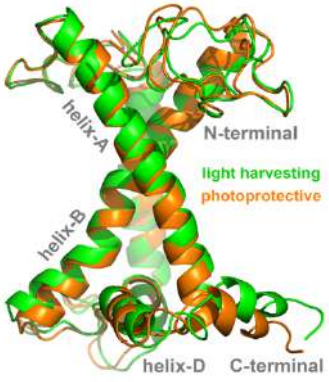


Figure 3 | The transition of the major LHCII antenna of higher plants from the light harvesting to the photoprotective conformation. Protein domains that participate in this transition are indicated.

The photosynthetic apparatus is a highly modular assembly of large pigment-binding proteins. Complexes called antennae can capture the sunlight and direct it from the periphery of two Photosystems (I, II) to the core reaction centers, where it is converted into chemical energy. The apparatus must cope with the natural light fluctuations that can become detrimental to the viability of the photosynthetic organism. So far, we have proposed an atomic scale view of the photoprotective mechanism that is activated on this line of defense by several photosynthetic organisms to avoid overexcitation upon excess illumination. We have provided a complete macroscopic to microscopic picture with specific details on the conformations of the membrane-integrated major antenna of Photosystem II (LHCII) that could be associated with the switch from the light harvesting to the photoprotective state (**Fig. 1**). This has been achieved by combining insight from both experiments and all-atom simulations.[1-8] The major LHCII antenna of higher plants has an intrinsic property to switch between light harvesting and dissipating

states (conformations) to protect the photosynthetic apparatus from oxidative stress. We have employed the most extensive array of external stimuli (trans-thylakoid membrane ΔpH, exchanges in the carotenoid content within LHCII, salt concentration gradients, the interaction of LHCII with the photoprotective protein PsbS) to sample the configurational space of the major LHCII from higher plants (**Fig. 1**). LHCII is found to be rather rigid in a way that only subtle changes are allowed in the pigment network. To the contrary, we have reported a rather flexible protein scaffold for the antenna of diatoms,[7] the Fucoxanthin and Chlorophyll-a/c binding Protein (FCP), which correlates with the survival of diatoms on the ocean surface under a fluctuating light.

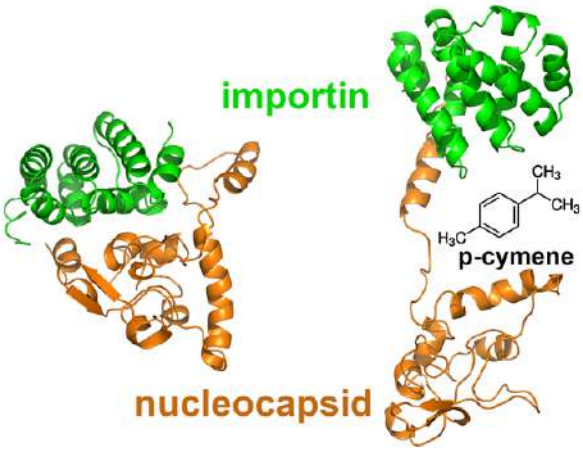


Figure 4 | p-cymene weakens the interaction between the SARS-CoV-2 nucleocapsid protein with the host cells importins to inhibit the entry of the viral RNA into the host cell nucleus.

B. SARS-CoV-2 and COVID-19

In collaboration with the School of Medicine and the Department of Biology of University of Crete, and the School of Medicine of the Democritus University of Thrace, two natural products have been identified against the SARS-CoV-2 infection in a combination of elaborate computational approaches and in vitro experimental work.[9-11] **Fortunellin** (from kumquat) is an allosteric inhibitor of the dimerization of the viral main protease MPro, as proposed by in silico simulations, and validated in vitro in SARS-CoV-2–infected Vero cells.[9] Furthermore, **p-cymene** (found in an essential oil extract containing *Thymbra capitata* – thyme, *Origanum dictamnus* – Creta dittany, and *Salvia fruticose* – Greek sage; *NPJ* ***Sci. Food 2020****, 4, 20*) acts as a potent anti-influenza and anti-SARS-CoV-2 agent, with a mechanism of action to target the viral nucleoprotein and nucleocapsid protein (**Fig. 2**), respectively, verified by elaborate enhanced sampling molecular dynamics techniques and by experimental in vitro work on infected cells.[10]

In the same context, future projects on photoprotection will include Biomolecular Dynamics and Engineering for applications in the increase of crop yields in higher plants and the biomass in diatoms, research on natural products that can fight disease, as well as the powerful genome editing tool CRISPR-Cas9, along with variants (Cas12a, Cas13a, IscB/ ω-RNA).

Selected publications of the group:

1. ***Phys. Chem. Chem. Phys.*** **2018**, 20, 11843-11855
2. BBA - ***Biomembranes*** **2019**, 1861, 183059
3. ***Chemical Physics*** **2019**, 526, 110439
4. ***J. Phys. Chem. B*** **2019**, 123, 9609–9615
5. ***Chemical Communications*** **2020**, 56, 11215–11218
6. ***Phys. Chem. Chem. Phys.*** **2021**, 23, 7407–7417
7. ***J. Phys. Chem. Lett.*** **2021**, 12, 39, 9626–9633
8. ***Front. Plant Sci.*** **2022**, doi: 10.3389/fpls.2021.797373
9. Molecules 2021, 26(19), 6068
10. ***Pharmacology Research and Perspectives*** **2021**, 9, e00798
11. ***Molecules*** **2022**, 27(13), 4060.

Research Group on Environmental Bioprocessing

Head: Michalis Koutinas, Associate Professor

Team: Maria Patsalou, Michalis Kallis, Maria Kyriakou, Panayiota Karanicola, Andonia Nicodemou, Marianna Christodoulou

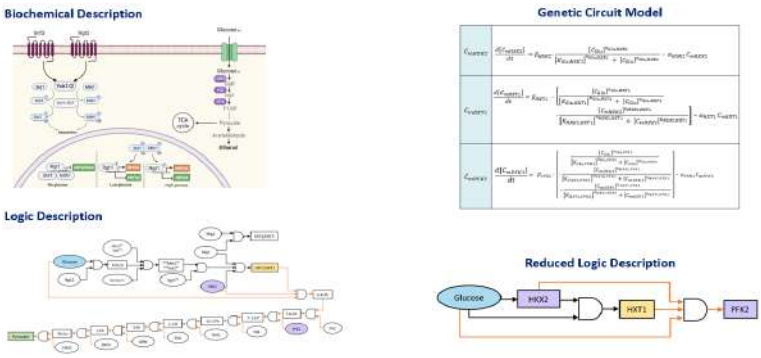
Webpage: https://enblab.weebly.com/

Petrochemical processes have provided low cost production routes for fuels, plastics, and chemicals for over 50 years. Nevertheless, the escalating impact on the environment and the inevitable depletion of fossil feedstocks make it essential that benign, sustainable alternatives be developed commercially in a cost-effective and expedited manner. Biomass-based industrial waste streams could be regarded as sustainable feedstocks for the development of a new industrial sector that integrates chemical and material production into existing industries.

Our group applies advanced experimental and systems engineering techniques in order to provide solutions to important biological problems. Our interests are in line with EU priorities for waste and natural resources, focusing on the following areas:

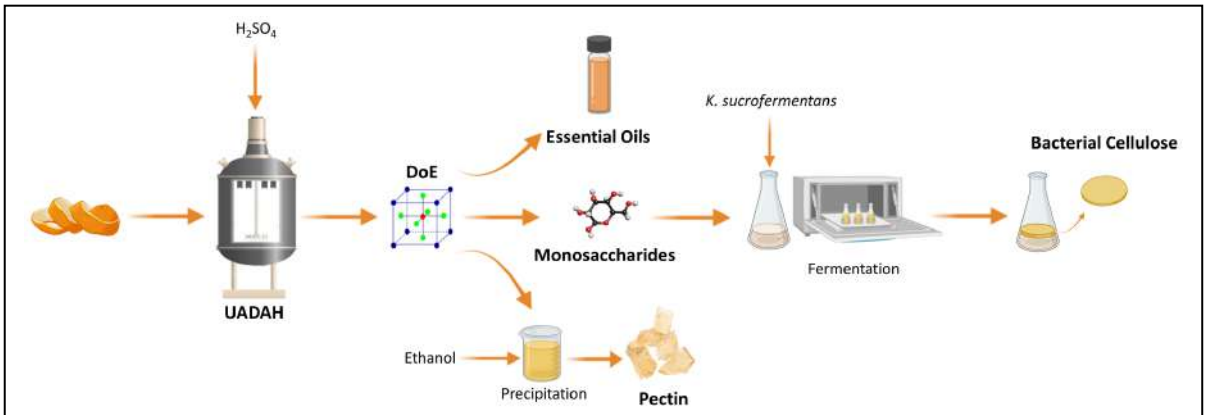
1. Biotechnological applications for the production of added-value chemicals, biomaterials and biofuels from waste;
2. Application of biological systems for the treatment of toxic and persistent pollutants from aqueous, gaseous and solid waste streams;
3. Development of mathematical models for understanding specific metabolic properties of the strains employed and the function of the bioprocess applied;
4. Utilisation of advanced molecular techniques for detecting specific microbial strains used in applied bioprocesses and quantification of important metabolic properties;

We participate in several national and EU-funded research projects and as members of international associations and networks. We have been appointed as Country Representatives of the International Bioprocessing Association (IBA-IFIBiop) and Management Committee members of COST Action CA20133 “Cross-Border Transfer and Development of Sustainable Resource Recovery Strategies Towards Zero Waste (FULLRECO4US)”.



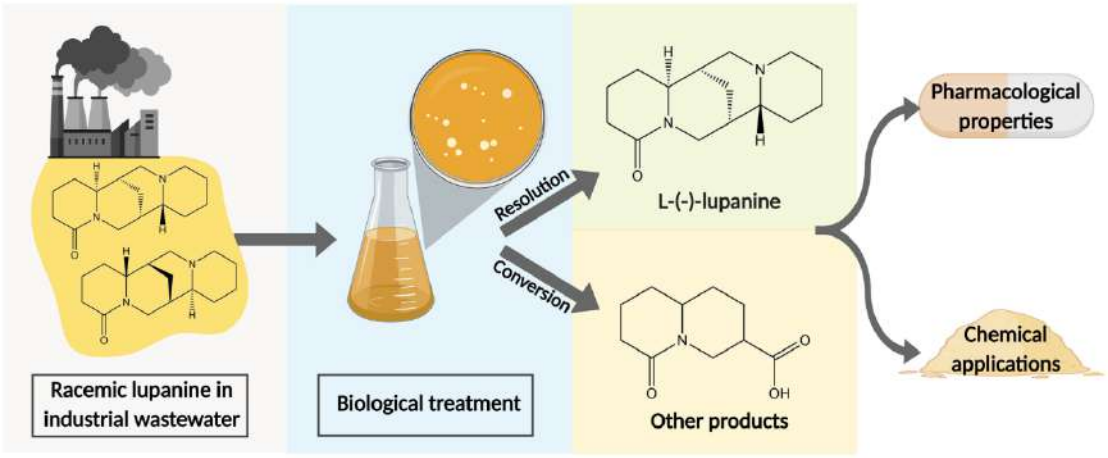
Linking gene regulation to ethanol bioprocess kinetics.

Current research at the Environmental Bioprocessing Lab is evaluating the potential for development of gene regulation models aiming to capture essential molecular dynamics and use these effectively for the prediction of bioprocess reaction kinetics. We are currently exemplifying this idea via the development of a dynamic mathematical model describing hexose sensing, signaling and bioconversion in *S. cerevisiae* employed for bioethanol production.



Optimization of a citrus peel-based biorefinery for production of multiple commodities.

In the broader field of Industrial Biotechnology, we have participated in a Water Joint Programming Initiative targeting the valorisation of food wastewater containing alkaloids for the production of added-value products (Biorg4WasteWaterVal+), two LIFE projects demonstrating a novel technology for the production of biogas and biofertilizer from municipal biowaste (LIFECAB, LIFE EBP) as well as national projects concerned with the production of multiple marketable commodities from citrus processing waste (Citrus4Wealth, BioTECPro). Moreover, we are currently working in a H2020 project towards the development of bioprocessing routes for bioplastics recycling (Sus-Bio-Plastics), and in two PhD Thesis developing biochar-based biocatalysts and algal biorefineries.



A biological resolution technology for production of enantiopure molecules in biorefineries.

Selected publications

Karanicola P, Patsalou M, … Papamichael EM, Koutinas M. 2021. Ultrasound-assisted dilute acid hydrolysis for production of essential oils, pectin and bacterial cellulose via a citrus processing waste biorefinery. *Bioresource Technology*, 342:126010.

Kyriakou M, Patsalou M, …, Constantinides G, Koutinas M. 2020. Enhancing bioproduction and thermotolerance in *Saccharomyces cerevisiae* via cell immobilization on biochar: Application in a citrus peel waste biorefinery. *Renewable Energy*, 155:53-64.

Tsipa A, Koutinas M, Usaku C, Mantalaris A. 2018. Optimal bioprocess design through a gene regulatory network – growth kinetic hybrid model: Towards replacing Monod kinetics. *Metabolic Engineering*, 48:129-137.

Research Group on Environmental Engineering

Head: Ioannis Vyrides, Assistant Professor

Team: PhD students: Charis Samanides, Maria Andronikou, Panagiotis Charalambous, Yiota Photiou, Sofia Georgiou, Despina Constantinou, Anthi Kyprianou.

Webpage: https://www.facebook.com/Environmental-Engineering-Lab-CyprusUniversity-of-Technology-169868080059059/

ENVIRONMENTAL ENGINEERING LABORATORY

The Environmental Engineering Laboratory research covers the following topics:

CO_2 capture and utilization of products such as hydrogen, methane, or acetic acid using a sustainable process. Researchers are tackling the challenge of transforming CO_2 into valuable chemicals and fuels. One approach involves capturing CO_2 using NaOH aqueous solutions. However, regenerating NaOH from stable bicarbonate is difficult. Recent findings at our Environmental Engineering laboratory demonstrate that under specific conditions, metallic iron or magnesium can rapidly produce hydrogen from bicarbonate at ambient conditions (Fig. 1). The alkaline solution can be recycled for further CO_2 capture. Another approach explored is converting H_2 and CO_2 into CH4 using methanogens in a system with zero-valent metal, soluble CO_2, and anaerobic granular sludge (Fig. 1). An alternative method inhibits methanogens, resulting in acetic acid production mainly through homoacetogens.

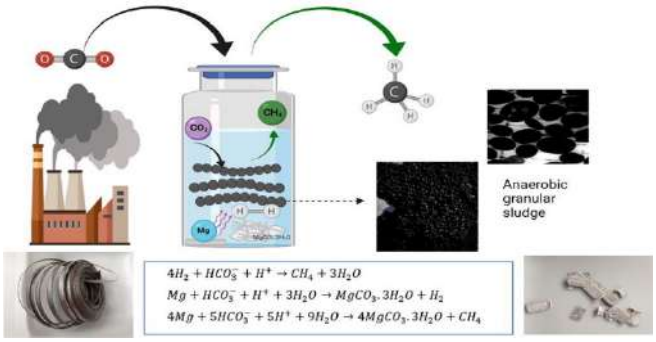


Fig.1. CO_2 capture and utilization to products using metallic magnesium and anaerobic granular sludge (Andronikou et al. 2022).

(2) Industrial wastewater treatment through novel processes: In two projects at TRL 3-4, we investigated an electrolysis cell without an ion exchange membrane within an anaerobic digester. The first project, ElectroSAnMBR, focused on treating recalcitrant wastewater (bilge water), while the second project, BioElectroCathode, aimed to convert CO2 to CH4. By incorporating an electric cell with anode and cathode into the digester, it enabled in-situ production of H2 and O2, creating micro-aerobic conditions. These conditions accelerated the biodegradation of recalcitrant compounds that require both aerobic and anaerobic conditions for degradation. The results showed that the system combining a submerged anaerobic membrane bioreactor with an electrolysis cell outperformed a standalone anaerobic digester.

(3) Phosphorus recovery from wastewater using treated biowaste as adsorption material:

Scientists and engineers are actively seeking alternative sources of phosphorus and conducting research to develop efficient and sustainable processes for phosphorus recovery, particularly from wastewater and waste. We have discovered that biowaste materials like eggshells and residual seagrass, after undergoing thermal treatment, can be effectively transformed into selective adsorbents for phosphorus and then can be used as a soil fertilizer

(4) Reconstruction of full-scale free water surface wetland and monitoring its performance. Dr. Vyrides participated in the Interreg project (DOMUS_CW) comparing full-scale free-water surface wetlands in Choletria, Cyprus, and Greece. The Environmental Engineering lab reconstructed the septic tank and wetland, monitoring their performance. The project was a success, marking Cyprus's first implementation of this system.

Selected publications:

1. Andronikou, M., Adamou, V., Koutsokeras, L., Constantinides, G. and Vyrides, I., (2022). Magnesium ribbon and anaerobic granular sludge for conversion of CO_2 to CH_4 or biogas upgrading. Chemical Engineering Journal, p.134888
2. Gatidou, G., Samanides, C.G., Fountoulakis, M.S. and Vyrides, I., (2022). Microbial electrolysis cell coupled with anaerobic granular sludge: A novel technology for real bilge water treatment. Chemosphere, p.133988.
3. Charalambous, P. and Vyrides, I (2021). In situ biogas upgrading and enhancement of anaerobic digestion of cheese whey by addition of scrap or powder zero-valent iron (ZVI). Journal of Environmental Management, 280, p.111651
4. Photiou, P., Koutsokeras, L., Constantinides, G., Koutinas, M. and Vyrides, I (2021). Phosphate removal from synthetic and real wastewater using thermally treated seagrass residues of Posidonia oceanica. Journal of Cleaner Production, 278, p.123294.
5. Samanides, C.G., Koutsokeras, L., Constantinides, G. and Vyrides, I (corresponding author), (2020). Methanogenesis Inhibition in Anaerobic Granular Sludge for the Generation of Volatile Fatty Acids from CO2 and Zero Valent Iron. Frontiers in Energy Research, 8, p.37.

Participation in Research projects (Dr Ioannis Vyrides as Principal Investigator):

1. February 2022-November 2022. Natural Gas Sweetening based on Metallic Iron-processes, “IroNGaSweetening”, Cyprus RIF CONCEPT-HYDRO/0421/014, Scientific coordinator of the project, Budget Total Budget: €49,999.60
2. October 2021-Octomber 2025, Participation as representative of Cyprus in COST Action CA20130 - Microbiologically Influenced Corrosion MIC Network – New paths for science, sustainability and standards
3. November 2018-April 2022, Utilization of CO2 through novel BioElectroCathode systems for production of biofuels (CH4 and ethanol). “BElectroCathode”, Cyprus RIF, P2P/M-ERA.NET/0317/0008, Scientific coordinator of the project, Budget (CUT): €169,900, Total Budget: €670,289

4. April 2019-March 2022, Sulphur removal from oil by Biodesulfurization (BDS) technology, “OilEcoDesulfur”, Cyprus RIF POST-DOC/0916/0121, Dr Vyrides, scientific coordinator for CUT. Budget (CUT): €24,960 Total Budget: €159,840

5. March 2020- February 2022, Development of A Novel Submerged Anaerobic Electrochemical Membrane Bioreactor (e-SAnMBR) for bilge water treatment, “ElectroSAnMBR”, Marie Curie Individual Fellowship to Dr Georgia Gatidou to be hosted at Environmental Engineering laboratory. Dr Vyrides, scientific coordinator of the project. Total Budget: €157,941

6. January 2019-April 2021, Treatment of Bilge Water using Submerged Anaerobic Membrane Bioreactor (SAnMBR) and aerobic Moving Bed Biofilm Reactor (MBBR), “MicrobEatBilge”, Cyprus RIF, OPPORTUNITY/0916/MSCA/0006, Scientific coordinator of the project, Budget (CUT): €139,735. Total Budget: €149,695.

7. May 2019-December 2020, On the Market of BioMethane as a Renewable Transport Fuel: An Off-Grid Mobile Solution.”Waste-toWheel” START-UPS/0618/0027, Dr Vyrides, scientific coordinator of CUT, Budget (CUT): €25,980. Total Budget: €106.400

8. October 2017-December 2020, A digital Solid waste reuse platform for Balkan, “S.W.A.N” INTERREG V-B "BALKAN MEDITERRANEAN 2014-2020", Dr Vyrides, scientific coordinator of CUT, Budget (CUT): €160,000. Total Budget: €968,000

9. September 2017-November 2020, Optimization of decentralized domestic wastewater treatment and sanitation via Constructed Wetlands, “DOMUS_CW” INTERREG V-B "BALKAN MEDITERRANEAN 2014-2020", Dr Vyrides, scientific coordinator of CUT, Budget (CUT): €257,300. Total Budget: €889,000

Research Group on Water Treatment– AQUA

Head: Maria G. Antoniou, Assistant Professor

Team: Eleni C. Keliri, Nomiki I. Kallikazarou, Shelmith (Shelly) Theuri, Nikoletta Tsiarta, Nektarios Efstathiou, Angelos Sophokleous, Panayiota Adamou, Manolis A. Christofi, and Christia Paraskeva

Webpage: http://WTL-AQUA.weebly.com

The research activities of the Water Treatment Laboratory-AQUA focus on the application of advanced oxidation treatment processes (AOPs) for the removal of manmade and naturally produced toxic compounds from water and wastewater.

Specifically, WTL-AQUA focuses mainly on the monitoring, detection, prevention, and treatment of cyanobacterial contaminated water *at source* and in drinking water treatment plants. Cyanobacteria (blue-green algae) are phototrophic microorganisms and an essential part of the phytoplankton community. However, increased nutrient fluxes from anthropogenic activities (including intense agricultural and livestock and urbanization) along with climate change, have resulted in an increased frequency and persistency of cyanobacteria harmful blooms (cyano-HABs) on a global scale. Cyano-HABs, not only directly affect water quality by producing undesirable color, taste, and odor but also by releasing harmful toxic metabolites (cyanotoxins) into the water. Reported LD_{50} for cyanotoxins can be as low as 50 μg/kg. These compounds are finally included in the newly Revised Drinking Water Directive (2020/2184/EC), which means that monitoring and treatment of cyanobacteria and cyanotoxins will become mandatory in surface waters; applying more pressure to local authorities to manage and treat cyano-HAB contaminated waters adequately and promptly.

Below are summarized select studies performed at WTL-AQUA the past four years.

1. ***Monitoring and treatment of surface waters affected by cyanobacterial harmful algal blooms in Cyprus***

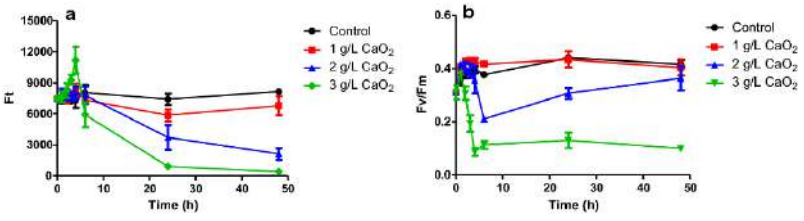


Figure 1. *The effect of calcium peroxide granules concentration (0, 1, 2, 3 g/L) on* ***a)*** *phycocyanin concentration (measured as raw fluorescence units—RFU) and* ***b)*** *maximal quantum efficiency of the PSII (QY) at 620 nm.* (**Keliri et al., *Environmental Sciences Europe*, 33, 2021 31.**)

This study aimed to monitor two lakes, St. George and Athalassa Lake, located at the national Forest Park of Athalassa, in Nicosia, Cyprus. Monitoring of the lakes was held between January and December 2019. During the sampling and monitoring period, Athalassa Lake showed less variability on its water quality characteristics than St. George Lake, thus this study focused on St. George Lake in order to correlate its trophic condition with its water quality characteristics and to identify the key environmental variables driving cyanobacterial blooming. Another aim was to initiate a new methodology to control the bloom that occurred in the lake during summer 2019, by comparing liquid hydrogen peroxide treatment with novel metallic peroxide granules (CaO_2, MgO_2) as

source of hydrogen peroxide (H_2O_2). Preliminary experiments with the metallic peroxide granules indicated that their application in aqueous matrixes resulted in the gradual release of liquid H_2O_2, which acts as an oxidizer to destroy toxic cyanobacterial blooming in affected waterbodies. The cyanobacterium *Merismopedia* sp. bloomed in the lake between June and September 2019, comprising up to 99% of the phytoplankton biovolume. The presence of microcystin synthase encoding gene (mcyB, mcyE) was confirmed, however microcystins were not detected by tandem mass spectroscopy. Treatment with liquid hydrogen peroxide in concentrations 1 to 5 mg/L had no effect on the phycocyanin fluorescence (Ft) and quantum yield of PSII (Fv/Fm) indicating an ineffective treatment for this dense *Merismopedia bloom* (10^6 cells/mL ± 20%). Metallic peroxide granules tested for their H_2O_2 releasing capacity in St. George Lake water, showed that CaO_2 released higher H_2O_2 concentration and therefore, have better mitigation efficiency than MgO_2 granules (Figure 1).

2.In-situ cyanotoxin assessment toolbox for real time surface water monitoring

Our research team participated in the CYANOBOX project funded by the Research and Innovation Foundation of Cyprus (ENTERPRISES/0618/0157). Project's duration was 3-years and was coordinated by the Cyprus Research and Innovation Centre (CyRIC). The project aimed to develope of a remote monitoring tool for the identification and quantification of cyanotoxins in surface waters. Our team actively participated in the project by conducting a user requirements survey, assisting the design of the autonomous filtration system, including filters selection, method of extraction of Microcystins with organic solvents, proposing water quality probes, and by leading the system validation work package. Continuous monitoring data collected from the experiments (shallow lake and deep lake simulations) were processed with MATLAB® for the development of predictive models and presented in the final open event of CYANOBOX.

3.Mitigation of harmful cyanobacteria blooms (cyano-HABs) with Calcium Peroxide granules and comparison with liquid H_2O_2

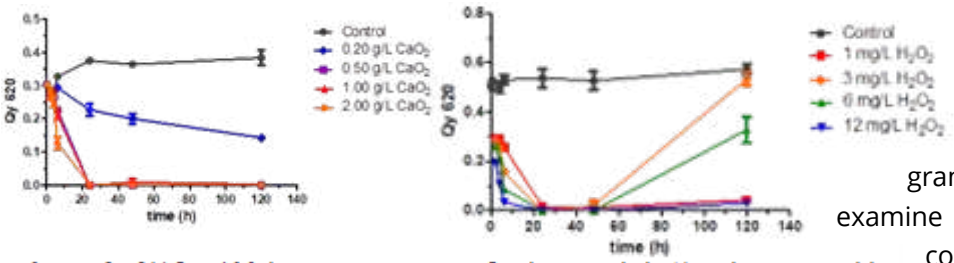


Figure 2. *QY for 120 hours treatment of Microcystis in Kouris water with 0.2-2.0 g/L CaO_2 granules and 1-12 mg/L H_2O_2.* (**Keliri et al., *Environ. Sci. Eur.*, 33 (2021) 31; Keliri et al, CEJA, 11 (2022) 100318**).

Based on our preliminary results from the treatment of naturally contaminated surface water with CaO_2 granules, it was decided to examine their effectiveness in comparison with liquid H_2O_2 on cyanobacterial blooms by applying them in surface water spiked with cultures of *Microcystis sp*. and *Aphanizomenon* sp.. We hypothesized that the gradual release H_2O_2 contributes to the elimination of cyanobacteria, without causing high accumulative concentrations H2O2 that exceed the threshold of 5 mg/L H_2O_2. Initially, the release kinetics of H_2O_2 by granules when applied in a surface water medium were determined. The release curves showed that CaO_2 granules release as high concentrations of H_2O_2 as 12 mg/L when 2.0 g/L were added in Kouris surface water matrix. Therefore, select concentrations of granules were utilized to examine their efficiency on *Microcystis* and *Aphanizomenon* species (Figure 2). Treatment showed that CaO_2 granules outperformed liquid H_2O_2 in equal released concentrations.

4.Nutrient recovery from anaerobically treated livestock waste: A Pilot-scale study

A major cause of environmental pollution of surface waters is the disposal of inadequately treated livestock waste. Currently, the most common manure management practice is solid-liquid separation, while a small percentage of these waste is anaerobically digested (6.4% in EU 27). WTL-AQUA participated in the Interreg MED project RE-LIVE WASTE, which aimed to increase innovation capacities of the public and private sectors on livestock waste management. In order to do so, nutrients were recovered from anaerobically treated livestock waste through a precipitation reaction to produce a high-value commercial organo-mineral fertilizer, struvite ($MgNH_4PO_4 \cdot 6H_2O$). A series of pilot-scale struvite crystallization experiments were conducted first with ultra-filtration (UF) permeate as starting material. Pig slurry or mixed livestock were anaerobically treated, with the digestate effluent filtered through filter bags and UF ceramic membranes prior to struvite precipitation in the 250-L struvite crystallization reactor. The produced struvite precipitates were analyzed for their quality characteristics by X-Ray Diffraction (XRD), Scanning Electron Microscopy coupled with Energy Dispersive X-ray analysis (SEM-EDX), and X-Ray Fluorescence (XRF), spectroscopic techniques. The content of the produced struvite in polycyclic aromatic hydrocarbons (PAHs), and hexavalent chromium (Cr^{6+}) was below the MDL. Struvite precipitates from UF permeate mixed waste and pig slurry had high purity, > 90% w/w, based on XRD analysis using Reference Intensity Ratio method, with an orthorhombic structure (SEM-EDX). The precipitates complied with the regulatory requirements for pathogens, carcinogens (PAHs, PCBs, and Cr^{6+}), and heavy metals (XRF) (Regulation (EU) 2019/1009). Overall, our pilot-study confirmed that nutrient recovery from livestock waste is feasible through struvite production.

Another study conducted at the pilot, aimed to assess the effect of a specific feeding strategy during AD on the crystallization of struvite from pig slurry at pilot scale, while a microbial tracking study also took place. The results showed that the stepwise feeding of the substrate to the digester alleviated ammonia inhibition. Experimentally measured methane production efficiency reached approximately 90% of the theoretical production, thus indicating a stable anaerobic digestion process. The produced struvite was of very high purity (> 95 w/w) (XRD using RIR method), with orthorhombic crystals (SEM), while XRF analysis indicated that heavy metals were within the acceptable regulatory limits. No carcinogens (PAHs, and Cr^{6+}) or pathogens (*Salmonella* spp. *and Escherichia coli*) were detected in the produced struvite.

Selected publications

H. Choi, C. Han, M. G. Antoniou, Sustainable and Green Decomposition of Various Cyanotoxins and Cyanobacteria through New Photocatalytic Materials Development, *Current Opinion in Green and Sustainable Chemistry*, 2021, 28 (100444)1-10.

E. Keliri, C. Paraskeva, A. Sofokleous, A. Sukenik, D. Dziga, E. Chernova, L. Brient, and M. G. Antoniou, Occurrence of a single-species cyanobacterial bloom in a lake in Cyprus: monitoring and treatment with hydrogen peroxide-releasing granules, *Environmental Sciences Europe*, 33, 2021 31.

Kaarsholm, K.M.S.; Kokkoli, A.; Keliri, E.; Mines, P.D.; Antoniou, M.G.; Jakobsen, M.H.; Andersen, H.R. Quantification of Hypochlorite in Water Using the Nutritional Food Additive Pyridoxamine. *Water*, 2021, 13, 3616.

E. Keliri, P. Adamou, N. Efstathiou, D. Kokkinidou, K. Kapnisis, A. S. Anayiotos, H. Mazur-Marzec, and M. G. Antoniou. Calcium peroxide (CaO2) granules enclosed in fabrics as an alternative H2O2 delivery system to combat Microcystis sp. *Chemical Engineering Journal Advances*, 11 (2022) 100318

Research Group on Chemical Reaction Engineering

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Undergraduate diploma Thesis students: Imat Kouti, Kyproula Georgiou, Styliana Iakovou, Aliki Christodoulou, Anastasia Spanou, Georgia Paschalidou, Panagiota Efraim

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My research work over the last 10 years has been in the field of Chemical Reaction and Catalytic Engineering, and primarily in the field of multiphase reactor design. More specifically, my research work is focused on the experimental and theoretical studies of novel multiphase reactors and their characterization in relation to kinetics, hydrodynamics and mass/heat transfer for optimising their performance. I have been working on the design, development and evaluation of several gas/liquid and gas/liquid/solid microstructured continuous flow reactors both experimentally, as well as computationally- validating the experimental results (concentrations, velocity and temperature profiles) using a variety of modelling tools (analytical as well as complex computational fluid dynamics (CFD)), and assessing their suitability for production.

My research centred on carbon dioxide (CO_2) (major greenhouse gas) capture using microstructured intensified reactors. Conventional techniques such as column absorption are energy-consuming and difficult to operate due to flooding and foaming problems. Membrane contactors are a promising alternative and under rapid development. Their implementation is seen as part of a process intensification trend boosting efficiency, saving energy, minimizing environmental impact and increasing safety. I developed various membrane microreactors using different absorbents (from monoethanolamine, to diethanolamine to sodium hydroxide).

I have been working also on delivering breakthrough technology for exploiting a number of potentially very valuable reactions (e.g. ozonolysis reactions) that are rarely used in the pharmaceutical industry due to constrains posed by conventional laboratory hardware and safety concerns. Microchannel continuous flow reactors offer an excellent solution to these issues due to reduced costs, process development time, improved process performance and minimizing environmental impact. I have developed a novel microchannel continuous flow reactor system for ozonolysis reactions (mesoscale 1-10g per day) ensuring intrinsically safe operation and efficient mass/heat transfer and hydrodynamics. Furthermore I have been working on catalytic oxidations using continuous flow reactors. I have developed and implemented multiphase continuous reactors for the production of fine chemicals, pharmaceuticals and agrochemicals using gas/liquid/solid aerobic oxidations. This was achieved by incorporating packed-bed membrane reactors as well as catalytic membrane reactors for catalytic oxidation of alcohols in flow. These configurations, where the oxidant is added continuously along the length of the reactor, offer safer operation compared to batch slurry systems since gas/liquid flammable mixtures are kept separated.

Currently, I am participating in several projects either as a PI or Co-I, with projects on CO_2 capture in the energy sector, liquid fuel synthesis, biofuels, plastic solid waste treatment and hydrogen production.

Recent publications

Hafeez, S., Al-Salem, S.M., Bansode, A., Villa, A., Dimitratos, N., Manos, G. and Constantinou, A., 2022. Computational Investigation of Microreactor Configurations for Hydrogen Production from Formic Acid Decomposition Using a Pd/C Catalyst. Industrial & Engineering Chemistry Research, 61(4), pp.1655-1665.

Oudejans, D., Offidani, M., Constantinou, A., Albonetti, S., Dimitratos, N. and Bansode, A., 2022. A Comprehensive Review on Two-Step Thermochemical Water Splitting for Hydrogen Production in a Redox Cycle. Energies, 15(9), p.3044.

Hafeez, S., Barlocco, I., Al-Salem, S.M., Villa, A., Chen, X., Delgado, J.J., Manos, G., Dimitratos, N. and Constantinou, A., 2021. Experimental and process modelling investigation of the hydrogen generation from formic acid decomposition using a pd/zn catalyst. Applied Sciences, 11(18), p.8462.

Hafeez, S., Sanchez, F., Al-Salem, S.M., Villa, A., Manos, G., Dimitratos, N. and Constantinou, A., 2021. Decomposition of additive-free formic acid using a pd/c catalyst in flow: Experimental and cfd modelling studies. Catalysts, 11(3), p.341.

Hafeez, S., Safdar, T., Pallari, E., Manos, G., Aristodemou, E., Zhang, Z., Al-Salem, S.M. and Constantinou, A., 2021. CO2 capture using membrane contactors: A systematic literature review. Frontiers of Chemical Science and Engineering, 15(4), pp.720-754.

Antelava, A., Jablonska, N., Constantinou, A., Manos, G., Salaudeen, S.A., Dutta, A. and Al-Salem, S.M., 2021. Energy potential of plastic waste valorization: A short comparative assessment of pyrolysis versus gasification. Energy & Fuels, 35(5), pp.3558-3571.

Hafeez, S., Aristodemou, E., Manos, G., Al-Salem, S.M. and Constantinou, A., 2020. Computational fluid dynamics (CFD) and reaction modelling study of bio-oil catalytic hydrodeoxygenation in microreactors. Reaction Chemistry & Engineering, 5(6), pp.1083-1092.

Antelava, A., Constantinou, A., Bumajdad, A., Manos, G., Dewil, R. and Al-Salem, S.M., 2020. Identification of commercial oxo-biodegradable plastics: study of UV induced degradation in an effort to combat plastic waste accumulation. Journal of Polymers and the Environment, 28(9), pp.2364-2376.

Hafeez, S., Aristodemou, E., Manos, G., Al-Salem, S.M. and Constantinou, A., 2020. Modelling of packed bed and coated wall microreactors for methanol steam reforming for hydrogen production. RSC advances, 10(68), pp.41680-41692.

Hafeez, S., Al-Salem, S.M., Manos, G. and Constantinou, A., 2020. Fuel production using membrane reactors: a review. Environmental Chemistry Letters, 18(5), pp.1477-1490.

Research Group on Thermodynamics and Transport Phenomena

Head: Pavlos S. Stephanou, Assistant Professor

Team: Post-Docs: Dr. Terpsichori (Chara) Alexiou, Dr. Vasileios-Martin Nikiforidis

Undergraduate diploma Thesis students: Maria K. Papadimitriou, Amalia K. Ioannou,

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A major theme of my research work has been the development of reliable constitutive models for describing the dynamics and equilibrium (i.e., no imposed flow) and flow behavior of complex polymeric fluids. At equilibrium, I derive and solve theories of polymer dynamics using simple molecular models of different polymeric systems (e.g., ring polymers). The aim is to understand the properties of various polymeric systems and to provide the avenue to design tailor-made systems with improved properties. In this case, we consider simple models that can be solved analytically or numerically, however, as we mention below, we strive to always compare the predictions of these theories with (equilibrium) Molecular Dynamics (MD) simulations. On the other end, under the imposition of a flow field, I rely on the use of non-equilibrium thermodynamics (NET), in particular on the Generalized Bracket and GENERIC formalisms, for developing closed-form balance equations for the fundamental hydrodynamic fields. No matter what the system is (say biological or chemical), it must obey the laws of thermodynamics. In particular, when the system is beyond equilibrium (e.g., under the influence of a flow field), its time evolution must be dictated by the laws of non-equilibrium thermodynamics (NET). This is exactly the reason for employing NET in my work: by construction, the new constitutive models obey the laws of thermodynamics. In my models, the underlying microstructure of the complex fluid is described by using structural variables, such as the conformation tensor for polymer chains (describing their average conformation), which are hydrodynamically coupled with the imposed flow field. The relation between microstructure (structural variables) and macroscopic observables (viscometric functions) takes eventually the form of a stress tensor equation. So far, I have developed generalized constitutive models for polymer melts, polymer solutions, and polymer nanocomposites. Currently, I am using NET to develop constitutive models for biomolecular fluids, such as blood.

In most cases, the resulting constitutive equations contain parameters whose values are not known. To overcome this, I resort to atomistic simulations, both (equilibrium) MD and non-equilibrium MD (NEMD). This allows me to develop interconnections between three different levels of system description: the atomistic or microscopic, the mesoscopic, and the macroscopic. As one moves from the atomistic to the macroscopic level (coarse-graining), the degrees of freedom of the system are significantly reduced, which results in a dramatic reduction in computational demands. However, coarse-graining must be done carefully to avoid the loss of important information. My work connects the three levels through the development of scale-bridging methodologies, and the outcome is a set of, closed-form, constitutive equations for the time evolution of the structural and hydrodynamic fields selected to describe the system.

More recently, I am also involved in developing modeling approaches for biological systems, such as predicting the deposition of a substance in various organs in our body, and describing the process used by specific organisms to produce important products, i.e., bioreactors.

Current Research-Brief Outline

1) Modeling the rheological response of concrete paste

Undoubtedly, cement is one of the most important materials in the construction industry. For its effective use, it is particularly important to fully comprehend the reversible and irreversible rheological behavior of cement paste. When cement is mixed with water, a suspension is initially formed, while as the hydration reactions progress, the cement paste gradually solidifies, making a new irreversible structure. At the same time, the viscosity of the paste initially decreases with time, while at long times it increases due to the formation of the irreversible structure. We introduce a continuum model for predicting the rheological behavior of cement pastes. The model is developed using non-equilibrium thermodynamics, and in particular, the Generalized Brackets formalism, to guarantee model admissibility with thermodynamic laws. To this end, we consider two scalar structural variables: a reversible one characterizing the reversible

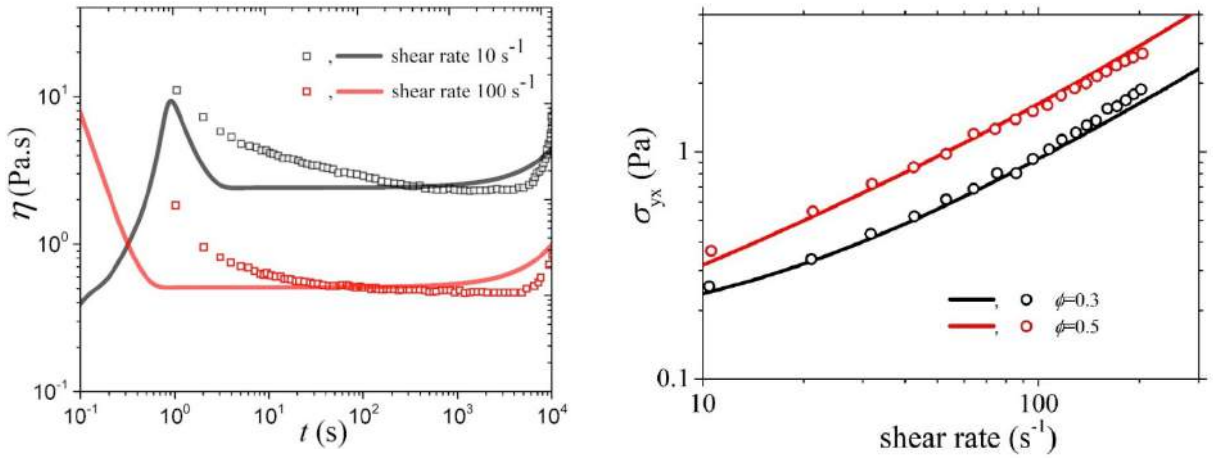


***Fig. 1**: Left: Comparison of the model predictions (lines) for the rheological response of the viscosity of a concrete paste at two different shear rates. Right: Comparison of the model predictions (lines) for the shear stress of light crude oil seawater emulsions with 30% (black) and 50% (red) of seawater against available experimental rheological data.*

structure, and an irreversible one characterizing the irreversible structure resulting from the hydrolysis reactions. Also, we consider a tensorial structural variable the conformation tensor, to characterize the deformation of the complex structure. The predictions of the new model compare quite well with available experimental data (Fig. 1, left). It is expected that the use of this model in concrete paste rheology simulators will allow for the in-silico tailor-designing of specific concrete pastes o meet specific needs.

2) Modeling the rheological response of petroleum oil-in-water emulsions

During oil extraction on offshore fields, crude oil is often mixed with water, leading to the formation of water-in-oil (W/O) emulsions. Since these emulsions pose severe flow resistance, such as higher pressure drops, due to their complex fluid rheology, it is important to have in our arsenal a rheological constitutive model that accurately predicts their rheological response. In this work, we propose such a model for W/O emulsions wherein the emulsions are modeled as deformable volume-preserving droplets via the use of a determinant-preserving contravariant second-rank tensor. We use the generalized bracket formalism of

non-equilibrium thermodynamics, to make sure that the derived model is by construction thermodynamically admissible. An additional scalar structural variable is considered to allow for the prediction of a yield point, following previous work. The predictions of the new model are shown to be in very good agreement with available experimental measurements (Fig. 1, right).

3) Elucidating the prediction of an asymmetric stress tensor and couple stresses from a NET perspective (theory and molecular simulations)
It has been almost exclusively assumed that the stress tensor employed in Fluid mechanics is symmetric, which implies that there is no interchange between macroscopic and molecular angular momenta. Such a consideration assumes that matter is continuously distributed throughout the body. Although this stands as a reasonable basis for analyzing the behavior of materials at the macroscale level, it fails to do so in cases whence the microstructure size-dependency cannot be neglected, such as polymeric systems or suspensions. In fact, the micro-rotation of freely suspended particles in fluid suspensions gives rise to antisymmetric stress, known as couple stress. In this work, we aim to verify whether the above-mentioned modification of classical fluid mechanics is thermodynamically admissible by using NET. The model will also be verified by performing non-equilibrium molecular dynamics (NEMD) simulations using atomistic detail.

4) Development of a Gene regulatory model to enhance the prediction of bioethanol production by Saccharomyces Cerevisiae (collaboration with Prof. M. Koutinas)
The production of biofuels, such as bioethanol from lignocellulosic biomass, constitutes a promising process holding numerous advantages, such as reduction of fossil fuels and environmental pollution. Alcoholic fermentation is commonly performed by the industrial workhorse *Saccharomyces cerevisiae* which utilizes glucose as the primary energy source. In this work, we predict the kinetics of the microorganism in relation to glucose uptake and consumption, by developing a logic model with the use of logic gates. The model will then be parametrized by fitting its predictions against experimental data.

Recent publications

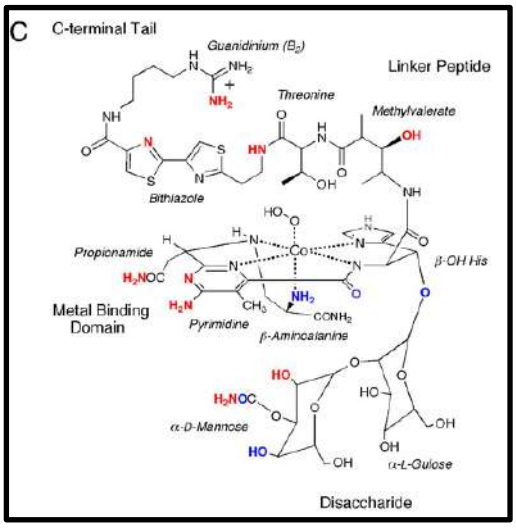
1. P. S. Stephanou, I. Ch. Tsimouri, and V. G. Mavrantzas, “Simple, Accurate and User-Friendly Differential Constitutive Model for the Rheology of Entangled Polymer Melts and Solutions from Non-Equilibrium Thermodynamics”, *Materials* 13, 2867 (2020) [Invited, Open Access]
2. P. S. Stephanou, and I. Ch. Tsimouri, “A constitutive hemorheological model addressing the deformability of red blood cells in Ringer solutions”, *Soft Matter* 16, 7585 (2020).
3. P. S. Stephanou, “A constitutive hemorheological model addressing both the deformability and aggregation of red blood cells”, *Phys. Fluids*, 32, 103103 (2020). [Selected as Featured article] [Erratum: *Phys. Fluids* 33, 039901 (2021)].
4. E. N. Skountzos, D. G. Tsalikis, P. S. Stephanou, and V. G. Mavrantzas, “Individual Contributions of Adsorbed and Free Chains to Microscopic Dynamics of Unentangled poly(ethylene Glycol)/Silica Nanocomposite Melts and the Important Role of End Groups: Theory and Simulation”, *Macromolecules* 54, 4470–4487 (2021).
5. P. S. Stephanou, “On the consistent modeling of shear-thickening polymer solutions”, *Phys. Fluids* 33, 063107 (2021).
6. P. S. Stephanou, “Elucidating the rheological implications of adding drug-carrying particles in blood”, *Rheol. Acta* 60, 603–616 (2021).

Research Group on Environmental Biospectroscopy

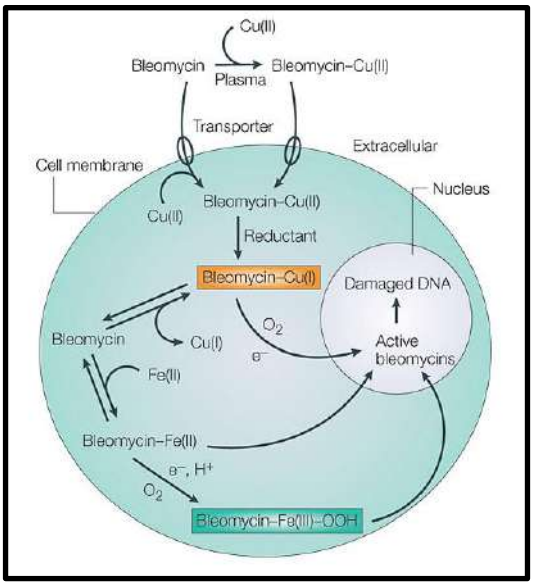
Head: Constantinos Koutsoupakis, Special Teaching Staff

Team: Georgia Demetriou, Iakovi Agathokleous

The bleomycins (BLMs, Figure 1) are a group of natural glycopeptides produced by Steptomyces verticillus that have potent antitumor activity against lymphomas, head and neck cancers and testicular cancer. The BLMs' therapeutic efficacy is proposed to be related to their ability to cause both single-stranded (ss) and double-stranded (ds) DNA damage in the presence of the required cofactors (Fe(II) or Cu(I), O2 and a one-electron reductant) (Figure 2). The ds-DNA cleavage events have long been believed to be the major source of BLMs' cytotoxicity.

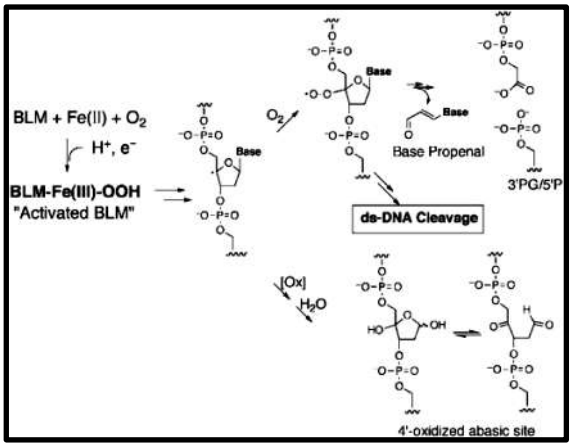


The cytotoxic effect of BLM is believed to result from the drug's ability to bind iron, activate oxygen, and cleave DNA and RNA. Furthermore, the iron complex of the drug (Fe-BLM), is remarkably selective in both the sequences that are cleaved, with a preference for 5′-GyPy-3′ sequences (*i.e.* pyrimidine bases that lie 3′ to a guanine), and in the chemical mechanism, with the initial event being abstraction of the 4′-hydrogen from the deoxyribose ring (Figure 3). Several features of Fe-BLM have been identified that may explain the ability to activate oxygen, such as the presence of a delocalized π-electron buffer around iron and the strong ironpyrimidine π-backbonding. In contrast, the structural features of Fe-BLM responsible for the sequence and chemical specificity of the DNA degradation reaction remain obscure.



Indeed, there have been reports implicating almost every region of the Fe-BLM molecule, including the C-terminal bithiazole and dimethylsulfonium groups, the N-terminal metal binding site, the primary amine of the β-aminoalanine residue, and the "linker region" that connects the metal binding site with the bithiazole group, as being responsible, at least in part, for the sequence selectivity of Fe-BLM-mediated DNA degradation. While many of these reports appear to provide conflicting results, the one requirement from all of these studies is that for sequencespecific cleavage of DNA to occur, both the metal binding site and bithiazole moiety must be intact.

In this work, we aim to characterize spectroscopically changes in the metal binding site of Fe-/Cu-BLM induced by complexation with DNA, using optical, and Fourier transform infrared (FTIR) spectroscopies. This way we obtain structural information regarding the local environment of the metal site of Fe-/Cu-BLM. We also extended our studies to Fe-/Cu-BLM bound to the self-complementary hexanucleotides, d(CGCGCG) and d(ATATAT), with the intent of detecting structural changes in the metal binding site that correlate with the sequence specificity of DNA cleavage.



Selected Publications

1. Koutsoupakis C., Soulimane T., Varotsis C. *Accounts of Chemical Research* 52 (2019) 1380-1390.

2. Koutsoupakis C., Soulimane T., Varotsis C. *Chemistry – A European Journal* 21 (2015) 4958-4961

3. Koutsoupakis C., Soulimane T., Varotsis C. *Journal of Biological Chemistry* 287 (2012) 37495-37507.

Research Group on Environmental Toxicology **(oikotoxicologia)**

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Team: Panayiota Pissaridou (Ph.D.), Katerina Drakou (Ph. D.), Gregoris Notarides (M.Sc.), Maria Christodoulou (M.Sc.), Christiana Tourapi (M. Sc.), Ioanna Angelidou (M.Sc.), Ioannis Konstantinou (M. Sc.), Andreas Christou (M. Sc.), Soteris Meletiou, Thessalia Nikolaou, Stylianos Hadjipetrou (M. Sc.), Stavros Patsalidis (M.Sc.)

Webpage: http://www.oikotoxicologia.org

Keywords: environmental toxicology; molecular bioassessment; ecological engineering; molecular ecology; water systems

"Towards integrated surveillance of natural and engineered ecosystems"

It is widely accepted that our greatest challenges to achieving good status for water bodies primarily relate to systemic problems. Aquatic ecosystems have inherent higher complexity as they are prone to multiple pressures that interact dynamically over a period of time. Among our new concerns is the occurrence of contaminants of emerging concern including both chemical and biological contaminants.

Even though our target is ultimately to preserve and even improve the quality of aquatic ecosystems we still need to increase our understanding of important ecosystem structures and functions. Adding to this, the efficiency of treatment processes is still evaluated using traditional and sum parameters that are not sensitive enough to timely identify pressures that can negatively and adversely affect receiving water bodies. It is, therefore, a stringent necessity to improve our monitoring tools. High-throughput sequencing methods can now more easily help us decipher the structure of biological communities in an accurate and time-efficient manner. This approach complements our current monitoring schemes that are based primarily on morphotaxonomy only. Our current practices are known to be more time-consuming and require high taxonomic expertise. This is even more challenging in regions of high biodiversity and especially on islands in which local expertise is usually scarce.

Our interdisciplinary group aims at increasing knowledge of aquatic ecosystem structure at small and microscale to increase understanding of ecosystem functions. We are on the quest of identifying bioindicators that can predict multiple pressure effects. Ultimately the goal is to dismantle multiple pressures on aquatic ecosystems caused primarily by human activities. In this sense, our work contributes to the One Health approach in which ecological health is intertwined with human health as well. Our activities are in line with SDGs 3,6, 13,14 and 15.

During the period 2018-2022 our group has worked on the following:

1. Increasing knowledge of aquatic ecosystem structures and functions

To effectively apply high throughput sequencing methods, it is indispensable to have curated national reference databases for species. In collaboration with stakeholders, reference databases for freshwater fish, macroinvertebrates (Macher et al 2020) and mosquito species are under development.

In parallel, we have established an observatory for insects of medical importance giving special attention to invasive mosquito species. The surveillance network was primarily established in Limassol (Drakou et al 2020) and then expanded to have island-wide coverage. Management plans and harmonized protocols at the European level have been developed and are now being implemented (Bellini et al 2020; Miranda et at 2022).

2. Disentangling effects of multiple stressors on microbial communities

To better understand the structure of microbial communities we deploy metabarcoding techniques. These are compared to traditional methods to evaluate their sensitivity and specificity indicating great potential for application and maturity (Pissaridou et al 2021a). To identify the effects of stressors on natural aquatic bacteria (Conte et al 2021) and diatom communities (Pissaridou et al 2021b), we apply metabarcoding techniques and then correlate them to environmental parameters. We also investigate the structure of bacterial communities on synthetic surfaces such as plastic ones throughout their life cycle and during their movement between compartments (Martinez Campos et al 2022). As a result, we propose new microbial molecular indices that can be used during the bioassessment of aquatic ecosystems to increase understanding of ecological functions with regard to multiple stressors effects (Mareckova et al 2021).

3. Elucidating ecotoxicological patterns during waste valorization and water treatment processes

Evaluating the ecotoxicological pattern towards model organisms acting as sentinels of acute and chronic toxicity can improve the efficiency of treatment processes. Process optimization meeting high environmental criteria can significantly promote fit-for-purpose technologies and the protection of receiving environments. In this framework, we evaluate the evolution of transformation products of contaminants of emerging concern during photolytic (Ofrydopoulou et al 2020), biotransformation (Koutinas et al 2019, Stylianou et al 2018) and bilge wastewater treatment processes (Mazioti et al 2021). In the same framework, these methods are used for process optimization of waste valorization strategies for alkaloids (Parmaki et al 2018) and industrial wastewater (Parmaki et al 2020).

4. Engaging stakeholders at the regional, national and international level

To protect aquatic environments in the long term, the active engagement of stakeholders is needed. In this sense, we develop critical reviews on implementing current policies to promote responsible research and innovation (Theodotou Schneider et al 2022), showcase good practices on the ways to create collaborative networks (Rotter et al 2021, Rotter et al 2020) and open up directions of the blue biotechnology sector that can be further exploited (Rotter et al 2022, Rotter et al 2021).

During 2018-2022, two Post-Doctoral, three M.Sc. and seven B.Sc. projects were successfully completed. Apart from this, we hosted twelve academics/postgraduate researchers and four undergraduate researchers through ERAMUS+ placements or STSM grants. We participated in the scientific committee of the NEREUS COST Action final conference event XENOWAC 2018 “Challenges and Solutions related to Xenobiotics and Antimicrobial Resistance in the Framework of Urban Wastewater Reuse: Towards a Blue Circle Society” and the DNAqua International Conference of the DNAqua-Net COST Action “on the use of DNA for water biomonitoring”. We have co-chaired a session on Genetic approaches to assess and monitor freshwater biodiversity and ecosystem functions at the SEFS12 conference. We have hosted a training school for the Ocean4Biotech COST Action “an ocean of opportunities in the Blue Biotechnology sector: Seagrass biotechnology and biomaterials as case studies” and a joint ECDC-WHO-IAEA training school on “developing vector control needs assessment”

(a) Assessing diatom communities in an intermittent river; (b) calculating seagrass density; (c) participating in a response plan to increase resilience to the climatic crisis; (d) evaluating ecological health bioindicators and physicochemical parameters; (e) hosting a training school on seagrass biotechnology and biomaterials; (f) hosting a WHO-IAEA-ECDC workshop on vector control needs assessment

Selected publications

Martínez Campos S et al (2022) Evolution of prokaryotic colonisation of greenhouse plastics discarded into the environment Ecotoxicology and Environmental Safety 232: 113213

Pissaridou P et al (2021) Cyprus diatom diversity and the association of environmental and anthropogenic influences for ecological assessment of rivers using DNA metabarcoding Chemosphere 272:129814

Mareckova M et al (2021) Expanding ecological assessment by integrating microorganisms into routine freshwater biomonitoring Water Research 191:116767

Drakou K et al (2020) The effect of weather variables on mosquito activity: a snapshot of the main point of entry of Cyprus. International Journal of Environmental Research and Public Health 17:1403.

Ofrydopoulou A et al (2020) Exploring the phototransformation and assessing the in vitro and in silico toxicity of a mixture of pharmaceuticals susceptible to photolysis Science of the Total Environment 756:144079.

Research Group on Advanced (Nano)Materials & Applications

Head: Melita Menelaou, Special Teaching Staff

Current Undergraduate Students: Evgenia C. Christofi, Antonis Procopiou

Website: https://www.researchgate.net/profile/Melita-Menelaou

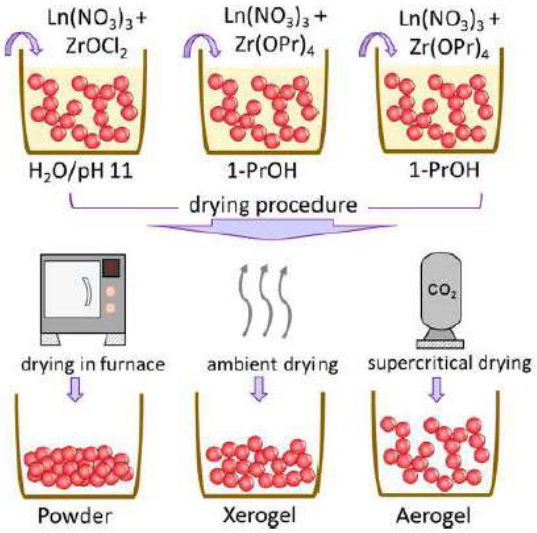
The EU Roadmap 2050 aims at developing a low-carbon economy that meets the energy security, environmental and economic goals of the European Union. Achieving the goals of Roadmap 2050 requires innovations in Materials Science and Engineering, Chemistry and Nanotechnology, among other areas. My research interests and activities for more than 10 years merge under the unifying theme of developing functional and advanced materials for applications in energy-saving technology (high-temperature superconductors), environmental monitoring (fluorescence sensors), data storage (polyaromatic hydrocarbons, molecular magnets), health (magnetic nanoparticles), and automotive/aerospace industry (high-temperature ceramics).

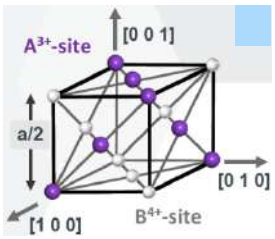
Currently, I actively participate in a COST action; namely, CA19108 (High-Temperature superconductivity for accelerating the energy transition, (Hi-SCALE)) as Cyprus' representative. Superconductivity is an exotic state of matter characterised by the absence of electrical resistivity that certain materials exhibit when cooled below a certain critical (cryogenic) temperature. Together with other unique properties, like the ability to carry huge currents and trap extremely large magnetic fields, superconductors pave the way for accelerating the Energy Transition. The goals therefore of this COST action is by a systemic approach to: a) create the path from materials to devices; b) foster improved modelling and advanced computation paradigms; c) provide methodologies and demonstrators for addressing industrial challenges and applications; and d) develop tools for the economic and sustainability assessment of High Temperature Superconducting (HTS) technologies.

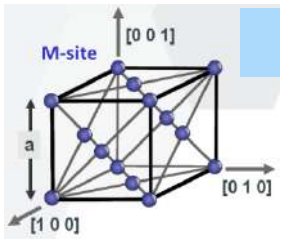
Moreover, my colleague Dr Istvan Lazar (University of Debrecen, Hungary) and I are currently acting as guest-editors in a special issue of the Journal Gels which is focused on "Aerogel Hybrids and Nanocomposites" (IF = 4.702). The Special Issue is focused on any aspect of the synthesis, production, structure, properties, and any applications of such complex aerogel materials while paying special attention to the cooperation between the hybrid matrix components and the guest particles. Aerogels in general are a class of synthetic porous ultralight materials (advanced materials) derived from a gel, in which the liquid component for the gel has been replaced with a gas, without significant collapse of the gel structure. The result is usually a solid with very (or extremely) low density and very (or extremely) low thermal conductivity. By tailoring the production process, many of the properties of an aerogel can be adjusted. Silica aerogels, which are the most widely studied type of aerogel, are usually transparent with a characteristic blue cast due to Rayleigh scattering while carbon aerogels are totally opaque and black. Traditional silica-based aerogels have been successfully used in many applications, such as providing insulation on a Mars Rover. They have also been used in many commercial products. When aerogels are used for commercial purposes, they are typically in pellet form or in a composite with other materials. The

fascinating properties of these materials render them as very powerful materials with possible applications in refrigeration, building and construction, updating historical structures, and many other insulation needs.

Ceramics, which is another topic of interest, are traditionally described as inorganic, nonmetallic solids that are prepared from powdered materials, are fabricated into products through the application of heat, and display properties such as hardness, strength, low electrical conductivity, and brittleness. Advanced ceramics represent an "advancement" over the aforementioned traditional definition. Through the application of modern materials science approaches, new materials or new combinations of existing materials have been designed that exhibit surprising variations on the properties traditionally ascribed to ceramics. As a result, there are now ceramic products that are as tough and electrically conductive as some metals! Developments in advanced ceramic processing continue at a rapid pace, constituting what can be considered a revolution in the kind of materials and properties obtained. Under this regard, we are currently focused on a family of advanced ceramic materials, called Rare-earth Zirconates or Lanthanide Zirconates with the chemical formula $Ln_2Zr_2O_7$ (where Ln=trivalent rare-earth ion). These materials are potential candidates for thermal-barrier coatings (TBCs) among other applications. Two crystal structures are characteristic for these materials: (i) the fluorite BO_6 (F) (space group $Fm\bar{3}m$, 4 formula units per unit cell) and (ii) the pyrochlore (P) $A_2B_2O_7$ (space group $Fd\bar{3}m$, 8 formula units per unit cell), which is a fluorite superstructure. We can prepare these materials in various forms; namely, nanopowders, xerogels, and aerogels which give us the unique opportunity to study how the synthetic and drying protocol can affect drastically (or not) the fascinating properties these materials demonstrate.







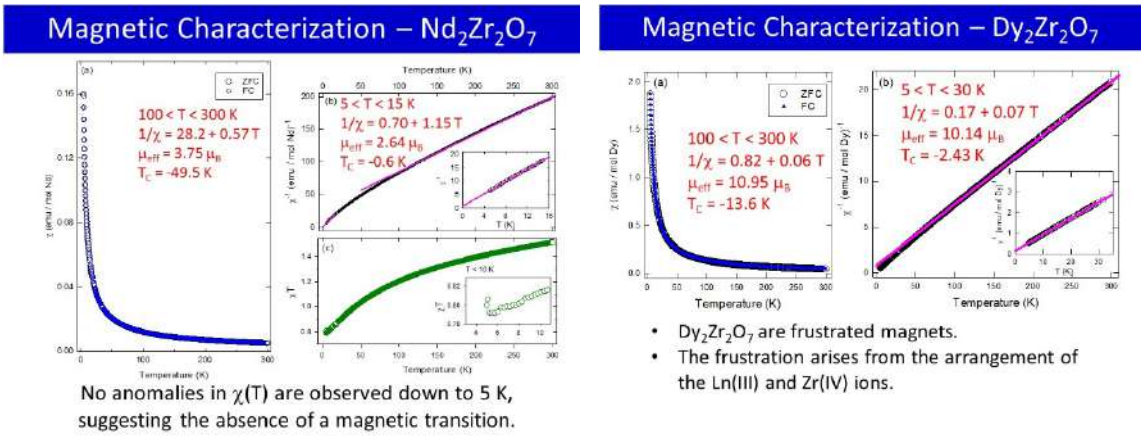
$A_2B_2O_7$

(Fd-3m) Z=8

BO_6

(Fm-3m) Z=4

$Ln_2Zr_2O_7$ Nanostructured materials can be prepared using a variety of drying procedures to result nanopowders, xerogels and aerogels. Typically, these materials crystallize in the pyrochlore (P) $A_2B_2O_7$ structure or the fluorite BO_6 (F) one.



Magnetic characterization of two representative members of the rare-earth zirconates family;

namely, $Nd_2Zr_2O_7$ and $Dy_2Zr_2O_7$ (where Ln(III) = Nd or Dy).

Selected publications

M. E. Stiehler, N. T. Panagiotopoulos, D. S. Keeble, M. Menelaou, M. R. Jolly, A. L. Greer and K. Georgarakis (**2022**). "The effect of Ni or Co additions on the structure of $Zr_{60}Cu_{30}Al_{10}$ bulk metallic glass revealed by high-energy synchrotron radiation". **Research Article** ***Materials Today Communications***, 31, 103531 (9 pages)

B. D. Nath, M. M. Islam, S. Rahman, M. A. A. Shaikh, P. E. Georghiou and M. Menelaou (**2022**). "Recent Progress in Metal-Incorporated Acyclic Schiff-base". **Review Article** ***ChemistrySelect,*** 7, e202104290 (23 pages)

P. E. Georghiou, S. Rahman, Y. Assiri, M. Menelaou, A. N. Alodhay, M. Braim and L. Y. Beaulieu (**2022**). "Development of calix[4]arenes modified at their narrow- and wider-rims as potential metal ions sensor layers for microcantilever sensors: further studies". **Research Article** ***Canadian Journal of Chemistry***, 100, 144-149

ANNEX I

List of students who graduated in years 2018-2022

Ph.D. in Environmental Science & Technology

Adamou, Anastasia (2018)
Chatziiona, Vasiliki (2019)
Sotiriou, Chryso (2020)
Theofilou, Efstathios (2019)
Drakou, Eftychiamaria (2020)
Parmaki, Stalla (2021)
Patsalou, Maria (2019)
Salameh, Anastasia (2020)

M.Sc. in Energy Resources Management

Kareklas, Giorgos (2018)
Vrachnou, Ioannis (2019)
Konstantinoy, Iosif (2018)
Kasartosmashias, Andreas (2020)
Sialis, Kyriakos (2018)

M.Sc. in Environmental Life Science & Technology

Christodoylou, Aggeliki (2018)
Georgiou, Nikolas (2019)
Kanakaris, Stylianos (2018)
Argirides, Marios (2019)

B.Sc. in Environmental Science & Technology

Christou, Andreas (2018)
Georgiadou, Roi (2019)
Charalambides, Michalis (2021)
Chrystofi, Eliza (2018)
Kwsta, Rafaela (2019)
Charalamboude, Katerina (2021)
Chrysostomou, Konstantinos (2018)
Nicolaou, Thessalia (2019)
Vasileiou, Lambros (2021)
Dimitriou, Rafailia (2018)
Papanikolaou, Harris (2019)
Elia, Stavroula (2018)
Pavlou, Korina (2019)
Katechaki, Demetra (2018)
Stavrinou, Anna (2019)
Kyriacou, Eleni (2018)
Stylianou, Konstantina (2019)
Leonidou, Evangelia (2018)
Symeou, Giannis (2019)

Lytras, Nikolas (2018)

Michaelides, Andreas (2018)

Neofytides, Konstantinos (2018)

Pitsillidis, Nikos (2018)

Siachin, Jean (2018)

Sofokleous, Angelos (2018)

Sotiriou, Marios (2018)

Christofi, Manolis (2019)

Dimitriou, Argyris (2019)

Filippou, Skevi (2019)

Theofilou, Nicolas (2019)

Efstathiou, Nektarios (2020)

Frantzi, Nikoletta (2020)

Matsagkou, Stavros (2020)

Odysseos, Giorgos (2020)

Panagiotou, Christina (2020)

Panteli, Pantelis (2020)

Papapanteli, Panagiota (2020)

Paraskeva, Christia (2020)

Paschalis, Markos (2020)

B.Sc. in Chemical Engineering

Fylaktou, Maria (2021)

Harkou, Eleana (2021)

Kavallieratou, Alexandra (2021)

Kantzias, Nicolas (2021)

Tofi, Christodoulos (2021)

Adamou, Panayiota (2022)

Efraim, Panagiota (2022)

Ioannou, Amalia (2022)

Karetsou, Natasa (2022)

Kyriakou, Christina (2022)

Panagiotou, Christina (2022)

Paschalidou, Georgia (2022)

Siatra, Philippia (2022)

Spanou, Anastasia (2022)

Ph.D. in Agricultural Sciences, Biotechnology and Food Science

Christofi, Marina (2021)

Anagnostopoulos, Dimitrios (2020)

Hadjipieri, Margarita (2020)

Neofytou, Marina (2020)

Symeiou, Simoni (2020)

Xylia, Panayiota (2020)

Hadjimbei, Elena (2019)

Constantinou, Savvas (2018)

Tsolakidou, Maria Dimitra (2018)

Bs.C. in Agricultural Sciences, Biotechnology and Food Science (Food Science & Technology)

Athanasiou, Katerina (2021)
Stylianou, Stella (2021)
Avgousti, Christiana (2021)
Xenarou, Styliani (2021)
Konstantinou, Paraskevi (2021)
Mixail, Ioanna (2020)
Louka, Konstantina (2020)
Staurou, Pantelis (2020)
Eliade, Georgia (2020)
Strati, Vasiliki (2020)
Costi, Alexandros (2020)
Nikolaou, Marilena (2020)
Pogiatzi, Kyriaki (2020)
Zosima, Loukia (2020)
Panagiotou, Marina (2020)
Alkiviadi, Aristi (2020)
Neophytou, Elena (2020)
Pieretti, Chionia (2020)
Kosta, Dimitris (2019)
Antwniou, Erwtoklia (2019)
Kleitou, Dorothea (2019)
Seleari, Christina (2019)
Xiourouppa, Elisavet (2019)
Petrou, Maria (2019)
Michael, Sophia (2019)
Ketti, Stavriani (2019)
Economidou, Panagiota (2019)
Mavri, Maria (2019)
Kyprianou, Eleni (2019)
Papadimitriou, Chrysovalanto (2019)
Zinonos, Dimitris (2019)
Christodoulou, Maria (2019)
Makromallis, Antreas (2019)
Spetsiotis, Stathis (2018)
Michail, Alexandros (2018)
Constantinou, Androulla (2018)
Dispyrou, Eleni (2018)
Eftychopoulou, Rafaella (2018)
Nikita, Dimitra (2018)
Chrysostomou, Nikoletta (2018)
Georgiou, Maria (2018)
Asxanian, Antria (2018)
Georgiou, Athina (2018)
Constantinou, Constantinos (2018)
Nikolaou, Polymnia (2018)
Stefani, Elena (2018)

Bs.C. in Agricultural Sciences, Biotechnology and Food Science (Animal and Dairy Science)

Aristodemou, Andreas (2020)
Synnou, Eliza (2019)
Kleanthous, Theodosis (2018)
Kyriakou, Mikaella (2018)

Bs.C. in Agricultural Sciences, Biotechnology and Food Science (Crop Science and Technology)

Tsiftes, Antreas (2021)

Malekkidis, Marios (2021)

Rossias, Andreas (2021)

Koukou, Dimos (2021)

Georgiou, Nikos (2021)

Adamou, Andri (2020)

Champalis, Antonis (2020)

Kiriakou, Ioannis (2020)

Tzionis, Antonios (2020)

Antwniou, Pelopidas (2020)

Panagiwtou, Sotiria (2020)

Polyviou, Vasilis (2020)

Panayi, Melani (2020)

Chatzigiannis, Dimitris (2020)

Alkiviadi, Aristi (2020)

Neophytou, Elena (2020)

Pieretti, Chionia (2020)

Kosta, Dimitris (2019)

Antwniou, Erwtoklia (2019)

Kleitou, Dorothea (2019)

Panagiotou, Christodoulos (2020)

Ioannou, Nektaria (2020)

Massou, Nicolas (2020)

Christou, Solon (2020)

Neoptolemou, Andreas (2020)

Ioannou, Ioannis (2020)

Foukas, Petros (2020)

Panagi, Anastasios (2019)

Charalambous, Savvas (2019)

Apostolou, Dimitris (2019)

Aristeidou, Christos (2019)

Hadjipapa, Nikolina (2019)

Manoli, Chrystalla (2019)

Ioannou, Irene (2019)

Hadjichristodoulou, Anna (2019)

Protopapas, Alkis (2019)

Mavronikola, Anastasia (2019)

Makris, Georgios (2018)

Stilianou, Antreas (2018)

Liggi, Stalla (2018)

Chapeshi, Antrea (2018)

Ioannou, Kleoniki (2018)

Antoniou, Dimitris (2018)

Xatzixristodoulou, Kalia (2018)

Athinodorou, Filio (2018)

Polydorou, Chrystalla (2018)

Tsalakou, Antria (2018)

Ttigki, Eirini (2018)

Vasileiou, Rea (2018)

Xaralampous, Iliana (2018)

ANNEX II

List of research projects (ongoing or completed) during 2018-2022

I. Projects funded or supported by European Union programmes

Project Title	Funding Programme	Own Budget (€)	Total Budget (€)	Period	Contact person
CLIMATE-ENERGY COMMUNITIES FOR ENERGY POVERTY	CLIMATE KIC	19,936	20,000	2020	Alexandros Charalambides
ZERO-NET EMISSIONS, RESILIENT MARITIME HUBS IN CYPRUS II	CLIMATE KIC	61,000	41,875	2020	Alexandros Charalambides
EIT CLIMATE-KIC RIS HUB MANAGEMENT&NETWORK DEVELOPMENT CYPRUS	CLIMATE KIC	35,000	35,000	2020	Alexandros Charalambides
Reducing gender gaps for the digital generation	HORIZON2020	147,617	481,446	2020-2022	Alexandros Charalambides
Climate Risk Information for Supporting/Adaptation Planning and operation-Phase	CLIMATE KIC	62,106	62,105	2020	Alexandros Charalambides
CLIMATE RESILIENT-REGIONS THROUGH SYSTEMIC SOLUTIONS AND INNOVATIONS	HORIZON2020	312,500	312,500	2021-2025	Alexandros Charalambides
Climate Risk Information for Supporting/Adaptation Planning and operation-Phase	CLIMATE KIC	28,900	28,900	2021	Alexandros Charalambides
CLIMATE MaritimeClimAccelerator 2021	CLIMATE KIC	87,500	87,500	2021	Alexandros Charalambides
EIT CLIMATE-KIC RIS HUB MANAGEMENT&NETWORK DEVELOPMENT CYPRUS	CLIMATE KIC	40,000	40,000	2021	Alexandros Charalambides
A knowledge Alliance in Eco-Innovation Entrepreneurship to Boost SMEs Competitiv	EU-Interreg Balkan Med 2014-20	85,977	101,150	2017-2021	Alexandros Charalambides

Project Title	Funding Programme	Own Budget (€)	Total Budget (€)	Period	Contact person
EIT RIS NETWORK DEVELOPMENT, COMMUNICATION & OUTREACH ACTIVITIES CYPRUS	CLIMATE KIC	75,000	75,000	2018	Alexandros Charalambides
EIT CLIMATE KIC HUB CYPRUS	CLIMATE KIC	49,000	52,500	2019	Alexandros Charalambides
Zero-Net Emissions, Resilient Maritime Hubs in Cyprus	CLIMATE KIC	32,500	36,500	2019	Alexandros Charalambides
Cyprus NECP Support	CLIMATE KIC	7,500	7,500	2019	Alexandros Charalambides
ENTERPRISE LEVEL GHG REDUCTION INITIATIVE	CLIMATE KIC	63,000	63,000	2018-2019	Alexandros Charalambides
Towards innovative methods for energy performance assessment and certification of buildings	HORIZON EUROPE	22,727	1,996,586	2022-2024	Alexandros Charalambides
MEDITERRANEAN ISLAND CLEANTECH INNOVATION ECOSYSTEM	HORIZON EUROPE	90,000	482,000	2021-2023	Alexandros Charalambides
Quick Challenge-driven, Human-centered Co-Creation mechanism for INDUStry-Academia Collaborations	HORIZON EUROPE	114,100	1,999,843	2022-2025	Alexandros Charalambides
Fork-to-farm agent-based simulation tool augmenting BIOdiversity in the agri-food VALUE chain	HORIZON2020	341,250	5,993,562	2021-2025	Andreas Katsiotis
Achieving ecological resilient dynamism for the european food system through consumer-driven policies, socio-ecological challenges, biodiversity, data driven policy, sustainable futures	HORIZON 2020	431,938	14,728,450	2022 - 2026	Andreas Katsiotis
Optimal Usage of natural product and biological Priming agents to improve resilience of agrosystems to climate change	PRIMA	0	1,140,588	2021-2024	Vasilis Photopoulos

Project Title	Funding Programme	Own Budget (€)	Total Budget (€)	Period	Contact person
ReAlising DynamIc vAlue chaiNs for underuTilised crops	HORIZON2020	90,000	5,999,715	2021-2025	Vasilis Photopoulos
Development of Innovative priming technologies safeguarding yield security in soft fruit crops through acutting edge etchnological approach	HORIZON EUROPE	894,500	1,496,875	2022-2025	Giorgos Manganaris
MEDITERRANEAN CLIMATE VINE & WINE ECOSYSTEM	CLIMATE KIC	19,125	49,412	2019-2022	Dimitris Tsaltas
AGROINNOECO-BALKAN MED INTERREGIONAL INNOVATION ECOSYSTEM FOR MATURING	EU-Interreg Balkan Med 2014-20	136,610	905,332	2017-2019	Dimitris Tsaltas
ACUA- ΣΥΣΤΗΜΑΤΑ ΑΥΤΟΝΟΜΗΣ ΟΙΚΙΑΚΗΣ ΚΟΜΠΟΣΤΟΠΟΙΗΣΗΣ ΣΕ ΑΣΤΙΚΟ ΠΕΡΙΒΑΛΛΟΝ	EU-Interreg GR CY 2014-20	55,000	865,052	2017-2021	Dimitris Tsaltas
LIFE GREEN GRAPES-NEW APPROACHES FOR PROTECTION IN A MODERN SUSTAINALBLE VITI	EU - LIFE	318,366	318,366	2017-2021	Dimitris Tsaltas
Alliance for Skills and Knowledge to Widen Food Sector-related Open Innovation	EU - LLP-ERASMUS	56,041	56,041	2018-2021	Dimitris Tsaltas
GENDER SMART SCIENCE MANAGEMENT OF AGRICULTURE AND LIFE SCIENCES, INCL.RESEARCH	EU - HORIZON 2020	240,031	3,162,028	2019-2022	Dimitris Tsaltas
Enhancement of knowledge transfer in the food sector strengthening technologic	EU - LLP-ERASMUS	61,867	61,867	2020-2022	Dimitris Tsaltas
ΑΓΡΟΤΑΥΤΟΤΗΤΑ: ΤΑΥΤΟΠΟΙΗΣΗ ΑΥΘΕΝΤΙΚΟΤΗΤΑΣ ΚΑΙ ΕΝΙΣΧΥΣΗ ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑΣ ΤΟΠΙΚΩΝ ΠΡΟΙΟΝΤΩΝ	EU-Interreg GR CY 2014-20	324,000	1,581,930	2017-2021	Dimitris Tsaltas
Monitoring EU energy efficiency first principle and policy implementation	EU - HORIZON 2020	33,799	33,799	2019-2021	Theodoros Zachariades
Optimization of decentralised domestic wastewater treatment and sanitation via C	EU-Interreg Balkan Med 2014-20	218,773	218,773	2017-2020	Ioannis Vyrides

Project Title	Funding Programme	Own Budget (€)	Total Budget (€)	Period	Contact person
A digital Solid waste reuse platform for Balkan	EU-Interreg Balkan Med 2014-20	136,000	160,000	2017-2020	Ioannis Vyrides
Development of A Novel Submerged Anaerobic Electrochemical Membrane Bioreactor	EU - Marie Curie	157,941	157,941	2020-2022	Ioannis Vyrides
Climate Risk Information for Supporting Adaptation Planning and operation-Phase	CLIMATE KIC	99,489	154,988	2019-2022	Costas Andreou
Στήριξη για τη δημιουργία και λειτουργία Επιχειρισιακών Ομάδων της Ευρωπαικής Σύμπραξης Καινοτομίας για την Παραγωγικότητα και τη Βιωσιμότητα της Γεωργίας	EU - other	66,960	84,200	2021-2023	Loukas Kanetis
Regenerative agricultural approaches to improve ecosystem service in medditerranean vineyards	PRIMA	0	1,922,595	2021-2024	Loukas Kanetis
Improving innovation capacities of private and public actors for sunstainable an	EU - MED	365,425	382,125	2018-2021	Maria Antoniou
Automated In-situ Cyanotoxin Assessment Toolbox for Real-Time Surface Water Moni	EU - other	50,500	100,000	2019-2020	Maria Antoniou
Novel physical-chemical oxidation processes for mitigating toxic cyanobacterial blooming	EU - other	10,000	100,000	2020-2022	Maria Antoniou
Ανάπτυξη Διασυνοριακού Ολοκληρωμένου Καινοτόμου Ευφυούς Συστήματος Διαχείρισης Πόρων, Λήψης Αποφάσεων και Εκπαίδευσης στην Αντιμετώπιση Φυσικών και Τεχνολογικών Καταστροφών και Ανθρωπογενών και Κοινωνικών Κρίσεων	EU-Interreg V-A GR CY 2014-20	125,171	130,639	2017-2020	Marlen Vasquez
MANAGING THE NATURA 2000 NETWORK IN CYPRUS AND SHAPING A SUSTAINABLE FUTURE	EU - LIFE	139,956	11,540,167	2019-2029	Menelaos Stavrinides
Exposure to Electromagnet fields and planetary health	HORIZON 2020	116,000	6,635,055	2022-2027	Menelaos Stavrinides

Project Title	Funding Programme	Own Budget (€)	Total Budget (€)	Period	Contact person
Safeguarding agroecosystems resilience under climate change through efficient pollination and sustainable beekeeping	PRIMA	Cost action	1,191,941	2021-2024	Menelaos Stavrinides
Biogas and digestate with controlled ammonia content by a virtuous biowaste cycle	EU - LIFE	231,360	231,391	2017-2021	Michalis Koutinas
Ecofriendly multipurpose Biobased Products from municipal biowaste	EU - LIFE	435,438	435,438	2020-2024	Michalis Koutinas
Recycling process trains of waste bioplastics	HORIZON EUROPE	92,538	115,560	2022-2024	Michalis Koutinas
AGROLABS-AGROFOOD INNOVATION CLUSTERS	EU-Interreg Balkan Med 2014-20	125,760	956,303	2017-2020	Nikolaos Tzortzakis
Προστασία και ανάδειξη της πολιτιστικής κληρονομιάς Ελλάδας και Κύπρου σε μουσει	EU-Interreg GR CY 2014-20	218,426	270,000	2017-2020	Petros Savva
Αποκεντρωμένη διαχείριση των βιοαποβλήτων και Αξιοποίησή τους με χρήση εναλλακτι	EU-Interreg GR CY 2014-20	354,873	420,000	2018-2020	Petros Savva
Demonstration of an innovative method for the detoxification of pharmaceutical wastewater from pharmaceutical facilities	LIFE	330,000	1,735,815	2021-2025	Petros Savva
Innovative Dairy Science education material development, focused on Products, Processes, Quality, Safety & Entrepreneurship, using Information and Communication Technologies (ICTs) and Open Educational Resources (OER)	EU - LLP-ERASMUS	37,402	37,402	2018-2021	Photis Papademas
Medditerranean Climate Vine and Wine Ecosystem	CLIMATE KIC	21,875	194,819	2022	Dimitris Tsaltas
Training and mentorship based adult rural women empowerment in the field of green entrepreneurship	ERASMUS+	25,411	232,249	2022-2024	Dimitris Tsaltas

Overall, the total budget of the projects was **69,723,827 EUROS** and the budget contributed to CUT was **7,676,255** EUROS.

II. Projects funded by the Research Promotion Foundation of Cyprus

Project Title	Own Budget (€)	Total Budget (€)	Period	Contact person
Intra-hour prediction of solar electricity generation from Photovoltaics	168,000	198,000	2018-2021	Alexandros Charalambides
Investigating the phytochemical profile and in-vitro bioactive properties of endemic plant extracts from Cyprus for potential use in medicine and agriculture	12,600	59,990	2022-2024	Vasilis Photopoulos
Sustainable yield security through seed priming with non-toxic chemical agents coupled with advanced advanced naturallyderived, biodegradable hydrogel coatings	11,000	12,000	2020-2021	Vasilis Photopoulos
ESTABLISHMENT OF A PLATFORM FOR THE DISCOVERY OF NOVEL ANTIMICROBIAL AND ANTIDIABETIC AGENTS FROM NATURAL SOURCES	174,367	174,367	2022-2024	Vlasios Goulas
RABID BACTERIA DETECTION ON FOOD	13,200	13,200	2019-2021	Dimitris Tsaltas
Triggering Photoprotection in Photosystem II Antenna by Molecular Simulations an	159,965	159,965	2018-2022	Evangelos Daskalakis
Urban Micro-Climate and the Design of Sustainable Bulilt Environments	17,280	17,280	2019-2022	Theodoros Zachariades
Utilization of CO2 through novel Bio ElectroCathode systems for production of bi	169,824	212,424	2018-2022	Ioannis Vyrides
Biological treatment of Bigle water using a hybrid system of Submerged Anaerobic	139,434	149,695	2019-2021	Ioannis Vyrides
Surphur removal form oil by Biodesulgurization (BDS) technology	24,480	24,480	2019-2022	Ioannis Vyrides
On the Market of BioMethane as a Renewable Trasnport Fuel: An off-Grid Mobile S	25,980	106,460	2019-2020	Ioannis Vyrides
Natural Gas Sweetening based on Metallic Iron-process	49,990	49,990	2022	Ioannis Vyrides
BioMethane as a Drop-In -Marinwe -BioFUel: Developing a Virtual Gas-Grid Solution	10,800	199,995	2022-2023	Ioannis Vyrides
Production of the bioactive signaling messenger nitric oxide from nitrite: Probi	93,451	93,451	2019-2023	Constantinos Varotsis
Real time monitoring the natural resources in the Mining Enviroments of Hellenic	82,920	82,920	2019-2021	Constantinos Varotsis
Development of non-Destructive Fast Spectroscopic Methods for the Detection of of Biological contaminants in Water/Foods and Heavy Metals/Nutrients in Agricultural Soils	62,400	62,400	2019-2021	Constantinos Varotsis
Monitoring and treatment of cyanobacterial contaminated surface waters	5,000	5,000	2017-2019	Maria Antoniou

Automated In-situ Cyanotoxin Assessment Toolbox for Real-Time Surface Water Moni	54603	64,883	2019-2022	Maria Antoniou
Quantification kit for oxidant X for filed and lab applications	10,000	20,000	2020-2023	Maria Antoniou
A sustainable and innovative management system for toxic cyanobacteria blooming of surface waters with combined energy production, sustainable agriculture and food safety	198,607	198,607	2022-2024	Maria Antoniou
Biophotonics technology for in-situ, fast, accurate and cost-effective milk analysis	70,280	266,630	2022-2023	Maria Aspri
NOVEL DNA-BASED TEST FOR THE IDENTIFICATION OF BENTHIC DIATOMS OF EUROPEAN FRESHWATER WATERBODIES	92,517	150,219	2020-2023	Marlen Vasquez
HERBAL ESSENTIAL OILS: POTENTIAL FOR DEVELOPMENT AS LOW-RISK PESTICIDES,PLANT GRO	156,534	156,534	2018-2021	Menelaos Stavrinides
Eco-innovation for the production of low environmental footprint wine	181,446	249,923	2019-2022	Menelaos Stavrinides
Biorefinery Technologies for Exploitation of Citrus Processing Residues	111,476	252,334	2022-2024	Michalis Koutinas
Developemt of a Hybrid Ozone-Biological Process for the Treatment of Drill Cuttings	55,096	105,669	3018-2020	Michalis Koutinas
Production of high added-value commodities through integrated management of citrus wealth	109,143	109,143	2019-2021	Michalis Koutinas
I dentification of Medicinal/AromaticP lants properties and improving quality, nutritive value and storability of fresh and dry products to support SME competitiveness	174,790	259,573	2022-2024	Nikolaos Tzortzakis
VALorization of wild UnExploited species and local landraces vegetables in Medit	169,935	169,935	2020-2023	Nikolaos Tzortzakis
Innovative sustainable technologies to extend shelf-life of Perishable Mediterra	141,366	169,946	2020-2022	Nikolaos Tzortzakis
INNOVATIVE APPROACHES PROMOTING FUNCTIONAL MICROBIAL DIVERSITY FOR A SUSTAINABLE	140,599	174,432	2021-2024	Nikolaos Tzortzakis
DONKEY MILK BIOACTIVE POWER-DELIVER	112,945	112,945	2018-2021	Photis Papademas
Νέα εκλεκτικά χηλικά υλικά Ουρανυλίου για την ανάπτυξη νέων αισθητήρων και δεσμευτών ουρανίου από τη θάλασσα	2,824	200,055	2022-2024	Chrysoula Drouza
New quinone/hydroquinone metal complexes for the catalytic conversion of H2O/O2	20,880	20,880	2019-2022	Chrysoula Drouza

Overall, the total budget of the projects was **4,303,330 EUROS** and the budget invested by CUT was **3,023,738** EUROS.

III. Projects funded or supported by other national and international sources

Project Title	Funding Organisation	Own Budget (€)	Total Budget (€)	Period	Contact person
National Energy and Climate Plan (NECP) - Responding to the comments of the Euro	Ministry of Agriculture Cyprus	11,500	20,000	2020	Alexandros Charalambides
Black to the future - biochar and compost as soil amendment- EIT FOOD	EIT Food	37,500	65,000	2021-2022	Dimitris Tsaltas
ChiLd MicroBes predict how to stay away from Obesity- EIT FOOD	EIT Food	8,600	10,750	2021-2022	Dimitris Tsaltas
ΕΝΣΩΜΑΤΩΣΗ ΤΩΝ ΒΙΟΔΡΑΣΤΙΚΩΝ ΣΥΣΤΑΤΙΚΩΝ ΤΗΣ ΠΡΟΠΟΛΗΣ ΣΤΟ ΜΕΛΙ	PV - Private Sector - CY	14,400	14,400	2018-2019	Dimitris Tsaltas

ANNEX III

Publications of Faculty staff in 2018-2022*

2018

Anagnostopoulos, D., Bozoudi, D. and Tsaltas, D., 2018. Enterococci Isolated from Cypriot Green Table Olives as a New Source of Technological and Probiotic Properties. *Fermentation*, 4(2), p.48. https://doi.org/10.3390/fermentation4020048.

Antoniou, C., Fragkoudi, I., Martinou, A., Stavrinides, M.C. and Fotopoulos, V., 2018a. Spatial response of Medicago truncatula plants to drought and spider mite attack. *Plant Physiology and Biochemistry*, 130, pp.658–662. https://doi.org/10.1016/j.plaphy.2018.08.018.

Antoniou, C., Savvides, A., Georgiadou, E.C. and Fotopoulos, V., 2018b. Spectrophotometric Quantification of Reactive Oxygen, Nitrogen and Sulfur Species in Plant Samples. [online] pp.155–161. https://doi.org/10.1007/978-1-4939-7398-9_16.

Antoniou, M.G., Boraei, I., Solakidou, M., Deligiannakis, Y., Abhishek, M., Lawton, L.A. and Edwards, C., 2018c. Enhancing photocatalytic degradation of the cyanotoxin microcystin-LR with the addition of sulfate-radical generating oxidants. *Journal of Hazardous Materials*, 360, pp.461–470. https://doi.org/10.1016/j.jhazmat.2018.07.111.

Aspri, M., Leni, G., Galaverna, G. and Papademas, P., 2018. Bioactive properties of fermented donkey milk, before and after in vitro simulated gastrointestinal digestion. *Food Chemistry*, 268, pp.476–484. https://doi.org/10.1016/j.foodchem.2018.06.119.

Balestrini, R., Chitarra, W., Antoniou, C., Ruocco, M. and Fotopoulos, V., 2018. Improvement of plant performance under water deficit with the employment of biological and chemical priming agents. *The Journal of Agricultural Science*, 156(5), pp.680–688. https://doi.org/10.1017/S0021859618000126.

Bozoudi, D. and Tsaltas, D., 2018. The Multiple and Versatile Roles of Aureobasidium pullulans in the Vitivinicultural Sector. *Fermentation*, 4(4), 85. https://doi.org/10.3390/fermentation4040085.

Charalambides, A.G., Sahu, S., Hardalupas, Y., Taylor, A.M.K.P. and Urata, Y., 2018. Evaluation of Homogeneous Charge Compression Ignition (HCCI) autoignition development through chemiluminescence imaging and Proper Orthogonal Decomposition. *Applied Energy*, 210, pp.288–302. https://doi.org/10.1016/j.apenergy.2017.11.010.

Chatziiona, V.K., Constantinou, B.K., Savva, P.G., Olympiou, G.G., Kapnisis, K., Anayiotos, A. and Costa, C.N., 2018. Regulating the catalytic properties of Pt/Al2O3 through nanoscale inkjet printing. *Catalysis Communications*, 103, pp.69–73. https://doi.org/10.1016/j.catcom.2017.09.016.

Christou, A., Michael, C., Fatta-Kassinos, D. and Fotopoulos, V., 2018. Can the pharmaceutically active compounds released in agroecosystems be considered as emerging plant stressors? *Environment International*, 114, pp.360–364. https://doi.org/10.1016/j.envint.2018.03.003.

Chrysargyris, A., Antoniou, O., Tzionis, A., Prasad, M. and Tzortzakis, N., 2018a. Alternative soilless media using olive-mill and paper waste for growing ornamental plants. *Environmental Science and Pollution Research*, 25(36), pp.35915–35927. https://doi.org/10.1007/s11356-017-1187-4.

Chrysargyris, A., Michailidi, E. and Tzortzakis, N., 2018. Physiological and Biochemical Responses of Lavandula angustifolia to Salinity Under Mineral Foliar Application. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.00489.

Chrysargyris, A., Stamatakis, A., Moustakas, K., Prasad, M. and Tzortzakis, N., 2018b. Evaluation of Municipal Solid Waste Compost and/or Fertigation as Peat Substituent for Pepper Seedlings Production. *Waste and Biomass Valorization*, 9(12), pp.2285–2294. https://doi.org/10.1007/s12649-017-0124-6.

* Based primarily on the Scopus® database as of September 2022.

Chrysargyris, A., Tzionis, A., Xylia, P. and Tzortzakis, N., 2018c. Effects of Salinity on Tagetes Growth, Physiology, and Shelf Life of Edible Flowers Stored in Passive Modified Atmosphere Packaging or Treated With Ethanol. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.01765.

Chrysargyris, A., Xylia, P., Anastasiou, M., Pantelides, I. and Tzortzakis, N., 2018d. Effects of *Ascophyllum nodosum* seaweed extracts on lettuce growth, physiology and fresh-cut salad storage under potassium deficiency. *Journal of the Science of Food and Agriculture*, 98(15), pp.5861–5872. https://doi.org/10.1002/jsfa.9139.

Chrysargyris, A., Xylia, P., Antoniou, O. and Tzortzakis, N., 2018e. Climate change due to heat and drought stress can alter the physiology of Maratheftiko local Cyprian grapevine variety. *Journal of Water and Climate Change*, 9(4), pp.715–727. https://doi.org/10.2166/wcc.2018.226.

Chrysargyris, A., Xylia, P., Litskas, V., Mandoulaki, A., Antoniou, D., Boyias, T., Stavrinides, M. and Tzortzakis, N., 2018f. Drought stress and soil management practices in grapevines in Cyprus under the threat of climate change. *Journal of Water and Climate Change*, 9(4), pp.703–714. https://doi.org/10.2166/wcc.2018.135.

Constandinou, S., Nikoloudakis, N., Kyratzis, A.C. and Katsiotis, A., 2018. Genetic diversity of Avena ventricosa populations along an ecogeographical transect in Cyprus is correlated to environmental variables. *PLOS ONE*, 13(3), e0193885. https://doi.org/10.1371/journal.pone.0193885.

Constantinou, M., Nikolaou, P., Koutsokeras, L., Avgeropoulos, A., Moschovas, D., Varotsis, C., Patsalas, P., Kelires, P. and Constantinides, G., 2018a. Metal (Ag/Ti)-Containing Hydrogenated Amorphous Carbon Nanocomposite Films with Enhanced Nanoscratch Resistance: Hybrid PECVD/PVD System and Microstructural Characteristics. *Nanomaterials*, 8(4), 209. https://doi.org/10.3390/nano8040209.

Constantinou, S., Gómez-Caravaca, A.M., Goulas, V., Segura-Carretero, A., Koundouras, S. and Manganaris, G.A., 2018b. The impact of postharvest dehydration methods on qualitative attributes and chemical composition of 'Xynisteri' grape (Vitis vinifera) must. *Postharvest Biology and Technology*, 135, pp.114–122. https://doi.org/10.1016/j.postharvbio.2017.09.005.

Daskalakis, V., 2018. Protein–protein interactions within photosystem II under photoprotection: the synergy between CP29 minor antenna, subunit S (PsbS) and zeaxanthin at all-atom resolution. *Physical Chemistry Chemical Physics*, 20(17), pp.11843–11855. https://doi.org/10.1039/C8CP01226A.

Drakou, E.-M., Amorim, C.L., Castro, P.M.L., Panagiotou, F. and Vyrides, I., 2018. Wastewater Valorization by Pure Bacterial Cultures to Extracellular Polymeric Substances (EPS) with High Emulsifying Potential and Flocculation Activities. *Waste and Biomass Valorization*, 9(12), pp.2557–2564. https://doi.org/10.1007/s12649-017-0016-9.

Drouza, C., Hadjithoma, S., Nicolaou, M. and Keramidas, A.D., 2018. Structural characterization, hydrolytic stability and dynamics of cis-MoVIO22+ hydroquinonate/phenolate complexes. *Polyhedron*, 152, pp.22–30. https://doi.org/10.1016/j.poly.2018.06.008.

Fernandez i Marti, A., Saski, C.A., Manganaris, G.A., Gasic, K. and Crisosto, C.H., 2018. Genomic Sequencing of Japanese Plum (Prunus salicina Lindl.) Mutants Provides a New Model for Rosaceae Fruit Ripening Studies. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.00021.

Georgiadou, E.C., Kowalska, E., Patla, K., Kulbat, K., Smolińska, B., Leszczyńska, J. and Fotopoulos, V., 2018. Influence of Heavy Metals (Ni, Cu, and Zn) on Nitro-Oxidative Stress Responses, Proteome Regulation and Allergen Production in Basil (Ocimum basilicum L.) Plants. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.00862.

Gerrard, Z.E., Swift, B.M.C., Botsaris, G., Davidson, R.S., Hutchings, M.R., Huxley, J.N. and Rees, C.E.D., 2018. Survival of Mycobacterium avium subspecies paratuberculosis in retail pasteurised milk. *Food Microbiology*, 74, pp.57–63. https://doi.org/10.1016/j.fm.2018.03.004.

Ghiuță, I., Cristea, D., Croitoru, C., Kost, J., Wenkert, R., Vyrides, I., Anayiotos, A. and Munteanu, D., 2018. Characterization and antimicrobial activity of silver nanoparticles, biosynthesized using Bacillus species. *Applied Surface Science*, 438, pp.66–73. https://doi.org/10.1016/j.apsusc.2017.09.163.

Goulas, V., Nicolaou, D., Botsaris, G. and Barbouti, A., 2018. Straw Wine Melanoidins as Potential Multifunctional Agents: Insight into Antioxidant, Antibacterial, and Angiotensin-I-Converting Enzyme Inhibition Effects. *Biomedicines*, 6(3), p.83. https://doi.org/10.3390/biomedicines6030083.

Jucker Riva, M., Baeza, J., Bautista, S., Christoforou, M., Daliakopoulos, I.N., Hadjimitsis, D., Keizer, J.J., Liniger, H., Quaranta, G., Ribeiro, C., Salvia, R., Tsanis, I.K., Urgeghe, A.M., Valdecantos, A. and Schwilch, G., 2018. How does land

management contribute to the resilience of Mediterranean forests and rangelands? A participatory assessment. *Land Degradation & Development*, 29(10), pp.3721–3735. https://doi.org/10.1002/ldr.3104.

Karabagias, I.K., Louppis, A.P., Kontakos, S., Drouza, C. and Papastephanou, C., 2018a. Characterization and Botanical Differentiation of Monofloral and Multifloral Honeys Produced in Cyprus, Greece, and Egypt Using Physicochemical Parameter Analysis and Mineral Content in Conjunction with Supervised Statistical Techniques. *Journal of Analytical Methods in Chemistry*, 2018, pp.1–10. https://doi.org/10.1155/2018/7698251.

Karabagias, I.K., Vlasiou, M., Kontakos, S., Drouza, C., Kontominas, M.G. and Keramidas, A.D., 2018b. Geographical discrimination of pine and fir honeys using multivariate analyses of major and minor honey components identified by 1H NMR and HPLC along with physicochemical data. *European Food Research and Technology*, 244(7), pp.1249–1259. https://doi.org/10.1007/s00217-018-3040-5.

Koutinas, M., Yiangou, C., Osório, N.M., Ioannou, K., Canet, A., Valero, F. and Ferreira-Dias, S., 2018. Application of commercial and non-commercial immobilized lipases for biocatalytic production of ethyl lactate in organic solvents. *Bioresource Technology*, 247, pp.496–503. https://doi.org/10.1016/j.biortech.2017.09.130.

Kritioti, A., Menexes, G. and Drouza, C., 2018. Chemometric characterization of virgin olive oils of the two major Cypriot cultivars based on their fatty acid composition. *Food Research International*, 103, pp.426–437. https://doi.org/10.1016/j.foodres.2017.10.064.

Manganaris, G.A., Goulas, V., Mellidou, I. and Drogoudi, P., 2018. Antioxidant Phytochemicals in Fresh Produce: Exploitation of Genotype Variation and Advancements in Analytical Protocols. *Frontiers in Chemistry*, 5. https://doi.org/10.3389/fchem.2017.00095.

Mantzouki, E., Campbell, J., van Loon, E., Visser, P., Konstantinou, I., Antoniou, M., Giuliani, G., Machado-Vieira, D., Gurjão de Oliveira, A., Maronić, D.Š., Stević, F., Pfeiffer, T.Ž., Vucelić, I.B., Žutinić, P., Udovič, M.G., Plenković-Moraj, A., Tsiarta, N., Bláha, L., Geriš, R., Fránková, M., Christoffersen, K.S., Warming, T.P., Feldmann, T., Laas, A., Panksep, K., Tuvikene, L., Kangro, K., Häggqvist, K., Salmi, P., Arvola, L., Fastner, J., Straile, D., Rothhaupt, K.-O., Fonvielle, J., Grossart, H.-P., Avagianos, C., Kaloudis, T., Triantis, T., Zervou, S.-K., Hiskia, A., Gkelis, S., Panou, M., McCarthy, V., Perello, V.C., Obertegger, U., Boscaini, A., Flaim, G., Salmaso, N., Cerasino, L., Koreivienė, J., Karosienė, J., Kasperovičienė, J., Savadova, K., Vitonytė, I., Haande, S., Skjelbred, B., Grabowska, M., Karpowicz, M., Chmura, D., Nawrocka, L., Kobos, J., Mazur-Marzec, H., Alcaraz-Párraga, P., Wilk-Woźniak, E., Krztoń, W., Walusiak, E., Gagala, I., Mankiewicz-Boczek, J., Toporowska, M., Pawlik-Skowronska, B., Niedźwiecki, M., Pęczuła, W., Napiórkowska-Krzebietke, A., Dunalska, J., Sieńska, J., Szymański, D., Kruk, M., Budzyńska, A., Goldyn, R., Kozak, A., Rosińska, J., Szeląg-Wasielewska, E., Domek, P., Jakubowska-Krepska, N., Kwasizur, K., Messyasz, B., Pełechata, A., Pełechaty, M., Kokocinski, M., Madrecka, B., Kostrzewska-Szlakowska, I., Frąk, M., Bańkowska-Sobczak, A., Wasilewicz, M., Ochocka, A., Pasztaleniec, A., Jasser, I., Antão-Geraldes, A.M., Leira, M., Hernández, A., Vasconcelos, V., Morais, J., Vale, M., Raposeiro, P.M., Gonçalves, V., Aleksovski, B., Krstić, S., Nemova, H., Drastichova, I., Chomova, L., Remec-Rekar, S., Elersek, T., Delgado-Martín, J., García, D., Cereijo, J.L., Gomà, J., Trapote, M.C., Vegas-Vilarrúbia, T., Obrador, B., García-Murcia, A., Real, M., Romans, E., Noguero-Ribes, J., Duque, D.P., Fernández-Morán, E., Úbeda, B., Gálvez, J.Á., Marcé, R., Catalán, N., Pérez-Martínez, C., Ramos-Rodríguez, E., Cillero-Castro, C., Moreno-Ostos, E., Blanco, J.M., Rodríguez, V., Montes-Pérez, J.J., Palomino, R.L., Rodríguez-Pérez, E., Carballeira, R., Camacho, A., Picazo, A., Rochera, C., Santamans, A.C., Ferriol, C., Romo, S., Soria, J.M., Hansson, L.-A., Urrutia-Cordero, P., Özen, A., Bravo, A.G., Buck, M., Colom-Montero, W., Mustonen, K., Pierson, D., Yang, Y., M. H. Verspagen, J., de Senerpont Domis, L.N., Seelen, L., Teurlincx, S., Verstijnen, Y., Lürling, M., Maliaka, V., Faassen, E.J., Latour, D., Carey, C.C., W. Paerl, H., Torokne, A., Karan, T., Demir, N., Beklioğlu, M., Filiz, N., E. Levi, E., Iskin, U., Bezirci, G., Tavşanoğlu, Ü.N., Çelik, K., Özhan, K., Karakaya, N., Koçer, M.A.T., Yilmaz, M., Maraşlıoğlu, F., Fakioglu, Ö., Soylu, E.N., Yağcı, M.A., Çınar, Ş., Çapkın, K., Yağcı, A., Cesur, M., Bilgin, F., Bulut, C., Uysal, R., Köker, L., Akçaalan, R., Albay, M., Alp, M.T., Özkan, K., Sevindik, T.O., Tunca, H., Önem, B., Richardson, J., Edwards, C., Bergkemper, V., O'Leary, S., Beirne, E., Cromie, H. and Ibelings, B.W., 2018a. A European Multi Lake Survey dataset of environmental variables, phytoplankton pigments and cyanotoxins. *Scientific Data*, 5(1), 180226. https://doi.org/10.1038/sdata.2018.226.

Mantzouki, E., Lürling, M., Fastner, J., de Senerpont Domis, L., Wilk-Woźniak, E., Koreivienė, J., Seelen, L., Teurlincx, S., Verstijnen, Y., Krztoń, W., Walusiak, E., Karosienė, J., Kasperovičienė, J., Savadova, K., Vitonytė, I., Cillero-Castro, C., Budzyńska, A., Goldyn, R., Kozak, A., Rosińska, J., Szeląg-Wasielewska, E., Domek, P., Jakubowska-Krepska, N., Kwasizur, K., Messyasz, B., Pełechata, A., Pełechaty, M., Kokocinski, M., García-Murcia, A., Real, M., Romans, E., Noguero-Ribes, J., Duque, D., Fernández-Morán, E., Karakaya, N., Häggqvist, K., Demir, N., Beklioğlu, M., Filiz, N., Levi, E., Iskin, U., Bezirci,

G., Tavşanoğlu, Ü., Özhan, K., Gkelis, S., Panou, M., Fakioglu, Ö., Avagianos, C., Kaloudis, T., Çelik, K., Yilmaz, M., Marcé, R., Catalán, N., Bravo, A., Buck, M., Colom-Montero, W., Mustonen, K., Pierson, D., Yang, Y., Raposeiro, P., Gonçalves, V., Antoniou, M., Tsiarta, N., McCarthy, V., Perello, V., Feldmann, T., Laas, A., Panksep, K., Tuvikene, L., Gagala, I., Mankiewicz-Boczek, J., Yağcı, M., Çınar, Ş., Çapkın, K., Yağcı, A., Cesur, M., Bilgin, F., Bulut, C., Uysal, R., Obertegger, U., Boscaini, A., Flaim, G., Salmaso, N., Cerasino, L., Richardson, J., Visser, P., Verspagen, J., Karan, T., Soylu, E., Maraşlıoğlu, F., Napiórkowska-Krzebietke, A., Ochocka, A., Pasztaleniec, A., Antão-Geraldes, A., Vasconcelos, V., Morais, J., Vale, M., Köker, L., Akçaalan, R., Albay, M., Špoljarić Maronić, D., Stević, F., Žuna Pfeiffer, T., Fonvielle, J., Straile, D., Rothhaupt, K.-O., Hansson, L.-A., Urrutia-Cordero, P., Bláha, L., Geriš, R., Fránková, M., Koçer, M., Alp, M., Remec-Rekar, S., Elersek, T., Triantis, T., Zervou, S.-K., Hiskia, A., Haande, S., Skjelbred, B., Madrecka, B., Nemova, H., Drastichova, I., Chomova, L., Edwards, C., Sevindik, T., Tunca, H., Önem, B., Aleksovski, B., Krstić, S., Vucelić, I., Nawrocka, L., Salmi, P., Machado-Vieira, D., de Oliveira, A., Delgado-Martín, J., García, D., Cereijo, J., Gomà, J., Trapote, M., Vegas-Vilarrúbia, T., Obrador, B., Grabowska, M., Karpowicz, M., Chmura, D., Úbeda, B., Gálvez, J., Özen, A., Christoffersen, K., Warming, T., Kobos, J., Mazur-Marzec, H., Pérez-Martínez, C., Ramos-Rodríguez, E., Arvola, L., Alcaraz-Párraga, P., Toporowska, M., Pawlik-Skowronska, B., Niedźwiecki, M., Pęczuła, W., Leira, M., Hernández, A., Moreno-Ostos, E., Blanco, J., Rodríguez, V., Montes-Pérez, J., Palomino, R., Rodríguez-Pérez, E., Carballeira, R., Camacho, A., Picazo, A., Rochera, C., Santamans, A., Ferriol, C., Romo, S., Soria, J., Dunalska, J., Sieńska, J., Szymański, D., Kruk, M., Kostrzewska-Szlakowska, I., Jasser, I., Žutinić, P., Gligora Udovič, M., Plenković-Moraj, A., Frąk, M., Bańkowska-Sobczak, A., Wasilewicz, M., Özkan, K., Maliaka, V., Kangro, K., Grossart, H.-P., Paerl, H., Carey, C. and Ibelings, B., 2018b. Temperature Effects Explain Continental Scale Distribution of Cyanobacterial Toxins. *Toxins*, 10(4), 156. https://doi.org/10.3390/toxins10040156.

Markantonis, N., Vasickova, P., Kubankova, M., Mikel, P. and Botsaris, G., 2018. Detection of foodborne viruses in ready-to-eat meat products and meat processing plants. *Journal of Food Safety*, 38(2), p.e12436. https://doi.org/10.1111/jfs.12436.

Negro, V., Negro, V., Negre, M., Fabbri, G., Boero, V., Solaro, S., Antonini, M., Koutinas, A., Koutinas, M., Vlysidis, A., Konstantinidis, V. and Mainero, D., 2018. Compost stream as a potential biomass for humic acid production: Focus on compost seasonal and geographical variability. *Procedia Environmental Science, Engineering and Management*, 5(3), pp.133–138.

Nikoloudakis, N., Aissat, A. and Katsiotis, A., 2018. Screening A. ventricosa populations for 2n gametes. *Euphytica*, 214(2), 34. https://doi.org/10.1007/s10681-017-2107-x.

Panagiotou, E., Kafa, N., Koutsokeras, L., Kouis, P., Nikolaou, P., Constantinides, G. and Vyrides, I., 2018. Turning calcined waste egg shells and wastewater to Brushite: Phosphorus adsorption from aqua media and anaerobic sludge leach water. *Journal of Cleaner Production*, 178, pp.419–428. https://doi.org/10.1016/j.jclepro.2018.01.014.

Papanikolaou, M.G., Hadjithoma, S., Chatzikypraiou, D.S., Papaioannou, D., Drouza, C., Tsipis, A.C., Miras, H.N., Keramidas, A.D. and Kabanos, T.A., 2018. Investigation of dioxygen activation by copper(ii)–iminate/aminate complexes. *Dalton Transactions*, 47(45), pp.16242–16254. https://doi.org/10.1039/C8DT03137A.

Parmaki, S., Vyrides, I., Vasquez, M.I., Hartman, V., Zacharia, I., Hadjiadamou, I., Barbeitos, C.B.M., Ferreira, F.C., Afonso, C.A.M., Drouza, C. and Koutinas, M., 2018. Bioconversion of alkaloids to high-value chemicals: Comparative analysis of newly isolated lupanine degrading strains. *Chemosphere*, 193, pp.50–59. https://doi.org/10.1016/j.chemosphere.2017.10.165.

Petropoulos, S.A., Pereira, C., Tzortzakis, N., Barros, L. and Ferreira, I.C.F.R., 2018. Nutritional Value and Bioactive Compounds Characterization of Plant Parts From Cynara cardunculus L. (Asteraceae) Cultivated in Central Greece. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.00459.

Pollastri, S., Savvides, A., Pesando, M., Lumini, E., Volpe, M.G., Ozudogru, E.A., Faccio, A., de Cunzo, F., Michelozzi, M., Lambardi, M., Fotopoulos, V., Loreto, F., Centritto, M. and Balestrini, R., 2018. Impact of two arbuscular mycorrhizal fungi on Arundo donax L. response to salt stress. *Planta*, 247(3), pp.573–585. https://doi.org/10.1007/s00425-017-2808-3.

Prasad, M., Tzortzakis, N. and McDaniel, N., 2018. Chemical characterization of biochar and assessment of the nutrient dynamics by means of preliminary plant growth tests. *Journal of Environmental Management*, 216, pp.89–95. https://doi.org/10.1016/j.jenvman.2017.04.020.

Prokopi, K.Ph., Olympiou, G.G. and Costa, C.N., 2018. Multi-level Risk Analysis and Sensitivity Mapping for the Mediterranean Sea Basin—RAOP-MED Project. pp.1763–1765. https://doi.org/10.1007/978-3-319-70548-4_512.

Savvides, A.M. and Fotopoulos, V., 2018. Two Inexpensive and Non-destructive Techniques to Correct for Smaller-Than-Gasket Leaf Area in Gas Exchange Measurements. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.00548.

Souroullas, K., Aspri, M. and Papademas, P., 2018. Donkey milk as a supplement in infant formula: Benefits and technological challenges. *Food Research International*, 109, pp.416–425. https://doi.org/10.1016/j.foodres.2018.04.051.

Stylianou, K., Hapeshi, E., Vasquez, M.I., Fatta-Kassinos, D. and Vyrides, I., 2018a. Diclofenac biodegradation by newly isolated Klebsiella sp. KSC: Microbial intermediates and ecotoxicological assessment. *Journal of Environmental Chemical Engineering*, 6(2), pp.3242–3248. https://doi.org/10.1016/j.jece.2018.04.052.

Stylianou, M., Agapiou, A., Omirou, M., Vyrides, I., Ioannides, I.M., Maratheftis, G. and Fasoula, D., 2018b. Converting environmental risks to benefits by using spent coffee grounds (SCG) as a valuable resource. *Environmental Science and Pollution Research*, 25(36), pp.35776–35790. https://doi.org/10.1007/s11356-018-2359-6.

Tsipa, A., Koutinas, M., Usaku, C. and Mantalaris, A., 2018. Optimal bioprocess design through a gene regulatory network – Growth kinetic hybrid model: Towards replacing Monod kinetics. *Metabolic Engineering*, 48, pp.129–137. https://doi.org/10.1016/j.ymben.2018.04.023.

Vardanyan, A., Kafa, N., Konstantinidis, V., Shin, S.G. and Vyrides, I., 2018. Phosphorus dissolution from dewatered anaerobic sludge: Effect of pHs, microorganisms, and sequential extraction. *Bioresource Technology*, 249, pp.464–472. https://doi.org/10.1016/j.biortech.2017.09.188.

Vyrides, I., Andronikou, M., Kyprianou, A., Modic, A., Filippeti, A., Yiakoumis, C. and Samanides, C.G., 2018a. CO2 conversion to CH4 using Zero Valent Iron (ZVI) and anaerobic granular sludge: Optimum batch conditions and microbial pathways. *Journal of CO2 Utilization*, 27, pp.415–422. https://doi.org/10.1016/j.jcou.2018.08.023.

Vyrides, I., Drakou, E.-M., Ioannou, S., Michael, F., Gatidou, G. and Stasinakis, A.S., 2018b. Biodegradation of bilge water: Batch test under anaerobic and aerobic conditions and performance of three pilot aerobic Moving Bed Biofilm Reactors (MBBRs) at different filling fractions. *Journal of Environmental Management*, 217, pp.356–362. https://doi.org/10.1016/j.jenvman.2018.03.086.

Xylia, P., Chrysargyris, A., Botsaris, G. and Tzortzakis, N., 2018. Mint and pomegranate extracts/oils as antibacterial agents against *Escherichia coli* O157:H7 and *Listeria monocytogenes* on shredded carrots. *Journal of Food Safety*, 38(1). https://doi.org/10.1111/jfs.12423.

Ziogas, V., Molassiotis, A., Fotopoulos, V. and Tanou, G., 2018. Hydrogen Sulfide: A Potent Tool in Postharvest Fruit Biology and Possible Mechanism of Action. *Frontiers in Plant Science*, 9. https://doi.org/10.3389/fpls.2018.01375.

Zomeni, M., Martinou, A., Stavrinides, M. and Vogiatzakis, I., 2018. High nature value farmlands: challenges in identification and interpretation using Cyprus as a case study. *Nature Conservation*, 31, pp.53–70. https://doi.org/10.3897/natureconservation.31.28397.

2019

Adamou, A., Nicolaides, A. and Varotsis, C., 2019. Bio-hydrometallurgy dynamics of copper sulfide-minerals probed by micro-FTIR mapping and Raman microspectroscopy. *Minerals Engineering*, 132, pp.39–47. https://doi.org/10.1016/j.mineng.2018.11.038.

Anagnostopoulos, D.A. and Tsaltas, D., 2019. Fermented Foods and Beverages. In: *Innovations in Traditional Foods*. Elsevier. pp.257–291. https://doi.org/10.1016/B978-0-12-814887-7.00010-1.

Andrianou, X.D., van der Lek, C., Charisiadis, P., Ioannou, S., Fotopoulou, K.N., Papapanagiotou, Z., Botsaris, G., Beumer, C. and Makris, K.C., 2019. Application of the urban exposome framework using drinking water and quality of life indicators: a proof-of-concept study in Limassol, Cyprus. *PeerJ*, 7, e6851. https://doi.org/10.7717/peerj.6851.

Aspri, M., Souroulas, K., Ioannou, C. and Papademas, P., 2019. Physico-chemical composition and antimicrobial protein content of early lactation donkey milk. *International Journal of Food Studies*, [online] 8(1), pp.68–75. https://doi.org/10.7455/ijfs/8.1.2019.a6.

Breeze, T.D., Boreux, V., Cole, L., Dicks, L., Klein, A., Pufal, G., Balzan, M. v., Bevk, D., Bortolotti, L., Petanidou, T., Mand, M., Pinto, M.A., Scheper, J., Stanisavljević, L., Stavrinides, M.C., Tscheulin, T., Varnava, A. and Kleijn, D., 2019. Linking farmer and beekeeper preferences with ecological knowledge to improve crop pollination. *People and Nature*, 1(4), pp.562–572. https://doi.org/10.1002/pan3.10055.

Charalambides, A.G., Maxoulis, C.N., Kyriacou, O., Blakeley, E. and Frances, L.S., 2019. The impact of Energy Performance Certificates on building deep energy renovation targets. *International Journal of Sustainable Energy*, 38(1), pp.1–12. https://doi.org/10.1080/14786451.2018.1448399.

Christou, A., Papadavid, G., Dalias, P., Fotopoulos, V., Michael, C., Bayona, J.M., Piña, B. and Fatta-Kassinos, D., 2019. Ranking of crop plants according to their potential to uptake and accumulate contaminants of emerging concern. *Environmental Research*, 170, pp.422–432. https://doi.org/10.1016/j.envres.2018.12.048.

Chrysargyris, A., Antoniou, O., Athinodorou, F., Vassiliou, R., Papadaki, A. and Tzortzakis, N., 2019a. Deployment of olive-stone waste as a substitute growing medium component for Brassica seedling production in nurseries. *Environmental Science and Pollution Research*, 26(35), pp.35461–35472. https://doi.org/10.1007/s11356-019-04261-8.

Chrysargyris, A., Kloukina, C., Vassiliou, R., Tomou, E.-M., Skaltsa, H. and Tzortzakis, N., 2019b. Cultivation strategy to improve chemical profile and anti-oxidant activity of Sideritis perfoliata L. subsp. perfoliata. *Industrial Crops and Products*, 140, 111694. https://doi.org/10.1016/j.indcrop.2019.111694.

Chrysargyris, A., Loupasaki, S., Petropoulos, S.A. and Tzortzakis, N., 2019c. Salinity and cation foliar application: Implications on essential oil yield and composition of hydroponically grown spearmint plants. *Scientia Horticulturae*, 256, 108581. https://doi.org/10.1016/j.scienta.2019.108581.

Chrysargyris, A., Papakyriakou, E., Petropoulos, S.A. and Tzortzakis, N., 2019d. The combined and single effect of salinity and copper stress on growth and quality of Mentha spicata plants. *Journal of Hazardous Materials*, 368, pp.584–593. https://doi.org/10.1016/j.jhazmat.2019.01.058.

Chrysargyris, A., Petropoulos, S.A., Fernandes, Â., Barros, L., Tzortzakis, N. and Ferreira, I.C.F.R., 2019e. Effect of phosphorus application rate on Mentha spicata L. grown in deep flow technique (DFT). *Food Chemistry*, 276, pp.84–92. https://doi.org/10.1016/j.foodchem.2018.10.020.

Chrysargyris, A., Solomou, M., Petropoulos, S.A. and Tzortzakis, N., 2019f. Physiological and biochemical attributes of Mentha spicata when subjected to saline conditions and cation foliar application. *Journal of Plant Physiology*, 232, pp.27–38. https://doi.org/10.1016/j.jplph.2018.10.024.

Chrysargyris, A., Stavrinides, M., Moustakas, K. and Tzortzakis, N., 2019g. Utilization of paper waste as growing media for potted ornamental plants. *Clean Technologies and Environmental Policy*, 21(10), pp.1937–1948. https://doi.org/10.1007/s10098-018-1647-7.

Chrysargyris, A., Tzionis, A., Xylia, P., Nicola, S. and Tzortzakis, N., 2019h. Physiochemical properties of petunia edible flowers grown under saline conditions and their postharvest performance under modified atmosphere packaging and ethanol application. *Journal of the Science of Food and Agriculture*, 99(7), pp.3644–3652. https://doi.org/10.1002/jsfa.9586.

Chrysargyris, Prasad, Kavanagh and Tzortzakis, 2019i. Biochar Type and Ratio as a Peat Additive/Partial Peat Replacement in Growing Media for Cabbage Seedling Production. *Agronomy*, 9(11), 693. https://doi.org/10.3390/agronomy9110693.

Constantinou, S., Gómez-Caravaca, A.M., Goulas, V., Fernandez-Gutierrez, A., Koundouras, S. and Manganaris, G.A., 2019. Leaf removal at veraison stage differentially affects qualitative attributes and bioactive composition of fresh and dehydrated grapes of two indigenous Cypriot cultivars. *Journal of the Science of Food and Agriculture*, 99(3), pp.1342–1350. https://doi.org/10.1002/jsfa.9309.

Daskalakis, V., Maity, S., Hart, C.L., Stergiannakos, T., Duffy, C.D.P. and Kleinekathöfer, U., 2019. Structural Basis for Allosteric Regulation in the Major Antenna Trimer of Photosystem II. *The Journal of Physical Chemistry B*, 123(45), pp.9609–9615. https://doi.org/10.1021/acs.jpcb.9b09767.

Daskalakis, V., Papadatos, S. and Kleinekathöfer, U., 2019. Fine tuning of the photosystem II major antenna mobility within the thylakoid membrane of higher plants. *Biochimica et Biophysica Acta (BBA) - Biomembranes*, 1861(12), 183059. https://doi.org/10.1016/j.bbamem.2019.183059.

Djekic, I., Mujčinović, A., Nikolić, A., Jambrak, A.R., Papademas, P., Feyissa, A.H., Kansou, K., Thomopoulos, R., Briesen, H., Kavallieratos, N.G., Athanassiou, C.G., Silva, C.L.M., Sirbu, A., Moisescu, A.M., Tomasevic, I., Brodnjak, U.V., Charalambides, M. and Tonda, A., 2019. Cross-European initial survey on the use of mathematical models in food industry. *Journal of Food Engineering*, 261, pp.109–116. https://doi.org/10.1016/j.jfoodeng.2019.06.007.

Fiore, A., Papademas, P. and Goulas, V., 2019. Chemistry of Food Contaminants and Their Remediation or Mitigation. *Journal of Chemistry*, 2019, pp.1–2. https://doi.org/10.1155/2019/2756389.

Geissler, S., Androutsopoulos, A., Charalambides, A.G., Jareño Escudero, C., Jensen, O.M., Kyriacou, O. and Petran, H., 2019. ENERFUND - Identifying and rating deep renovation opportunities. *IOP Conference Series: Earth and Environmental Science*, 323(1), 012174. https://doi.org/10.1088/1755-1315/323/1/012174.

Geissler, S., Charalambides, A.G. and Hanratty, M., 2019. Public Access to Building Related Energy Data for Better Decision Making in Implementing Energy Efficiency Strategies: Legal Barriers and Technical Challenges. *Energies*, 12(10), 2029. https://doi.org/10.3390/en12102029.

Georgiadou, E.C., Koubouris, G., Goulas, V., Sergentani, C., Nikoloudakis, N., Manganaris, G.A., Kalaitzis, P. and Fotopoulos, V., 2019. Genotype-dependent regulation of vitamin E biosynthesis in olive fruits as revealed through metabolic and transcriptional profiles. *Plant Biology*, 21(4), pp.604–614. https://doi.org/10.1111/plb.12950.

Goulas, V. and Hadjisolomou, A., 2019. Dynamic changes in targeted phenolic compounds and antioxidant potency of carob fruit (Ceratonia siliqua L.) products during in vitro digestion. *LWT*, 101, pp.269–275. https://doi.org/10.1016/j.lwt.2018.11.003.

Goulas, V., Hadjivasileiou, L., Primikyri, A., Michael, C., Botsaris, G., Tzakos, A.G. and Gerothanassis, I.P., 2019. Valorization of Carob Fruit Residues for the Preparation of Novel Bi-Functional Polyphenolic Coating for Food Packaging Applications. *Molecules*, 24(17), 3162. https://doi.org/10.3390/molecules24173162.

Hadjipieri, M., Gavriel, K., Sismanidis, G. and Manganaris, G.A., 2019. The effect of modified atmosphere packaging on postharvest performance of two loquat cultivars. *Acta Horticulturae*, (1242), pp.729–734. https://doi.org/10.17660/ActaHortic.2019.1242.108.

Hasanuzzaman, M., Fotopoulos, V., Nahar, K. and Fujita, M., 2019a. Preface. In: *Reactive Oxygen, Nitrogen and Sulfur Species in Plants*. [online] Wiley. https://doi.org/10.1002/9781119468677.fmatter2.

Hasanuzzaman, M., Fotopoulos, V., Nahar, K. and Fujita, M. eds., 2019b. *Reactive Oxygen, Nitrogen and Sulfur Species in Plants*. Wiley. https://doi.org/10.1002/9781119468677.

Ioannou, A. and Varotsis, C., 2019. Probing hemoglobin glyco-products by fluorescence spectroscopy. *RSC Advances*, 9(64), pp.37614–37619. https://doi.org/10.1039/C9RA05243G.

Ioos, R., Aloi, F., Piškur, B., Guinet, C., Mullett, M., Berbegal, M., Bragança, H., Cacciola, S.O., Oskay, F., Cornejo, C., Adamson, K., Douanla-Meli, C., Kačergius, A., Martínez-Álvarez, P., Nowakowska, J.A., Luchi, N., Vettraino, A.M., Ahumada, R., Pasquali, M., Fourie, G., Kanetis, L., Alves, A., Ghelardini, L., Dvořák, M., Sanz-Ros, A., Diez, J.J., Baskarathevan, J. and Aguayo, J., 2019. Transferability of PCR-based diagnostic protocols: An international collaborative case study assessing protocols targeting the quarantine pine pathogen Fusarium circinatum. *Scientific Reports*, 9(1), 8195. https://doi.org/10.1038/s41598-019-44672-8.

Kamilari, E., Tomazou, M., Antoniades, A. and Tsaltas, D., 2019. High Throughput Sequencing Technologies as a New Toolbox for Deep Analysis, Characterization and Potentially Authentication of Protection Designation of Origin Cheeses? *International Journal of Food Science*, 2019, pp.1–15. https://doi.org/10.1155/2019/5837301.

Koutinas, M., Vasquez, M.I., Nicolaou, E., Pashali, P., Kyriakou, E., Loizou, E., Papadaki, A., Koutinas, A.A. and Vyrides, I., 2019. Biodegradation and toxicity of emerging contaminants: Isolation of an exopolysaccharide-producing

Sphingomonas sp. for ionic liquids bioremediation. *Journal of Hazardous Materials*, 365, pp.88–96. https://doi.org/10.1016/j.jhazmat.2018.10.059.

Koutsoupakis, C., Soulimane, T. and Varotsis, C., 2019. Discrete Ligand Binding and Electron Transfer Properties of *ba* $_3$ -Cytochrome *c* Oxidase from *Thermus thermophilus* : Evolutionary Adaption to Low Oxygen and High Temperature Environments. *Accounts of Chemical Research*, 52(5), pp.1380–1390. https://doi.org/10.1021/acs.accounts.9b00052.

Kyratzis, A.C., Nikoloudakis, N. and Katsiotis, A., 2019. Genetic variability in landraces populations and the risk to lose genetic variation. The example of landrace 'Kyperounda' and its implications for ex situ conservation. *PLOS ONE*, 14(10), e0224255. https://doi.org/10.1371/journal.pone.0224255.

Kyriakou, M., Chatziiona, V.K., Costa, C.N., Kallis, M., Koutsokeras, L., Constantinides, G. and Koutinas, M., 2019. Biowaste-based biochar: A new strategy for fermentative bioethanol overproduction via whole-cell immobilization. *Applied Energy*, 242, pp.480–491. https://doi.org/10.1016/j.apenergy.2019.03.024.

Lall, N., Chrysargyris, A., Lambrechts, I., Fibrich, B., Blom Van Staden, A., Twilley, D., de Canha, M.N., Oosthuizen, C.B., Bodiba, D. and Tzortzakis, N., 2019. Sideritis Perfoliata (Subsp. Perfoliata) Nutritive Value and Its Potential Medicinal Properties. *Antioxidants*, 8(11), 521. https://doi.org/10.3390/antiox8110521.

Litskas, V., Chrysargyris, A., Stavrinides, M. and Tzortzakis, N., 2019a. Water-energy-food nexus: A case study on medicinal and aromatic plants. *Journal of Cleaner Production*, 233, pp.1334–1343. https://doi.org/10.1016/j.jclepro.2019.06.065.

Litskas, V.D., Migeon, A., Navajas, M., Tixier, M.-S. and Stavrinides, M.C., 2019b. Impacts of climate change on tomato, a notorious pest and its natural enemy: small scale agriculture at higher risk. *Environmental Research Letters*, 14(8), 084041. https://doi.org/10.1088/1748-9326/ab3313.

Maity, S., Gelessus, A., Daskalakis, V. and Kleinekathöfer, U., 2019. On a chlorophyll-caroteinoid coupling in LHCII. *Chemical Physics*, 526, 110439. https://doi.org/10.1016/j.chemphys.2019.110439.

Mellidou, I., Georgiadou, E.C., Kaloudas, D., Kalaitzis, P., Fotopoulos, V. and Kanellis, A.K., 2019. Vitamins. In: *Postharvest Physiology and Biochemistry of Fruits and Vegetables*. [online] Elsevier. pp.359–383. https://doi.org/10.1016/B978-0-12-813278-4.00017-8.

Migeon, A., Tixier, M.-S., Navajas, M., Litskas, V.D. and Stavrinides, M.C., 2019. A predator-prey system: Phytoseiulus persimilis (Acari: Phytoseiidae) and Tetranychus urticae (Acari: Tetranychidae): worldwide occurrence datasets. *Acarologia*, 59(3), pp.301–307. https://doi.org/10.24349/acarologia/20194322.

Moraiti, C.A., Kadis, C., Papayiannis, L.C. and Stavrinides, M.C., 2019. Insects and mites feeding on berries of Juniperus foetidissima Willd. on the Mediterranean island of Cyprus. *Phytoparasitica*, 47(1), pp.71–77. https://doi.org/10.1007/s12600-019-00718-1.

Nicolaides, A., Soulimane, T. and Varotsis, C., 2019. Reversible temperature-dependent high- to low-spin transition in the heme Fe–Cu binuclear center of cytochrome *ba* $_3$ oxidase. *RSC Advances*, 9(9), pp.4776–4780. https://doi.org/10.1039/C8RA09954E.

Nicolaou, M., Drouza, C. and Keramidas, A.D., 2019. Controlled one pot synthesis of polyoxofluorovanadate molecular hybrids exhibiting peroxidase like activity. *New Journal of Chemistry*, 43(45), pp.17595–17602. https://doi.org/10.1039/C9NJ01999E.

de Ollas, C., Morillón, R., Fotopoulos, V., Puértolas, J., Ollitrault, P., Gómez-Cadenas, A. and Arbona, V., 2019. Facing Climate Change: Biotechnology of Iconic Mediterranean Woody Crops. *Frontiers in Plant Science*, 10. https://doi.org/10.3389/fpls.2019.00427.

Papademas, P., Aspri, M., Mariou, M., Dowd, S.E., Kazou, M. and Tsakalidou, E., 2019. Conventional and omics approaches shed light on Halitzia cheese, a long-forgotten white-brined cheese from Cyprus. *International Dairy Journal*, 98, pp.72–83. https://doi.org/10.1016/j.idairyj.2019.06.010.

Papageorgiou, M., Tselios, C. and Varotsis, C., 2019. Photosensitivity responses of *Sagittula stellata* probed by FTIR, fluorescence and Raman microspectroscopy. *RSC Advances*, 9(47), pp.27391–27397. https://doi.org/10.1039/C9RA03630J.

Patsalou, M., Samanides, C.G., Protopapa, E., Stavrinou, S., Vyrides, I. and Koutinas, M., 2019. A Citrus Peel Waste Biorefinery for Ethanol and Methane Production. *Molecules*, 24(13), 2451. https://doi.org/10.3390/molecules24132451.

Pereira, C., Dias, M.I., Petropoulos, S.A., Plexida, S., Chrysargyris, A., Tzortzakis, N., Calhelha, R.C., Ivanov, M., Stojković, D., Soković, M., Barros, L. and C.F.R. Ferreira, I., 2019. The Effects of Biostimulants, Biofertilizers and Water-Stress on Nutritional Value and Chemical Composition of Two Spinach Genotypes (Spinacia oleracea L.). *Molecules*, 24(24), 4494. https://doi.org/10.3390/molecules24244494.

Petropoulos, S.A., Fernandes, Â., Tzortzakis, N., Sokovic, M., Ciric, A., Barros, L. and Ferreira, I.C.F.R., 2019a. Bioactive compounds content and antimicrobial activities of wild edible Asteraceae species of the Mediterranean flora under commercial cultivation conditions. *Food Research International*, 119, pp.859–868. https://doi.org/10.1016/j.foodres.2018.10.069.

Petropoulos, S.A., Sampaio, S.L., di Gioia, F., Tzortzakis, N., Rouphael, Y., Kyriacou, M.C. and Ferreira, I., 2019b. Grown to be Blue—Antioxidant Properties and Health Effects of Colored Vegetables. Part I: Root Vegetables. *Antioxidants*, 8(12), 617. https://doi.org/10.3390/antiox8120617.

Petropoulos, S.A., Taofiq, O., Fernandes, Â., Tzortzakis, N., Ciric, A., Sokovic, M., Barros, L. and Ferreira, I.C., 2019c. Bioactive properties of greenhouse-cultivated green beans (*Phaseolus vulgaris* L.) under biostimulants and water-stress effect. *Journal of the Science of Food and Agriculture*, 99(13), pp.6049–6059. https://doi.org/10.1002/jsfa.9881.

Petropoulos, S., Fernandes, Â., Pereira, C., Tzortzakis, N., Vaz, J., Soković, M., Barros, L. and Ferreira, I.C.F.R., 2019d. Bioactivities, chemical composition and nutritional value of Cynara cardunculus L. seeds. *Food Chemistry*, 289, pp.404–412. https://doi.org/10.1016/j.foodchem.2019.03.066.

Petropoulos, S., Fernandes, Â., Stojković, D., Pereira, C., Taofiq, O., di Gioia, F., Tzortzakis, N., Soković, M., Barros, L. and Ferreira, I.C.F.R., 2019e. Cotton and cardoon byproducts as potential growing media components for Cichorium spinosum L. commercial cultivation. *Journal of Cleaner Production*, 240, 118254. https://doi.org/10.1016/j.jclepro.2019.118254.

Savva, P.G. and Costa, C.N., 2019. Inkjet Printing of Catalytic Materials. In: *21st Century Nanoscience – A Handbook*. Boca Raton, Florida : CRC Press, [2020]: CRC Press. pp.14-1-14–25. https://doi.org/10.1201/9780367341558-14.

Stephanou, P. and Kröger, M., 2019. Assessment of the Tumbling-Snake Model against Linear and Nonlinear Rheological Data of Bidisperse Polymer Blends. *Polymers*, 11(2), p.376. https://doi.org/10.3390/polym11020376.

Symeou, S., Tsiafoulis, C.G., Gerothanassis, I.P., Miltiadou, D. and Tzamaloukas, O., 2019. Nuclear magnetic resonance screening of changes in fatty acid and cholesterol content of ovine milk induced by ensiled olive cake inclusion in Chios sheep diets. *Small Ruminant Research*, 177, pp.111–116. https://doi.org/10.1016/j.smallrumres.2019.06.017.

Theofilou, S.P., Constantinou, B.K., Chatziiona, V.K., Pantelidou, N., Plyastsov, S., Kapnisis, K., Savva, P.G., Meshkovsky, I., Anayiotos, A. and Costa, C.N., 2019. New insights into the antimicrobial treatment of water on Ag-supported solids. *Journal of Chemical Technology & Biotechnology*, 94(4), pp.1134–1143. https://doi.org/10.1002/jctb.5860.

Tselios, C., Papageorgiou, M. and Varotsis, C., 2019. Extracellular electron uptake from carbon-based π electron surface-donors: oxidation of graphite sheets by *Sulfobacillus thermosulfidooxidans* probed by Raman and FTIR spectroscopies. *RSC Advances*, 9(33), pp.19121–19125. https://doi.org/10.1039/C9RA03628H.

Tsiafoulis, C., Papaemmanouil, C., Alivertis, D., Tzamaloukas, O., Miltiadou, D., Balayssac, S., Malet-Martino, M. and Gerothanassis, I., 2019. NMR-Based Metabolomics of the Lipid Fraction of Organic and Conventional Bovine Milk. *Molecules*, 24(6), p.1067. https://doi.org/10.3390/molecules24061067.

Tsolakidou, M.-D., Pantelides, lakovos S., Tzima, A.K., Kang, S., Paplomatas, E.J. and Tsaltas, D., 2019a. Disruption and Overexpression of the Gene Encoding ACC (1-Aminocyclopropane-1-Carboxylic Acid) Deaminase in Soil-Borne Fungal

Pathogen *Verticillium dahliae* Revealed the Role of ACC as a Potential Regulator of Virulence and Plant Defense. *Molecular Plant-Microbe Interactions®*, 32(6), pp.639–653. https://doi.org/10.1094/MPMI-07-18-0203-R.

Tsolakidou, M.-D., Stringlis, I.A., Fanega-Sleziak, N., Papageorgiou, S., Tsalakou, A. and Pantelides, I.S., 2019b. Rhizosphere-enriched microbes as a pool to design synthetic communities for reproducible beneficial outputs. *FEMS Microbiology Ecology*. https://doi.org/10.1093/femsec/fiz138.

Tzortzakis, N., 2019. Physiological and Proteomic Approaches to Address the Active Role of Botrytis cinerea Inoculation in Tomato Postharvest Ripening. *Microorganisms*, 7(12), 681. https://doi.org/10.3390/microorganisms7120681.

Tzortzakis, N., Alkan, N., Alkan, N. and Alkan, N., 2019. Solanaceae and cucurbitaceae crops. In: *Postharvest Pathology of Fresh Horticultural Produce*. pp.303–337.

Tzortzakis, N., Xylia, P. and Chrysargyris, A., 2019. Sage Essential Oil Improves the Effectiveness of Aloe vera Gel on Postharvest Quality of Tomato Fruit. *Agronomy*, 9(10), 635. https://doi.org/10.3390/agronomy9100635.

Vardanyan, A. and Vyrides, I., 2019. Acidophilic bioleaching at high dissolved organic compounds: Inhibition and strategies to counteract this. *Minerals Engineering*, 143, 105943. https://doi.org/10.1016/j.mineng.2019.105943.

Vyrides, I., Rivett, D.W., Bruce, K.D. and Lilley, A.K., 2019. Selection and assembly of indigenous bacteria and methanogens from spent metalworking fluids and their potential as a starting culture in a fluidized bed reactor. *Microbial Biotechnology*, 12(6), pp.1302–1312. https://doi.org/10.1111/1751-7915.13448.

Xylia, P., Botsaris, G., Chrysargyris, A., Skandamis, P. and Tzortzakis, N., 2019a. Variation of microbial load and biochemical activity of ready-to-eat salads in Cyprus as affected by vegetable type, season, and producer. *Food Microbiology*, 83, pp.200–210. https://doi.org/10.1016/j.fm.2019.05.013.

Xylia, P., Clark, A., Chrysargyris, A., Romanazzi, G. and Tzortzakis, N., 2019b. Quality and safety attributes on shredded carrots by using Origanum majorana and ascorbic acid. *Postharvest Biology and Technology*, 155, pp.120–129. https://doi.org/10.1016/j.postharvbio.2019.05.015.

2020

Anagnostopoulos, D.A., Goulas, V., Xenofontos, E., Vouras, C., Nikoloudakis, N. and Tsaltas, D., 2020. Benefits of the Use of Lactic Acid Bacteria Starter in Green Cracked Cypriot Table Olives Fermentation. *Foods*, [online] 9(1), 17. https://doi.org/10.3390/foods9010017.

Anagnostopoulos, D.A., Kamilari, E. and Tsaltas, D., 2020. Evolution of Bacterial Communities, Physicochemical Changes and Sensorial Attributes of Natural Whole and Cracked Picual Table Olives During Spontaneous and Inoculated Fermentation. *Frontiers in Microbiology*, [online] 11. https://doi.org/10.3389/fmicb.2020.01128.

Androutsopoulos, A., Geissler, S., Charalambides, A.G., Escudero, C.J., Kyriacou, O. and Petran, H., 2020. Mapping the deep renovation possibilities of European buildings. In: *IOP Conference Series: Earth and Environmental Science*. 012056. https://doi.org/10.1088/1755-1315/410/1/012056.

Antelava, A., Constantinou, A., Bumajdad, A., Manos, G., Dewil, R. and Al-Salem, S.M., 2020. Identification of Commercial Oxo-Biodegradable Plastics: Study of UV Induced Degradation in an Effort to Combat Plastic Waste Accumulation. *Journal of Polymers and the Environment*, [online] 28(9), pp.2364–2376. https://doi.org/10.1007/s10924-020-01776-x.

Antoniou, C., Xenofontos, R., Chatzimichail, G., Christou, A., Kashfi, K. and Fotopoulos, V., 2020. Exploring the Potential of Nitric Oxide and Hydrogen Sulfide (NOSH)-Releasing Synthetic Compounds as Novel Priming Agents against Drought Stress in Medicago sativa Plants. *Biomolecules*, 10(1), 120. https://doi.org/10.3390/biom10010120.

A. Petropoulos, S., Fernandes, Â., Dias, M.I., Pereira, C., Calhelha, R.C., Chrysargyris, A., Tzortzakis, N., Ivanov, M., D. Sokovic, M., Barros, L. and Ferreira, I.C.F.R., 2020. Chemical Composition and Plant Growth of Centaurea raphanina

subsp. mixta Plants Cultivated under Saline Conditions. *Molecules*, 25(9), 2204. https://doi.org/10.3390/molecules25092204.

Aristodemou, E., Mottet, L., Constantinou, A. and Pain, C., 2020. Turbulent Flows and Pollution Dispersion around Tall Buildings Using Adaptive Large Eddy Simulation (LES). *Buildings*, 10(7), 127. https://doi.org/10.3390/buildings10070127.

Aspri, M., Papademas, P. and Tsaltas, D., 2020. Review on Non-Dairy Probiotics and Their Use in Non-Dairy Based Products. *Fermentation*, 6(1), 30. https://doi.org/10.3390/fermentation6010030.

Bellini, R., Michaelakis, A., Petrić, D., Schaffner, F., Alten, B., Angelini, P., Aranda, C., Becker, N., Carrieri, M., di Luca, M., Fălcuţă, E., Flacio, E., Klobučar, A., Lagneau, C., Merdić, E., Mikov, O., Pajovic, I., Papachristos, D., Sousa, C.A., Stroo, A., Toma, L., Vasquez, M.I., Velo, E., Venturelli, C. and Zgomba, M., 2020. Practical management plan for invasive mosquito species in Europe: I. Asian tiger mosquito (Aedes albopictus). *Travel Medicine and Infectious Disease*, 35, 101691. https://doi.org/10.1016/j.tmaid.2020.101691.

Brizzolara, S., Manganaris, G.A., Fotopoulos, V., Watkins, C.B. and Tonutti, P., 2020. Primary Metabolism in Fresh Fruits During Storage. *Frontiers in Plant Science*, [online] 11. https://doi.org/10.3389/fpls.2020.00080.

Charalambous, P., Shin, J., Shin, S.G. and Vyrides, I., 2020. Anaerobic digestion of industrial dairy wastewater and cheese whey: Performance of internal circulation bioreactor and laboratory batch test at pH 5-6. *Renewable Energy*, 147, pp.1–10. https://doi.org/10.1016/j.renene.2019.08.091.

Christou, A., Georgiadou, E.C., Zissimos, A.M., Christoforou, I.C., Christofi, C., Neocleous, D., Dalias, P., Torrado, S.O.C.A., Argyraki, A. and Fotopoulos, V., 2020. Hexavalent chromium leads to differential hormetic or damaging effects in alfalfa (Medicago sativa L.) plants in a concentration-dependent manner by regulating nitro-oxidative and proline metabolism. *Environmental Pollution*, 267, 115379. https://doi.org/10.1016/j.envpol.2020.115379.

Chrysargyris, A., Charalambous, S., Xylia, P., Litskas, V., Stavrinides, M. and Tzortzakis, N., 2020a. Assessing the Biostimulant Effects of a Novel Plant-Based Formulation on Tomato Crop. *Sustainability*, 12(20), 8432. https://doi.org/10.3390/su12208432.

Chrysargyris, A., Mikallou, M., Petropoulos, S. and Tzortzakis, N., 2020b. Profiling of Essential Oils Components and Polyphenols for Their Antioxidant Activity of Medicinal and Aromatic Plants Grown in Different Environmental Conditions. *Agronomy*, 10(5), 727. https://doi.org/10.3390/agronomy10050727.

Chrysargyris, A., Prasad, M., Kavanagh, A. and Tzortzakis, N., 2020c. Biochar Type, Ratio, and Nutrient Levels in Growing Media Affects Seedling Production and Plant Performance. *Agronomy*, [online] 10(9), 1421. https://doi.org/10.3390/agronomy10091421.

Chrysargyris, A., Xylia, P., Akinci, G., Moustakas, K. and Tzortzakis, N., 2020d. Printed Paper Waste as an Alternative Growing Medium Component to Produce Brassica Seedlings under Nursery Conditions. *Sustainability*, 12(15), 5992. https://doi.org/10.3390/su12155992.

Chrysargyris, A., Xylia, P., Litskas, V., Stavrinides, M., Heyman, L., Demeestere, K., Höfte, M. and Tzortzakis, N., 2020e. Assessing the Impact of Drought Stress and Soil Cultivation in Chardonnay and Xynisteri Grape Cultivars. *Agronomy*, 10(5), 670. https://doi.org/10.3390/agronomy10050670.

Cole, L.J., Kleijn, D., Dicks, L. v., Stout, J.C., Potts, S.G., Albrecht, M., Balzan, M. v., Bartomeus, I., Bebeli, P.J., Bevk, D., Biesmeijer, J.C., Chlebo, R., Dautartė, A., Emmanouil, N., Hartfield, C., Holland, J.M., Holzschuh, A., Knoben, N.T.J., Kovács-Hostyánszki, A., Mandelik, Y., Panou, H., Paxton, R.J., Petanidou, T., Pinheiro de Carvalho, M.A.A., Rundlöf, M., Sarthou, J., Stavrinides, M.C., Suso, M.J., Szentgyörgyi, H., Vaissière, B.E., Varnava, A., Vilà, M., Zemeckis, R. and Scheper, J., 2020. A critical analysis of the potential for EU Common Agricultural Policy measures to support wild pollinators on farmland. *Journal of Applied Ecology*, 57(4), pp.681–694. https://doi.org/10.1111/1365-2664.13572.

Compton, S.G., Stavrinides, M., Kaponas, C. and Thomas, P.J., 2020. No escape: most insect colonisers of an introduced fig tree in Cyprus come from the plant's native range. *Biological Invasions*, 22(2), pp.211–216. https://doi.org/10.1007/s10530-019-02132-4.

Costan, A., Stamatakis, A., Chrysargyris, A., Petropoulos, S.A. and Tzortzakis, N., 2020. Interactive effects of salinity and silicon application on *Solanum lycopersicum* growth, physiology and shelf-life of fruit produced hydroponically. *Journal of the Science of Food and Agriculture*, 100(2), pp.732–743. https://doi.org/10.1002/jsfa.10076.

Daskalakis, V., Papadatos, S. and Stergiannakos, T., 2020. The conformational phase space of the photoprotective switch in the major light harvesting complex II. *Chemical Communications*, 56(76), pp.11215–11218. https://doi.org/10.1039/D0CC04486E.

Drakou, K., Nikolaou, T., Vasquez, M., Petric, D., Michaelakis, A., Kapranas, A., Papatheodoulou, A. and Koliou, M., 2020. The Effect of Weather Variables on Mosquito Activity: A Snapshot of the Main Point of Entry of Cyprus. *International Journal of Environmental Research and Public Health*, 17(4), 1403. https://doi.org/10.3390/ijerph17041403.

Drenkhan, R., Ganley, B., Martín-García, J., Vahalík, P., Adamson, K., Adamčíková, K., Ahumada, R., Blank, L., Bragança, H., Capretti, P., Cleary, M., Cornejo, C., Davydenko, K., Diez, J.J., Lehtijärvi, H.T.D., Dvořák, M., Enderle, R., Fourie, G., Georgieva, M., Ghelardini, L., Hantula, J., Ioos, R., Iturritxa, E., Kanetis, L., Karpun, N.N., Koltay, A., Landeras, E., Markovskaja, S., Mesanza, N., Milenković, I., Musolin, D.L., Nikolaou, K., Nowakowska, J.A., Ogris, N., Oskay, F., Oszako, T., Papazova-Anakieva, I., Paraschiv, M., Pasquali, M., Pecori, F., Rafoss, T., Raitelaitytė, K., Raposo, R., Robin, C., Rodas, C.A., Santini, A., Sanz-Ros, A. v., Selikhovkin, A. v., Solla, A., Soukainen, M., Soulioti, N., Steenkamp, E.T., Tsopelas, P., Vemić, A., Vettraino, A.M., Wingfield, M.J., Woodward, S., Zamora-Ballesteros, C. and Mullett, M.S., 2020. Global Geographic Distribution and Host Range of Fusarium circinatum, the Causal Agent of Pine Pitch Canker. *Forests*, 11(7), 724. https://doi.org/10.3390/f11070724.

van den Elsen, E., Stringer, L.C., de Ita, C., Hessel, R., Kéfi, S., Schneider, F.D., Bautista, S., Mayor, A.G., Baudena, M., Rietkerk, M., Valdecantos, A., Vallejo, V.R., Geeson, N., Brandt, C.J., Fleskens, L., Hemerik, L., Panagos, P., Valente, S., Keizer, J.J., Schwilch, G., Jucker Riva, M., Sietz, D., Christoforou, M., Hadjimitsis, D.G., Papoutsa, C., Quaranta, G., Salvia, R., Tsanis, I.K., Daliakopoulos, I., Claringbould, H. and de Ruiter, P.C., 2020. Advances in Understanding and Managing Catastrophic Ecosystem Shifts in Mediterranean Ecosystems. *Frontiers in Ecology and Evolution*, [online] 8. https://doi.org/10.3389/fevo.2020.561101.

Fanourakis, D., Aliniaeifard, S., Sellin, A., Giday, H., Körner, O., Rezaei Nejad, A., Delis, C., Bouranis, D., Koubouris, G., Kambourakis, E., Nikoloudakis, N. and Tsaniklidis, G., 2020a. Stomatal behavior following mid- or long-term exposure to high relative air humidity: A review. *Plant Physiology and Biochemistry*, 153, pp.92–105. https://doi.org/10.1016/j.plaphy.2020.05.024.

Fanourakis, D., Nikoloudakis, N., Pappi, P., Markakis, E., Doupis, G., Charova, S.N., Delis, C. and Tsaniklidis, G., 2020b. The Role of Proteases in Determining Stomatal Development and Tuning Pore Aperture: A Review. *Plants*, 9(3), 340. https://doi.org/10.3390/plants9030340.

Francini, A., Pintado, M., Manganaris, G.A. and Ferrante, A., 2020. Editorial: Bioactive Compounds Biosynthesis and Metabolism in Fruit and Vegetables. *Frontiers in Plant Science*, [online] 11. https://doi.org/10.3389/fpls.2020.00129.

Georgiadou, E., Manganaris, G. and Fotopoulos, V., 2020. The diverse roles of vitamin E, its occurrence and regulation in different plant tissues. *Zywnosc Nauka Technologia Jakosc/Food Science Technology Quality*, [online] 125(4), pp.113–126. https://doi.org/10.15193/zntj/2020/125/363.

di Gioia, F., Tzortzakis, N., Rouphael, Y., Kyriacou, M.C., Sampaio, S.L., C.F.R. Ferreira, I. and Petropoulos, S.A., 2020. Grown to Be Blue—Antioxidant Properties and Health Effects of Colored Vegetables. Part II: Leafy, Fruit, and Other Vegetables. *Antioxidants*, 9(2), 97. https://doi.org/10.3390/antiox9020097.

Gohari, G., Alavi, Z., Esfandiari, E., Panahirad, S., Hajihoseinlou, S. and Fotopoulos, V., 2020a. Interaction between hydrogen peroxide and sodium nitroprusside following chemical priming of *Ocimum basilicum* L. against salt stress. *Physiologia Plantarum*, [online] 168(2), pp.361–373. https://doi.org/10.1111/ppl.13020.

Gohari, G., Mohammadi, A., Akbari, A., Panahirad, S., Dadpour, M.R., Fotopoulos, V. and Kimura, S., 2020b. Titanium dioxide nanoparticles (TiO2 NPs) promote growth and ameliorate salinity stress effects on essential oil profile and biochemical attributes of Dracocephalum moldavica. *Scientific Reports*, 10(1), 912. https://doi.org/10.1038/s41598-020-57794-1.

Gohari, G., Safai, F., Panahirad, S., Akbari, A., Rasouli, F., Dadpour, M.R. and Fotopoulos, V., 2020c. Modified multiwall carbon nanotubes display either phytotoxic or growth promoting and stress protecting activity in Ocimum basilicum L. in a concentration-dependent manner. *Chemosphere*, 249, 126171. https://doi.org/10.1016/j.chemosphere.2020.126171.

Goulas, V. and Georgiou, E., 2020. Utilization of Carob Fruit as Sources of Phenolic Compounds with Antioxidant Potential: Extraction Optimization and Application in Food Models. *Foods*, 9(1), 20. https://doi.org/10.3390/foods9010020.

Grafton-Cardwell, E.E., Bentley, W., Bianchi, M., Cave, F.E., Elkins, R., Godfrey, L., Gu, P., Haviland, D., Headrick, D., Hoddle, M., McMurtry, J., Murrietta, M., Mills, N., Ouyang, Y., Pickel, C., Rill, S., Stavrinides, M.C. and Varela, L.G., 2020. Surveys of 12 California crops for phytoseiid predatory mites show changes compared to earlier studies. *California Agriculture*, 74(3), pp.129–137. https://doi.org/10.3733/ca.2020a0010.

Grigoriou, A., Tsaniklidis, G., Hagidimitriou, M. and Nikoloudakis, N., 2020. The Cypriot Indigenous Grapevine Germplasm Is a Multi-Clonal Varietal Mixture. *Plants*, 9(8), 1034. https://doi.org/10.3390/plants9081034.

Hadjiadamou, I., Vlasiou, M., Spanou, S., Simos, Y., Papanastasiou, G., Kontargiris, E., Dhima, I., Ragos, V., Karkabounas, S., Drouza, C. and Keramidas, A.D., 2020. Synthesis of vitamin E and aliphatic lipid vanadium(IV) and (V) complexes, and their cytotoxic properties. *Journal of Inorganic Biochemistry*, 208, 111074. https://doi.org/10.1016/j.jinorgbio.2020.111074.

Hadjilouka, A., Loizou, K., Apostolou, T., Dougiakis, L., Inglezakis, A. and Tsaltas, D., 2020. Newly Developed System for the Robust Detection of Listeria monocytogenes Based on a Bioelectric Cell Biosensor. *Biosensors*, 10(11), 178. https://doi.org/10.3390/bios10110178.

Hadjilouka, A. and Tsaltas, D., 2020. Cyclospora Cayetanensis—Major Outbreaks from Ready to Eat Fresh Fruits and Vegetables. *Foods*, 9(11), 1703. https://doi.org/10.3390/foods9111703.

Hadjimbei, E., Botsaris, G., Goulas, V., Alexandri, E., Gekas, V. and Gerothanassis, I.P., 2020. Functional stability of goats' milk yoghurt supplemented with *Pistacia atlantica* resin extracts and *Saccharomyces boulardii*. *International Journal of Dairy Technology*, 73(1), pp.134–143. https://doi.org/10.1111/1471-0307.12629.

Hadjipieri, M., Christofi, M., Goulas, V. and Manganaris, G.A., 2020a. The impact of genotype and harvesting day on qualitative attributes, postharvest performance and bioactive content of loquat fruit. *Scientia Horticulturae*, [online] 263, 108891. https://doi.org/10.1016/j.scienta.2019.108891.

Hadjipieri, M., Georgiadou, E.C., Costa, F., Fotopoulos, V. and Manganaris, G.A., 2020b. Dissection of the incidence and severity of purple spot physiological disorder in loquat fruit through a physiological and molecular approach. *Plant Physiology and Biochemistry*, [online] 155, pp.980–986. https://doi.org/10.1016/j.plaphy.2020.06.043.

Hafeez, S., Al-Salem, S.M., Manos, G. and Constantinou, A., 2020a. Fuel production using membrane reactors: a review. *Environmental Chemistry Letters*, [online] 18(5), pp.1477–1490. https://doi.org/10.1007/s10311-020-01024-7.

Hafeez, S., Aristodemou, E., Manos, G., Al-Salem, S.M. and Constantinou, A., 2020b. Computational fluid dynamics (CFD) and reaction modelling study of bio-oil catalytic hydrodeoxygenation in microreactors. *Reaction Chemistry & Engineering*, 5(6), pp.1083–1092. https://doi.org/10.1039/D0RE00102C.

Hafeez, S., Aristodemou, E., Manos, G., Al-Salem, S.M. and Constantinou, A., 2020c. Modelling of packed bed and coated wall microreactors for methanol steam reforming for hydrogen production. *RSC Advances*, [online] 10(68), pp.41680–41692. https://doi.org/10.1039/D0RA06834A.

Halpern-Wight, N., Konstantinou, M., Charalambides, A.G. and Reinders, A., 2020. Training and Testing of a Single-Layer LSTM Network for Near-Future Solar Forecasting. *Applied Sciences*, [online] 10(17), 5873. https://doi.org/10.3390/app10175873.

Hasanuzzaman, M., Bhuyan, M.H.M., Zulfiqar, F., Raza, A., Mohsin, S., Mahmud, J., Fujita, M. and Fotopoulos, V., 2020. Reactive Oxygen Species and Antioxidant Defense in Plants under Abiotic Stress: Revisiting the Crucial Role of a Universal Defense Regulator. *Antioxidants*, 9(8), 681. https://doi.org/10.3390/antiox9080681.

Hassanpouraghdam, M.B., Mehrabani, L.V. and Tzortzakis, N., 2020. Foliar Application of Nano-zinc and Iron Affects Physiological Attributes of Rosmarinus officinalis and Quietens NaCl Salinity Depression. *Journal of Soil Science and Plant Nutrition*, 20(2), pp.335–345. https://doi.org/10.1007/s42729-019-00111-1.

Ioannou, A., Gohari, G., Papaphilippou, P., Panahirad, S., Akbari, A., Dadpour, M.R., Krasia-Christoforou, T. and Fotopoulos, V., 2020. Advanced nanomaterials in agriculture under a changing climate: The way to the future? *Environmental and Experimental Botany*, 176, 104048. https://doi.org/10.1016/j.envexpbot.2020.104048.

Irankhah, S., Chitarra, W., Nerva, L., Antoniou, C., Lumini, E., Volpe, V., Ganjeali, A., Cheniany, M., Mashreghi, M., Fotopoulos, V. and Balestrini, R., 2020. Impact of an arbuscular mycorrhizal fungal inoculum and exogenous MeJA on fenugreek secondary metabolite production under water deficit. *Environmental and Experimental Botany*, 176, 104096. https://doi.org/10.1016/j.envexpbot.2020.104096.

Kamilari, E., Anagnostopoulos, D.A., Papademas, P., Efthymiou, M., Tretiak, S. and Tsaltas, D., 2020a. Snapshot of Cyprus Raw Goat Milk Bacterial Diversity via 16S rDNA High-Throughput Sequencing; Impact of Cold Storage Conditions. *Fermentation*, 6(4), 100. https://doi.org/10.3390/fermentation6040100.

Kamilari, E., Anagnostopoulos, D.A., Papademas, P., Kamilaris, A. and Tsaltas, D., 2020b. Characterizing Halloumi cheese's bacterial communities through metagenomic analysis. *LWT*, 126, 109298. https://doi.org/10.1016/j.lwt.2020.109298.

Kritioti, A., Paikousis, L. and Drouza, C., 2020. RETRACTED: Characterization of the volatile profile of virgin olive oils of Koroneiki and Cypriot cultivars, and classification according to the variety, geographical region and altitude. *LWT*, 129, p.109543. https://doi.org/10.1016/j.lwt.2020.109543. Retracted

Kulbat-Warycha, K., Georgiadou, E.C., Mańkowska, D., Smolińska, B., Fotopoulos, V. and Leszczyńska, J., 2020. Response to stress and allergen production caused by metal ions (Ni, Cu and Zn) in oregano (Origanum vulgare L.) plants. *Journal of Biotechnology*, 324, pp.171–182. https://doi.org/10.1016/j.jbiotec.2020.10.025.

Kyriacou, M.C., Ioannidou, S., Nikoloudakis, N., Seraphides, N., Papayiannis, L.C. and Kyratzis, A.C., 2020. Physicochemical characterization and trait stability in a genetically diverse ex situ collection of pomegranate (Punica granatum L.) germplasm from Cyprus. *Scientia Horticulturae*, 263, 109116. https://doi.org/10.1016/j.scienta.2019.109116.

Kyriakou, M., Patsalou, M., Xiaris, N., Tsevis, A., Koutsokeras, L., Constantinides, G. and Koutinas, M., 2020. Enhancing bioproduction and thermotolerance in Saccharomyces cerevisiae via cell immobilization on biochar: Application in a citrus peel waste biorefinery. *Renewable Energy*, [online] 155, pp.53–64. https://doi.org/10.1016/j.renene.2020.03.087.

Langensiepen, M., Jansen, M.A.K., Wingler, A., Demmig-Adams, B., Adams, W.W., Dodd, I.C., Fotopoulos, V., Snowdon, R., Fenollosa, E., de Tullio, M.C., Buck-Sorlin, G. and Munné-Bosch, S., 2020. Linking integrative plant physiology with agronomy to sustain future plant production. *Environmental and Experimental Botany*, 178, 104125. https://doi.org/10.1016/j.envexpbot.2020.104125.

Litskas, V.D., Platis, D.P., Anagnostopoulos, C.D., Tsaboula, A.C., Menexes, G.C., Kalburtji, K.L., Stavrinides, M.C. and Mamolos, A.P., 2020a. Climate change and agriculture. In: *Sustainability of the Food System*. Elsevier. pp.33–49. https://doi.org/10.1016/B978-0-12-818293-2.00003-3.

Litskas, V.D., Tzortzakis, N. and Stavrinides, M.C., 2020. Determining the Carbon Footprint and Emission Hotspots for the Wine Produced in Cyprus. *Atmosphere*, 11(5), 463. https://doi.org/10.3390/atmos11050463.

Litskas, V., Mandoulaki, A., Vogiatzakis, I.N., Tzortzakis, N. and Stavrinides, M., 2020b. Sustainable Viticulture: First Determination of the Environmental Footprint of Grapes. *Sustainability*, 12(21), 8812. https://doi.org/10.3390/su12218812.

Macher, J.-N., Drakou, K., Papatheodoulou, A., Hoorn, B. van der and Vasquez, M., 2020. The mitochondrial genomes of 11 aquatic macroinvertebrate species from Cyprus. *Metabarcoding and Metagenomics*, 4. https://doi.org/10.3897/mbmg.4.58259.

Massa, D., Magán, J.J., Montesano, F.F. and Tzortzakis, N., 2020. Minimizing water and nutrient losses from soilless cropping in southern Europe. *Agricultural Water Management*, 241, 106395. https://doi.org/10.1016/j.agwat.2020.106395.

Mazioti, A.A., Notarides, G., Symeou, G. and Vyrides, I., 2020. Improving Biological Treatment of Real Bilge Wastewater With Zero Valent Iron and Activated Charcoal Addition. *Frontiers in Bioengineering and Biotechnology*, 8. https://doi.org/10.3389/fbioe.2020.614510.

Menikea, K.K., Kyprianou, A., Samanides, C.G., Georgiou, S.G., Koutsokeras, L., Constantinides, G. and Vyrides, I., 2020. Anaerobic granular sludge and zero valent scrap iron (ZVSI) pre-treated with green tea as a sustainable system for conversion of CO2 to CH4. *Journal of Cleaner Production*, 268, 121860. https://doi.org/10.1016/j.jclepro.2020.121860.

Michael, C., Gil, E., Gallart, M. and Stavrinides, M.C., 2020. Influence of Spray Technology and Application Rate on Leaf Deposit and Ground Losses in Mountain Viticulture. *Agriculture*, 10(12), 615. https://doi.org/10.3390/agriculture10120615.

Neofytou, M.C., Miltiadou, D., Sfakianaki, E., Constantinou, C., Symeou, S., Sparaggis, D., Hager-Theodorides, A.L. and Tzamaloukas, O., 2020. The use of ensiled olive cake in the diets of Friesian cows increases beneficial fatty acids in milk and Halloumi cheese and alters the expression of SREBF1 in adipose tissue. *Journal of Dairy Science*, 103(10), pp.8998–9011. https://doi.org/10.3168/jds.2020-18235.

Nikoloudakis, N., Pappi, P., Markakis, E.A., Charova, S.N., Fanourakis, D., Paschalidis, K., Delis, C., Tzortzakakis, E.A. and Tsaniklidis, G., 2020. Structural Diversity and Highly Specific Host-Pathogen Transcriptional Regulation of Defensin Genes Is Revealed in Tomato. *International Journal of Molecular Sciences*, [online] 21(24), 9380. https://doi.org/10.3390/ijms21249380.

Papadaki, E., Botsaris, G., Athanasiadi, E. and Mantzouridou, F.Th., 2020. Processing Wastewaters from Spanish-Style cv. Chalkidiki Green Olives: A Potential Source of Enterococcus casseliflavus and Hydroxytyrosol. *Microorganisms*, [online] 8(9), 1274. https://doi.org/10.3390/microorganisms8091274.

Papageorgiou, M., Tselios, C. and Varotsis, C., 2020. Photoreduction of carotenoids in the aerobic anoxygenic photoheterotrophs probed by real time Raman spectroscopy. *Journal of Photochemistry and Photobiology B: Biology*, 213, 112069. https://doi.org/10.1016/j.jphotobiol.2020.112069.

Papoutsa, C., Theocharidis, C., Prodromou, M., Papadavid, G., Sykas, D., Sykas, D., Christoforou, M., Kountios, G., Kounoudes, A., Milis, M. and Hadjimitsis, D.G., 2020. Smart water management for irrigation purposes: The SWSOIP Pproject. In: *9th International Conference on Information and Communication Technologies in Agriculture, Food and Environment,*. Thessaloniki. pp.2015–226.

Parmaki, S., Tsipa, A., Vasquez, M.I., Gonçalves, J.M.J., Hadjiadamou, I., Ferreira, F.C., Afonso, C.A.M., Drouza, C. and Koutinas, M., 2020. Resolution of alkaloid racemate: a novel microbial approach for the production of enantiopure lupanine via industrial wastewater valorization. *Microbial Cell Factories*, 19(1), 67. https://doi.org/10.1186/s12934-020-01324-1.

Pascale, A., Proietti, S., Pantelides, I.S. and Stringlis, I.A., 2020. Modulation of the Root Microbiome by Plant Molecules: The Basis for Targeted Disease Suppression and Plant Growth Promotion. *Frontiers in Plant Science*, 10. https://doi.org/10.3389/fpls.2019.01741.

Patsalou, M., Chrysargyris, A., Tzortzakis, N. and Koutinas, M., 2020. A biorefinery for conversion of citrus peel waste into essential oils, pectin, fertilizer and succinic acid via different fermentation strategies. *Waste Management*, [online] 113, pp.469–477. https://doi.org/10.1016/j.wasman.2020.06.020.

Petratos, K., Gessmann, R., Daskalakis, V., Papadovasilaki, M., Papanikolau, Y., Tsigos, I. and Bouriotis, V., 2020. Structure and Dynamics of a Thermostable Alcohol Dehydrogenase from the Antarctic Psychrophile *Moraxella* sp. TAE123. *ACS Omega*, 5(24), pp.14523–14534. https://doi.org/10.1021/acsomega.0c01210.

Petropoulos, S.A., Fernandes, Â., Dias, M.I., Pereira, C., Calhelha, R., di Gioia, F., Tzortzakis, N., Ivanov, M., Sokovic, M., Barros, L. and Ferreira, I.C.F.R., 2020a. Wild and Cultivated Centaurea raphanina subsp. mixta: A Valuable Source of Bioactive Compounds. *Antioxidants*, 9(4), 314. https://doi.org/10.3390/antiox9040314.

Petropoulos, S.A., Fernandes, Â., Plexida, S., Chrysargyris, A., Tzortzakis, N., Barreira, J.C.M., Barros, L. and Ferreira, I.C.F.R., 2020b. Biostimulants Application Alleviates Water Stress Effects on Yield and Chemical Composition of Greenhouse Green Bean (Phaseolus vulgaris L.). *Agronomy*, 10(2), 181. https://doi.org/10.3390/agronomy10020181.

Petropoulos, S.A., Fernandes, Â., Plexida, S., Pereira, C., Dias, M.I., Calhelha, R., Chrysargyris, A., Tzortzakis, N., Petrović, J., Soković, M.D., Ferreira, I.C.F.R. and Barros, L., 2020c. The Sustainable Use of Cotton, Hazelnut and Ground Peanut Waste in Vegetable Crop Production. *Sustainability*, 12(20), 8511. https://doi.org/10.3390/su12208511.

Petropoulos, S.A., di Gioia, F., Polyzos, N. and Tzortzakis, N., 2020d. Natural Antioxidants, Health Effects and Bioactive Properties of Wild Allium Species. *Current Pharmaceutical Design*, 26(16), pp.1816–1837. https://doi.org/10.2174/1381612826666200203145851.

Poulaki, E.G., Tsolakidou, M.-D., Gkizi, D., Pantelides, I.S. and Tjamos, S.E., 2020. The Ethylene Biosynthesis Genes ACS2 and ACS6 Modulate Disease Severity of Verticillium dahliae. *Plants*, 9(7), 907. https://doi.org/10.3390/plants9070907.

Prasad, M., Chrysargyris, A., McDaniel, N., Kavanagh, A., Gruda, N.S. and Tzortzakis, N., 2020. Plant Nutrient Availability and pH of Biochars and Their Fractions, with the Possible Use as a Component in a Growing Media. *Agronomy*, [online] 10(1), 10. https://doi.org/10.3390/agronomy10010010.

Rezaei, A., Alirezalu, K., Damirchi, S.A., Hesari, J., Papademas, P., Domínguez, R., Lorenzo, J.M. and Yaghoubi, M., 2020. Effect of Pasteurization and Ripening Temperature on Chemical and Sensory Characteristics of Traditional Motal Cheese. *Fermentation*, 6(4), 95. https://doi.org/10.3390/fermentation6040095.

Rotter, A., Bacu, A., Barbier, M., Bertoni, F., Bones, A.M., Cancela, M.L., Carlsson, J., Carvalho, M.F., Cegłowska, M., Dalay, M.C., Dailianis, T., Deniz, I., Drakulovic, D., Dubnika, A., Einarsson, H., Erdoğan, A., Eroldoğan, O.T., Ezra, D., Fazi, S., FitzGerald, R.J., Gargan, L.M., Gaudêncio, S.P., Ivošević DeNardis, N., Joksimovic, D., Kataržytė, M., Kotta, J., Mandalakis, M., Matijošytė, I., Mazur-Marzec, H., Massa-Gallucci, A., Mehiri, M., Nielsen, S.L., Novoveská, L., Overlingė, D., Portman, M.E., Pyrc, K., Rebours, C., Reinsch, T., Reyes, F., Rinkevich, B., Robbens, J., Rudovica, V., Sabotič, J., Safarik, I., Talve, S., Tasdemir, D., Schneider, X.T., Thomas, O.P., Toruńska-Sitarz, A., Varese, G.C. and Vasquez, M.I., 2020. A New Network for the Advancement of Marine Biotechnology in Europe and Beyond. *Frontiers in Marine Science*, 7. https://doi.org/10.3389/fmars.2020.00278.

Samanides, C.G., Koutsokeras, L., Constantinides, G. and Vyrides, I., 2020. Methanogenesis Inhibition in Anaerobic Granular Sludge for the Generation of Volatile Fatty Acids from CO2 and Zero Valent Iron. *Frontiers in Energy Research*, 8. https://doi.org/10.3389/fenrg.2020.00037.

Singh, V.P., Tripathi, D.K. and Fotopoulos, V., 2020. Hydrogen sulfide and nitric oxide signal integration and plant development under stressed/non-stressed conditions. *Physiologia Plantarum*, 168(2), pp.239–240. https://doi.org/10.1111/ppl.13066.

Skar, S.L.G., Pineda-Martos, R., Timpe, A., Pölling, B., Bohn, K., Külvik, M., Delgado, C., Pedras, C.M.G., Paço, T.A., Ćujić, M., Tzortzakis, N., Chrysargyris, A., Peticila, A., Alencikiene, G., Monsees, H. and Junge, R., 2020. Urban agriculture as a keystone contribution towards securing sustainable and healthy development for cities in the future. *Blue-Green Systems*, 2(1), pp.1–27. https://doi.org/10.2166/bgs.2019.931.

Stephanou, P.S., 2020. A constitutive hemorheological model addressing both the deformability and aggregation of red blood cells. *Physics of Fluids*, 32(10), p.103103. https://doi.org/10.1063/5.0022493.

Stephanou, P.S. and Tsimouri, I.Ch., 2020. A constitutive hemorheological model addressing the deformability of red blood cells in Ringer solutions. *Soft Matter*, 16(32), pp.7585–7597. https://doi.org/10.1039/D0SM00974A.

Stephanou, P.S., Tsimouri, I.Ch. and Mavrantzas, V.G., 2020a. Simple, Accurate and User-Friendly Differential Constitutive Model for the Rheology of Entangled Polymer Melts and Solutions from Nonequilibrium Thermodynamics. *Materials*, 13(12), 2867. https://doi.org/10.3390/ma13122867.

Stephanou, P.S., Tsimouri, I.Ch. and Mavrantzas, V.G., 2020b. Two-species models for the rheology of associative polymer solutions: Derivation from nonequilibrium thermodynamics. *Journal of Rheology*, 64(4), pp.1003–1016. https://doi.org/10.1122/8.0000038.

Stylianou, S., Tapakis, R. and Charalambides, A.G., 2020. Can photovoltaics be used to estimate cloud cover? *International Journal of Sustainable Energy*, 39(9), pp.880–895. https://doi.org/10.1080/14786451.2020.1777129.

Symeou, S., Tzamaloukas, O., Banos, G. and Miltiadou, D., 2020. *ACAA2* and *FASN* polymorphisms affect the fatty acid profile of Chios sheep milk. *Journal of Dairy Research*, 87(1), pp.23–26. https://doi.org/10.1017/S0022029919000992.

Tsaballa, A., Sarrou, E., Xanthopoulou, A., Tsaliki, E., Kissoudis, C., Karagiannis, E., Michailidis, M., Martens, S., Sperdouli, E., Hilioti, Z., Fotopoulos, V., Nianiou-Obeidat, I., Tsaftaris, A., Madesis, P., Kalivas, A. and Ganopoulos, I., 2020. Comprehensive approaches reveal key transcripts and metabolites highlighting metabolic diversity among three oriental tobacco varieties. *Industrial Crops and Products*, 143, 111933. https://doi.org/10.1016/j.indcrop.2019.111933.

Tsaniklidis, G., Pappi, P., Tsafouros, A., Charova, S.N., Nikoloudakis, N., Roussos, P.A., Paschalidis, K.A. and Delis, C., 2020. Polyamine homeostasis in tomato biotic/abiotic stress cross-tolerance. *Gene*, [online] 727, 144230. https://doi.org/10.1016/j.gene.2019.144230.

Tzortzakis, N., Chrysargyris, A. and Aziz, A., 2020. Adaptive Response of a Native Mediterranean Grapevine Cultivar Upon Short-Term Exposure to Drought and Heat Stress in the Context of Climate Change. *Agronomy*, 10(2), 249. https://doi.org/10.3390/agronomy10020249.

Tzortzakis, N., Nicola, S., Savvas, D. and Voogt, W., 2020. Editorial: Soilless Cultivation Through an Intensive Crop Production Scheme. Management Strategies, Challenges and Future Directions. *Frontiers in Plant Science*, 11. https://doi.org/10.3389/fpls.2020.00363.

Tzortzakis, N., Saridakis, C. and Chrysargyris, A., 2020. Treated Wastewater and Fertigation Applied for Greenhouse Tomato Cultivation Grown in Municipal Solid Waste Compost and Soil Mixtures. *Sustainability*, 12(10), 4287. https://doi.org/10.3390/su12104287.

Varnava, A.I., Roberts, S.P.M., Michez, D., Ascher, J.S., Petanidou, T., Dimitriou, S., Devalez, J., Pittara, M. and Stavrinides, M.C., 2020. The wild bees (Hymenoptera, Apoidea) of the island of Cyprus. *ZooKeys*, 924, pp.1–114. https://doi.org/10.3897/zookeys.924.38328.

Varotsis, C., Papageorgiou, M., Tselios, C., Yiannakkos, K.A., Adamou, A. and Nicolaides, A., 2020. Bacterial Colonization on the Surface of Copper Sulfide Minerals Probed by Fourier Transform Infrared Micro-Spectroscopy. *Crystals*, 10(11), 1002. https://doi.org/10.3390/cryst10111002.

Vogiatzakis, I., Zotos, S., Litskas, V., Manolaki, P., Sarris, D. and Stavrinides, M., 2020. Towards implementing Mapping and Assessment of Ecosystems and their Services in Cyprus: A first set of indicators for ecosystem management. *One Ecosystem*, 5. https://doi.org/10.3897/oneeco.5.e47715.

Xue, B., Zhang, Y. and Johnson, A.K., 2020. Interactions of the Brain Renin-Angiotensin-System (RAS) and Inflammation in the Sensitization of Hypertension. *Frontiers in Neuroscience*, 14. https://doi.org/10.3389/fnins.2020.00650.

2021

Agathokleous, E., Zhou, B., Xu, J., Ioannou, A., Feng, Z., Saitanis, C.J., Frei, M., Calabrese, E.J. and Fotopoulos, V., 2021. Exogenous application of melatonin to plants, algae, and harvested products to sustain agricultural productivity and enhance nutritional and nutraceutical value: A meta-analysis. *Environmental Research*, 200, 111746. https://doi.org/10.1016/j.envres.2021.111746.

Ahmed, Z.F.R., Alnuaimi, A.K.H., Askri, A. and Tzortzakis, N., 2021. Evaluation of Lettuce (Lactuca sativa L.) Production under Hydroponic System: Nutrient Solution Derived from Fish Waste vs. Inorganic Nutrient Solution. *Horticulturae*, 7(9), 292. https://doi.org/10.3390/horticulturae7090292.

Al-Salem, S.M., El-Eskandarani, M.S. and Constantinou, A., 2021. Can plastic waste management be a novel solution in combating the novel Coronavirus (COVID-19)? A short research note. *Waste Management & Research: The Journal for a Sustainable Circular Economy*, 39(7), pp.910–913. https://doi.org/10.1177/0734242X20978444.

Antelava, A., Jablonska, N., Constantinou, A., Manos, G., Salaudeen, S.A., Dutta, A. and Al-Salem, S.M., 2021. Energy Potential of Plastic Waste Valorization: A Short Comparative Assessment of Pyrolysis versus Gasification. *Energy & Fuels*, 35(5), pp.3558–3571. https://doi.org/10.1021/acs.energyfuels.0c04017.

Antoniou, C., Zarza, X., Gohari, G., Panahirad, S., Filippou, P., Tiburcio, A.F. and Fotopoulos, V., 2021a. Involvement of Polyamine Metabolism in the Response of Medicago truncatula Genotypes to Salt Stress. *Plants*, 10(2), 269. https://doi.org/10.3390/plants10020269.

Antoniou, O., Chrysargyris, A., Xylia, P. and Tzortzakis, N., 2021b. Effects of Selenium and/or Arbuscular Mycorrhizal Fungal Inoculation on Strawberry Grown in Hydroponic Trial. *Agronomy*, 11(4), 721. https://doi.org/10.3390/agronomy11040721.

Athinodorou, F., Foukas, P., Tsaniklidis, G., Kotsiras, A., Chrysargyris, A., Delis, C., Kyratzis, A.C., Tzortzakis, N. and Nikoloudakis, N., 2021. Morphological Diversity, Genetic Characterization, and Phytochemical Assessment of the Cypriot Tomato Germplasm. *Plants*, 10(8), 1698. https://doi.org/10.3390/plants10081698.

Barbouti, A. and Goulas, V., 2021. Dietary Antioxidants in the Mediterranean Diet. *Antioxidants*, 10(8), 1213. https://doi.org/10.3390/antiox10081213.

Barbouti, A., Kanavaros, P., Kitsoulis, P., Goulas, V. and Galaris, D., 2021a. Olive oil–contained phenolic compounds protect cells against H2O2-induced damage and modulate redox signaling by chelating intracellular labile iron. In: *Olives and Olive Oil in Health and Disease Prevention*. Elsevier. pp.231–237. https://doi.org/10.1016/B978-0-12-819528-4.00049-3.

Barbouti, A., Lagopati, N., Veroutis, D., Goulas, V., Evangelou, K., Kanavaros, P., Gorgoulis, V.G. and Galaris, D., 2021b. Implication of Dietary Iron-Chelating Bioactive Compounds in Molecular Mechanisms of Oxidative Stress-Induced Cell Ageing. *Antioxidants*, 10(3), 491. https://doi.org/10.3390/antiox10030491.

Bourdichon, F., Arias, E., Babuchowski, A., Bückle, A., Bello, F.D., Dubois, A., Fontana, A., Fritz, D., Kemperman, R., Laulund, S., McAuliffe, O., Miks, M.H., Papademas, P., Patrone, V., Sharma, D.K., Sliwinski, E., Stanton, C., Von Ah, U., Yao, S. and Morelli, L., 2021. The forgotten role of food cultures. *FEMS Microbiology Letters*, 368(14). https://doi.org/10.1093/femsle/fnab085.

Charalambous, P. and Vyrides, I., 2021. In situ biogas upgrading and enhancement of anaerobic digestion of cheese whey by addition of scrap or powder zero-valent iron (ZVI). *Journal of Environmental Management*, 280, 111651. https://doi.org/10.1016/j.jenvman.2020.111651.

Choi, H., Han, C. and Antoniou, M.G., 2021. Sustainable and green decomposition of cyanotoxins and cyanobacteria through the development of new photocatalytic materials. *Current Opinion in Green and Sustainable Chemistry*, 28, 100444. https://doi.org/10.1016/j.cogsc.2020.100444.

Christofi, M., Mauromoustakos, A., Mourtzinos, I., Lazaridou, A., Drogoudi, P., Theodoulidis, S., Biliaderis, C.G. and Manganaris, G.A., 2021a. The effect of genotype and storage on compositional, sensorial and textural attributes of canned fruit from commercially important non-melting peach cultivars. *Journal of Food Composition and Analysis*, 103, 104080. https://doi.org/10.1016/j.jfca.2021.104080.

Christofi, M., Mourtzinos, I., Lazaridou, A., Drogoudi, P., Tsitlakidou, P., Biliaderis, C.G. and Manganaris, G.A., 2021b. Elaboration of novel and comprehensive protocols toward determination of textural properties and other sensorial attributes of canning peach fruit. *Journal of Texture Studies*, 52(2), pp.228–239. https://doi.org/10.1111/jtxs.12577.

Christou, A., Georgiadou, E.C., Zissimos, A.M., Christoforou, I.C., Christofi, C., Neocleous, D., Dalias, P. and Fotopoulos, V., 2021a. Uptake of hexavalent chromium by Lactuca sativa and Triticum aestivum plants and mediated effects on their performance, linked with associated public health risks. *Chemosphere*, 267, 128912. https://doi.org/10.1016/j.chemosphere.2020.128912.

Christou, A., Georgiadou, E.C., Zissimos, A.M., Christoforou, I.C., Christofi, C., Neocleous, D., Dalias, P., Ioannou, A. and Fotopoulos, V., 2021b. Uptake of hexavalent chromium by tomato (Solanum lycopersicum L.) plants and mediated effects on their physiology and productivity, along with fruit quality and safety. *Environmental and Experimental Botany*, 189, 104564. https://doi.org/10.1016/j.envexpbot.2021.104564.

Chrysafoudi, A., Maity, S., Kleinekathöfer, U. and Daskalakis, V., 2021. Robust Strategy for Photoprotection in the Light-Harvesting Antenna of Diatoms: A Molecular Dynamics Study. *The Journal of Physical Chemistry Letters*, 12(39), pp.9626–9633. https://doi.org/10.1021/acs.jpclett.1c02498.

Chrysargyris, A., Antoniou, O., Xylia, P., Petropoulos, S. and Tzortzakis, N., 2021a. The use of spent coffee grounds in growing media for the production of Brassica seedlings in nurseries. *Environmental Science and Pollution Research*, 28(19), pp.24279–24290. https://doi.org/10.1007/s11356-020-07944-9.

Chrysargyris, A., Evangelides, E. and Tzortzakis, N., 2021. Seasonal Variation of Antioxidant Capacity, Phenols, Minerals and Essential Oil Components of Sage, Spearmint and Sideritis Plants Grown at Different Altitudes. *Agronomy*, 11(9), 1766. https://doi.org/10.3390/agronomy11091766.

Chrysargyris, A., Koutsoumpeli, E., Xylia, P., Fytrou, A., Konstantopoulou, M. and Tzortzakis, N., 2021b. Organic Cultivation and Deficit Irrigation Practices to Improve Chemical and Biological Activity of Mentha spicata Plants. *Agronomy*, 11(3), 599. https://doi.org/10.3390/agronomy11030599.

Chrysargyris, A., Maggini, R., Incrocci, L., Pardossi, A. and Tzortzakis, N., 2021c. Copper Tolerance and Accumulation on Pelargonium graveolens L'Hér. Grown in Hydroponic Culture. *Plants*, 10(8), 1663. https://doi.org/10.3390/plants10081663.

Chrysargyris, A., Petropoulos, S.A., Prvulovic, D. and Tzortzakis, N., 2021d. Performance of Hydroponically Cultivated Geranium and Common Verbena under Salinity and High Electrical Conductivity Levels. *Agronomy*, 11(6), 1237. https://doi.org/10.3390/agronomy11061237.

Chrysargyris, A., Rousos, C., Xylia, P. and Tzortzakis, N., 2021e. Vapour Application of Sage Essential Oil Maintain Tomato Fruit Quality in Breaker and Red Ripening Stages. *Plants*, 10(12), 2645. https://doi.org/10.3390/plants10122645.

Chrysargyris, A. and Tzortzakis, N., 2021. Tailor-made hydroponic recipes for the production of high quality medicinal and aromatic plants. *Acta Horticulturae*, (1321), pp.87–94. https://doi.org/10.17660/ActaHortic.2021.1321.11.

Chrysargyris, A. and Xylia, P., 2021. Effect of the nutrient solution electrical conductivity (EC) on the growth, development and nutrient content of *Viola tricolor* var. *hortensis* grown in perlite. *Acta Horticulturae*, (1321), pp.149–156. https://doi.org/10.17660/ActaHortic.2021.1321.19.

Conte, C., Rotini, A., Winters, G., Vasquez, M.I., Piazza, G., Kletou, D. and Migliore, L., 2021. Elective affinities or random choice within the seagrass holobiont? The case of the native Posidonia oceanica (L.) Delile and the exotic Halophila stipulacea (Forssk.) Asch. from the same site (Limassol, Cyprus). *Aquatic Botany*, 174, 103420. https://doi.org/10.1016/j.aquabot.2021.103420.

Djekic, I., Nikolić, A., Uzunović, M., Marijke, A., Liu, A., Han, J., Brnčić, M., Knežević, N., Papademas, P., Lemoniati, K., Witte, F., Terjung, N., Papageorgiou, M., Zinoviadou, K.G., Dalle Zotte, A., Pellattiero, E., Sołowiej, B.G., Guiné, R.P.F., Correia, P., Sirbu, A., Vasilescu, L., Semenova, A.A., Kuznetsova, O.A., Vrabič Brodnjak, U., Pateiro, M., Lorenzo, J.M., Getya, A., Kodak, T. and Tomasevic, I., 2021. Covid-19 pandemic effects on food safety - Multi-country survey study. *Food Control*, 122, 107800. https://doi.org/10.1016/j.foodcont.2020.107800.

Donis, D., Mantzouki, E., McGinnis, D.F., Vachon, D., Gallego, I., Grossart, H., Senerpont Domis, L.N., Teurlincx, S., Seelen, L., Lürling, M., Verstijnen, Y., Maliaka, V., Fonvielle, J., Visser, P.M., Verspagen, J., Herk, M., Antoniou, M.G., Tsiarta, N., McCarthy, V., Perello, V.C., Machado-Vieira, D., Oliveira, A.G., Maronić, D.Š., Stević, F., Pfeiffer, T.Ž., Vucelić, I.B., Žutinić, P., Udovič, M.G., Plenković-Moraj, A., Bláha, L., Geriš, R., Fránková, M., Christoffersen, K.S., Warming, T.P., Feldmann, T., Laas, A., Panksep, K., Tuvikene, L., Kangro, K., Koreivienė, J., Karosienė, J., Kasperovičienė, J., Savadova-Ratkus, K., Vitonytė, I., Häggqvist, K., Salmi, P., Arvola, L., Rothhaupt, K., Avagianos, C., Kaloudis, T., Gkelis, S., Panou, M., Triantis, T., Zervou, S., Hiskia, A., Obertegger, U., Boscaini, A., Flaim, G., Salmaso, N., Cerasino, L., Haande, S.,

Skjelbred, B., Grabowska, M., Karpowicz, M., Chmura, D., Nawrocka, L., Kobos, J., Mazur-Marzec, H., Alcaraz-Párraga, P., Wilk-Woźniak, E., Krztoń, W., Walusiak, E., Gagala-Borowska, I., Mankiewicz-Boczek, J., Toporowska, M., Pawlik-Skowronska, B., Niedźwiecki, M., Pęczuła, W., Napiórkowska-Krzebietke, A., Dunalska, J., Sieńska, J., Szymański, D., Kruk, M., Budzyńska, A., Goldyn, R., Kozak, A., Rosińska, J., Szeląg-Wasielewska, E., Domek, P., Jakubowska-Krepska, N., Kwasizur, K., Messyasz, B., Pełechata, A., Pełechaty, M., Kokocinski, M., Madrecka-Witkowska, B., Kostrzewska-Szlakowska, I., Frąk, M., Bańkowska-Sobczak, A., Wasilewicz, M., Ochocka, A., Pasztaleniec, A., Jasser, I., Antão-Geraldes, A.M., Leira, M., Vasconcelos, V., Morais, J., Vale, M., Raposeiro, P.M., Gonçalves, V., Aleksovski, B., Krstić, S., Nemova, H., Drastichova, I., Chomova, L., Remec-Rekar, S., Elersek, T., Hansson, L., Urrutia-Cordero, P., Bravo, A.G., Buck, M., Colom-Montero, W., Mustonen, K., Pierson, D., Yang, Y., Richardson, J., Edwards, C., Cromie, H., Delgado-Martín, J., García, D., Cereijo, J.L., Gomà, J., Trapote, M.C., Vegas-Vilarrúbia, T., Obrador, B., García-Murcia, A., Real, M., Romans, E., Noguero-Ribes, J., Duque, D.P., Fernández-Morán, E., Úbeda, B., Gálvez, J.Á., Catalán, N., Pérez-Martínez, C., Ramos-Rodríguez, E., Cillero-Castro, C., Moreno-Ostos, E., Blanco, J.M., Rodríguez, V., Montes-Pérez, J.J., Palomino, R.L., Rodríguez-Pérez, E., Hernández, A., Carballeira, R., Camacho, A., Picazo, A., Rochera, C., Santamans, A.C., Ferriol, C., Romo, S., Soria, J.M., Özen, A., Karan, T., Demir, N., Beklioğlu, M., Filiz, N., Levi, E., Iskin, U., Bezirci, G., Tavşanoğlu, Ü.N., Çelik, K., Ozhan, K., Karakaya, N., Koçer, M.A.T., Yilmaz, M., Maraşlıoğlu, F., Fakioglu, Ö., Soylu, E.N., Yağcı, M.A., Çınar, Ş., Çapkın, K., Yağcı, A., Cesur, M., Bilgin, F., Bulut, C., Uysal, R., Latife, K., Akçaalan, R., Albay, M., Alp, M.T., Özkan, K., Sevindik, T.O., Tunca, H., Önem, B., Paerl, H., Carey, C.C. and Ibelings, B.W., 2021. Stratification strength and light climate explain variation in chlorophyll <scp> *a* </scp> at the continental scale in a European multilake survey in a heatwave summer. *Limnology and Oceanography*, 66(12), pp.4314–4333. https://doi.org/10.1002/lno.11963.

Drouza, C. and Keramidas, A., 2021. Reductive Dioxygen Activation by Biomimetic Vanadium Complexes. In: *Vanadium Catalysis*. [online] pp.514–534. https://doi.org/10.1039/9781839160882-00514.

Fernandes, Â., Figueiredo, S., Finimundy, T.C., Pinela, J., Tzortzakis, N., Ivanov, M., Soković, M., Ferreira, I.C.F.R., Petropoulos, S.A. and Barros, L., 2021. Chemical Composition and Bioactive Properties of Purple French Bean (Phaseolus vulgaris L.) as Affected by Water Deficit Irrigation and Biostimulants Application. *Sustainability*, 13(12), 6869. https://doi.org/10.3390/su13126869.

Filippou, P., Zarza, X., Antoniou, C., Obata, T., Villarroel, C.A., Ganopoulos, I., Harokopos, V., Gohari, G., Aidinis, V., Madesis, P., Christou, A., Fernie, A.R., Tiburcio, A.F. and Fotopoulos, V., 2021. Systems biology reveals key tissue-specific metabolic and transcriptional signatures involved in the response of Medicago truncatula plant genotypes to salt stress. *Computational and Structural Biotechnology Journal*, 19, pp.2133–2147. https://doi.org/10.1016/j.csbj.2021.04.018.

Fotopoulos, V., 2021. Welcome to the new journal Plant Stress. *Plant Stress*, 1, 100001. https://doi.org/10.1016/j.stress.2020.100001.

Fudge, T., Bulmer, I., Bowman, K., Pathmakanthan, S., Gambier, W., Dehouche, Z., Al-Salem, S.M. and Constantinou, A., 2021. Microbial Electrolysis Cells for Decentralised Wastewater Treatment: The Next Steps. *Water*, 13(4), 445. https://doi.org/10.3390/w13040445.

Georgiadou, E.C., Antoniou, C., Majak, I., Goulas, V., Filippou, P., Smolińska, B., Leszczyńska, J. and Fotopoulos, V., 2021. Tissue-specific elucidation of lycopene metabolism in commercial tomato fruit cultivars during ripening. *Scientia Horticulturae*, 284, 110144. https://doi.org/10.1016/j.scienta.2021.110144.

Gohari, G., Panahirad, S., Sadeghi, M., Akbari, A., Zareei, E., Zahedi, S.M., Bahrami, M.K. and Fotopoulos, V., 2021a. Putrescine-functionalized carbon quantum dot (put-CQD) nanoparticles effectively prime grapevine (Vitis vinifera cv. 'Sultana') against salt stress. *BMC Plant Biology*, 21(1), 120. https://doi.org/10.1186/s12870-021-02901-1.

Gohari, G., Panahirad, S., Sepehri, N., Akbari, A., Zahedi, S.M., Jafari, H., Dadpour, M.R. and Fotopoulos, V., 2021b. Enhanced tolerance to salinity stress in grapevine plants through application of carbon quantum dots functionalized by proline. *Environmental Science and Pollution Research*, 28(31), pp.42877–42890. https://doi.org/10.1007/s11356-021-13794-w.

Gohari, G., Zareei, E., Rostami, H., Panahirad, S., Kulak, M., Farhadi, H., Amini, M., Martinez-Ballesta, M. del C. and Fotopoulos, V., 2021c. Protective effects of cerium oxide nanoparticles in grapevine (Vitis vinifera L.) cv. Flame Seedless

under salt stress conditions. *Ecotoxicology and Environmental Safety*, 220, 112402. https://doi.org/10.1016/j.ecoenv.2021.112402.

Goulas, V., Stavrou, K., Michael, C., Botsaris, G. and Barbouti, A., 2021. The Potential of Sun-Dried Grape Pomace as a Multi-Functional Ingredient for Herbal Infusion: Effects of Brewing Parameters on Composition and Bioactivity. *Antioxidants*, 10(4), 586. https://doi.org/10.3390/antiox10040586.

Hadjipieri, M., Georgiadou, E.C., Drogoudi, P., Fotopoulos, V., Badenes, M.L. and Manganaris, G.A., 2021a. The physiological disorder of purple spot in loquat fruit: etiology, possible causes and mitigation measures. *Acta Horticulturae*, (1327), pp.577–582. https://doi.org/10.17660/ActaHortic.2021.1327.76.

Hadjipieri, M., Georgiadou, E.C., Drogoudi, P., Fotopoulos, V. and Manganaris, G.A., 2021b. The efficacy of acetylsalicylic acid, spermidine and calcium preharvest foliar spray applications on yield efficiency, incidence of physiological disorders and shelf-life performance of loquat fruit. *Scientia Horticulturae*, 289, 110439. https://doi.org/10.1016/j.scienta.2021.110439.

Hafeez, S., Al-Salem, S.M., Papageridis, K.N., Charisiou, N.D., Goula, M.A., Manos, G. and Constantinou, A., 2021a. Theoretical Investigation of the Deactivation of Ni Supported Catalysts for the Catalytic Deoxygenation of Palm Oil for Green Diesel Production. *Catalysts*, 11(6), 747. https://doi.org/10.3390/catal11060747.

Hafeez, S., Barlocco, I., Al-Salem, S.M., Villa, A., Chen, X., Delgado, J.J., Manos, G., Dimitratos, N. and Constantinou, A., 2021b. Experimental and Process Modelling Investigation of the Hydrogen Generation from Formic Acid Decomposition Using a Pd/Zn Catalyst. *Applied Sciences*, 11(18), 8462. https://doi.org/10.3390/app11188462.

Hafeez, S., Safdar, T., Pallari, E., Manos, G., Aristodemou, E., Zhang, Z., Al-Salem, S.M. and Constantinou, A., 2021c. CO2 capture using membrane contactors: a systematic literature review. *Frontiers of Chemical Science and Engineering*, 15(4), pp.720–754. https://doi.org/10.1007/s11705-020-1992-z.

Hafeez, S., Sanchez, F., Al-Salem, S.M., Villa, A., Manos, G., Dimitratos, N. and Constantinou, A., 2021d. Decomposition of Additive-Free Formic Acid Using a Pd/C Catalyst in Flow: Experimental and CFD Modelling Studies. *Catalysts*, 11(3), 341. https://doi.org/10.3390/catal11030341.

Harkou, E., Hafeez, S., Manos, G. and Constantinou, A., 2021. CFD Study of the Numbering up of Membrane Microreactors for CO2 Capture. *Processes*, 9(9), 1515. https://doi.org/10.3390/pr9091515.

Hasanuzzaman, M., Parvin, K., Bardhan, K., Nahar, K., Anee, T.I., Masud, A.A.C. and Fotopoulos, V., 2021. Biostimulants for the Regulation of Reactive Oxygen Species Metabolism in Plants under Abiotic Stress. *Cells*, 10(10), 2537. https://doi.org/10.3390/cells10102537.

Heyman, L., Chrysargyris, A., Demeestere, K., Tzortzakis, N. and Höfte, M., 2021. Responses to Drought Stress Modulate the Susceptibility to Plasmopara viticola in Vitis vinifera Self-Rooted Cuttings. *Plants*, 10(2), 273. https://doi.org/10.3390/plants10020273.

Irena, K., Ernst, W. and Alexandros, C.G., 2021. The cost-effectiveness of CO2 mitigation measures for the decarbonisation of shipping. The case study of a globally operating ship-management company. *Journal of Cleaner Production*, 316, 128094. https://doi.org/10.1016/j.jclepro.2021.128094.

Kaarsholm, K.M.S., Kokkoli, A., Keliri, E., Mines, P.D., Antoniou, M.G., Jakobsen, M.H. and Andersen, H.R., 2021. Quantification of Hypochlorite in Water Using the Nutritional Food Additive Pyridoxamine. *Water*, 13(24), 3616. https://doi.org/10.3390/w13243616.

Kamilari, E., Efthymiou, M., Anagnostopoulos, D.A. and Tsaltas, D., 2021a. Cyprus Sausages' Bacterial Community Identification Through Metataxonomic Sequencing: Evaluation of the Impact of Different DNA Extraction Protocols on the Sausages' Microbial Diversity Representation. *Frontiers in Microbiology*, 12. https://doi.org/10.3389/fmicb.2021.662957.

Kamilari, E., Mina, M., Karallis, C. and Tsaltas, D., 2021b. Metataxonomic Analysis of Grape Microbiota During Wine Fermentation Reveals the Distinction of Cyprus Regional terroirs. *Frontiers in Microbiology*, 12. https://doi.org/10.3389/fmicb.2021.726483.

Kanetis, L.I., Pittas, L., Nikoloudakis, N., Cooke, D.E.L. and Ioannou, N., 2021. Characterization of *Phytophthora infestans* Populations in Cyprus, the Southernmost Potato-Producing European Country. *Plant Disease*, 105(11), pp.3407–3417. https://doi.org/10.1094/PDIS-12-20-2694-RE.

Karanicola, P., Patsalou, M., Stergiou, P.-Y., Kavallieratou, A., Evripidou, N., Christou, P., Panagiotou, G., Damianou, C., Papamichael, E.M. and Koutinas, M., 2021. Ultrasound-assisted dilute acid hydrolysis for production of essential oils, pectin and bacterial cellulose via a citrus processing waste biorefinery. *Bioresource Technology*, 342, 126010. https://doi.org/10.1016/j.biortech.2021.126010.

Keliri, E., Paraskeva, C., Sofokleous, A., Sukenik, A., Dziga, D., Chernova, E., Brient, L. and Antoniou, M.G., 2021. Occurrence of a single-species cyanobacterial bloom in a lake in Cyprus: monitoring and treatment with hydrogen peroxide-releasing granules. *Environmental Sciences Europe*, 33(1), 31. https://doi.org/10.1186/s12302-021-00471-5.

Konstantinou, M., Peratikou, S. and Charalambides, A.G., 2021. Solar Photovoltaic Forecasting of Power Output Using LSTM Networks. *Atmosphere*, 12(1), 124. https://doi.org/10.3390/atmos12010124.

Körner, O., Fanourakis, D., Chung-Rung Hwang, M., Hyldgaard, B., Tsaniklidis, G., Nikoloudakis, N., Larsen, D.H., Ottosen, C.-O. and Rosenqvist, E., 2021. Incorporating cultivar-specific stomatal traits into stomatal conductance models improves the estimation of evapotranspiration enhancing greenhouse climate management. *Biosystems Engineering*, 208, pp.131–151. https://doi.org/10.1016/j.biosystemseng.2021.05.010.

Koutinas, M., Kyriakou, M., Andreou, K., Hadjicharalambous, M., Kaliviotis, E., Pasias, D., Kazamias, G., Varavvas, C. and Vyrides, I., 2021. Enhanced biodegradation and valorization of drilling wastewater via simultaneous production of biosurfactants and polyhydroxyalkanoates by Pseudomonas citronellolis SJTE-3. *Bioresource Technology*, 340, 125679. https://doi.org/10.1016/j.biortech.2021.125679.

Kritioti, A., Paikousis, L. and Drouza, C., 2021. Retraction notice to "Characterization of the volatile profile of virgin olive oils of Koroneiki and Cypriot cultivars, and classification according to the variety, geographical region and altitude" [LWT - Food Science and Technology 129 (2020) 109543]. *LWT*, 144, 111332. https://doi.org/10.1016/j.lwt.2021.111332. Retraction notice

Liapi, M., Botsaris, G., Arsenoglou, C., Markantonis, N., Michael, C., Antoniou, A. and Pipis, C., 2021. Rapid Detection of Mycoplasma bovis, Staphylococcus aureus and Streptococcus agalactiae in Cattle Bulk Tank Milk in Cyprus and Relations with Somatic Cell Counts. *Pathogens*, 10(7), 841. https://doi.org/10.3390/pathogens10070841.

Litskas, V., Stavrinides, M., Economakis, C. and Tzortzakis, N., 2021. Life cycle assessment for the determination of key environmental impact indicators in soilless tomato culture and mitigation potential. *Acta Horticulturae*, (1321), pp.291–296. https://doi.org/10.17660/ActaHortic.2021.1321.38.

Loizou, M., Hadjiadamou, I., Drouza, C., Keramidas, A.D., Simos, Y. v. and Peschos, D., 2021. Vanadium(V) Complexes with Siderophore Vitamin E-Hydroxylamino-Triazine Ligands. *Inorganics*, 9(10), 73. https://doi.org/10.3390/inorganics9100073.

Lytra, K., Tomou, E., Chrysargyris, A., Christofi, M., Miltiadous, P., Tzortzakis, N. and Skaltsa, H., 2021. Bio-Guided Investigation of *Sideritis cypria* Methanol Extract Driven by *in Vitro* Antioxidant and Cytotoxic Assays. *Chemistry & Biodiversity*, 18(3). https://doi.org/10.1002/cbdv.202000966.

Maity, S., Daskalakis, V., Elstner, M. and Kleinekathöfer, U., 2021a. Multiscale QM/MM molecular dynamics simulations of the trimeric major light-harvesting complex II. *Physical Chemistry Chemical Physics*, 23(12), pp.7407–7417. https://doi.org/10.1039/D1CP01011E.

Maity, S., Sarngadharan, P., Daskalakis, V. and Kleinekathöfer, U., 2021b. Time-dependent atomistic simulations of the CP29 light-harvesting complex. *The Journal of Chemical Physics*, 155(5), 055103. https://doi.org/10.1063/5.0053259.

Markakis, E.A., Soultatos, S.K., Kanetis, L. and Goumas, D.E., 2021. First Report of Stem Canker of Almond Trees Caused by *Fusarium solani* in Greece. *Plant Disease*, 105(9), p.2724. https://doi.org/10.1094/PDIS-02-21-0245-PDN.

Mazioti, A.A., Koutsokeras, L.E., Constantinides, G. and Vyrides, I., 2021. Untapped Potential of Moving Bed Biofilm Reactors with Different Biocarrier Types for Bilge Water Treatment: A Laboratory-Scale Study. *Water*, 13(13), 1810. https://doi.org/10.3390/w13131810.

Mazioti, A.A., Vasquez, M.I. and Vyrides, I., 2021. Comparison of different cultures and culturing conditions for the biological deterioration of organic load from real saline bilge wastewater: microbial diversity insights and ecotoxicity assessment. *Environmental Science and Pollution Research*, 28(27), pp.36506–36522. https://doi.org/10.1007/s11356-021-13153-9.

Michael, C., Gil, E., Gallart, M. and Stavrinides, M.C., 2021. Evaluation of the Effects of Spray Technology and Volume Rate on the Control of Grape Berry Moth in Mountain Viticulture. *Agriculture*, 11(2), 178. https://doi.org/10.3390/agriculture11020178.

Middleton, N., Tsioutis, C., Kolokotroni, O., Heraclides, A., Theodosis-Nobelos, P., Mamais, I., Pantelidou, M., Tsaltas, D., Christaki, E., Nikolopoulos, G. and Dietis, N., 2021. Gaps in Knowledge About SARS-CoV-2 & COVID-19 Among University Students Are Associated With Negative Attitudes Toward People With COVID-19: A Cross-Sectional Study in Cyprus. *Frontiers in Public Health*, 9. https://doi.org/10.3389/fpubh.2021.758030.

Mladenov, V., Fotopoulos, V., Kaiserli, E., Karalija, E., Maury, S., Baranek, M., Segal, N., Testillano, P., Vassileva, V., Pinto, G., Nagel, M., Hoenicka, H., Miladinović, D., Gallusci, P., Vergata, C., Kapazoglou, A., Abraham, E., Tani, E., Gerakari, M., Sarri, E., Avramidou, E., Gašparović, M. and Martinelli, F., 2021. Deciphering the Epigenetic Alphabet Involved in Transgenerational Stress Memory in Crops. *International Journal of Molecular Sciences*, 22(13), p.7118. https://doi.org/10.3390/ijms22137118.

Nasiri, A., Taheri-Garavand, A., Fanourakis, D., Zhang, Y.-D. and Nikoloudakis, N., 2021. Automated Grapevine Cultivar Identification via Leaf Imaging and Deep Convolutional Neural Networks: A Proof-of-Concept Study Employing Primary Iranian Varieties. *Plants*, 10(8), p.1628. https://doi.org/10.3390/plants10081628.

Neofytou, M.C., Michael, C., Constantinou, C., Sparaggis, D. and Tzamaloukas, O., 2021a. Feeding wheat dried distillers' grains with solubles increases conjugated linoleic acid and unsaturated lipids in ovine milk without adversely affecting milk yield. *Journal of Dairy Research*, 88(2), pp.128–133. https://doi.org/10.1017/S0022029921000443.

Neofytou, M.C., Miltiadou, D., Symeou, S., Sparaggis, D. and Tzamaloukas, O., 2021b. Short-term forage substitution with ensiled olive cake increases beneficial milk fatty acids in lactating cows. *Tropical Animal Health and Production*, 53(2), 257. https://doi.org/10.1007/s11250-021-02706-2.

Nowicki, M., Hadziabdic, D., Trigiano, R.N., Boggess, S.L., Kanetis, L., Wadl, P.A., Ojiambo, P.S., Cubeta, M.A., Spring, O., Thines, M., Runge, F. and Scheffler, B.E., 2021. "Jumping Jack": Genomic Microsatellites Underscore the Distinctiveness of Closely Related Pseudoperonospora cubensis and Pseudoperonospora humuli and Provide New Insights Into Their Evolutionary Past. *Frontiers in Microbiology*, 12. https://doi.org/10.3389/fmicb.2021.686759.

Ofrydopoulou, A., Evgenidou, E., Nannou, C., Vasquez, M.I. and Lambropoulou, D., 2021. Exploring the phototransformation and assessing the in vitro and in silico toxicity of a mixture of pharmaceuticals susceptible to photolysis. *Science of The Total Environment*, 756, 144079. https://doi.org/10.1016/j.scitotenv.2020.144079.

Panagiotopoulos, A.A., Karakasiliotis, I., Kotzampasi, D.-M., Dimitriou, M., Sourvinos, G., Kampa, M., Pirintsos, S., Castanas, E. and Daskalakis, V., 2021a. Natural Polyphenols Inhibit the Dimerization of the SARS-CoV-2 Main Protease: The Case of Fortunellin and Its Structural Analogs. *Molecules*, 26(19), 6068. https://doi.org/10.3390/molecules26196068.

Panagiotopoulos, A., Tseliou, M., Karakasiliotis, I., Kotzampasi, D., Daskalakis, V., Kesesidis, N., Notas, G., Lionis, C., Kampa, M., Pirintsos, S., Sourvinos, G. and Castanas, E., 2021b. p-cymene impairs SARS-CoV-2 and Influenza A (H1N1) viral replication: *In silico* predicted interaction with SARS-CoV-2 nucleocapsid protein and H1N1 nucleoprotein. *Pharmacology Research & Perspectives*, 9(4). https://doi.org/10.1002/prp2.798.

Panoskaltsis, N., McCarthy, N.E., Stagg, A.J., Mummery, C.J., Husni, M., Arebi, N., Greenstein, D., Price, C.L., Al-Hassi, H.O., Koutinas, M., Mantalaris, A. and Knight, S.C., 2021. Immune reconstitution and clinical recovery following anti-

CD28 antibody (TGN1412)-induced cytokine storm. *Cancer Immunology, Immunotherapy*, 70(4), pp.1127–1142. https://doi.org/10.1007/s00262-020-02725-2.

Papademas, P., Kamilari, E., Aspri, M., Anagnostopoulos, D.A., Mousikos, P., Kamilaris, A. and Tsaltas, D., 2021. Investigation of donkey milk bacterial diversity by 16S rDNA high-throughput sequencing on a Cyprus donkey farm. *Journal of Dairy Science*, 104(1), pp.167–178. https://doi.org/10.3168/jds.2020-19242.

Papademas, P., Mousikos, P. and Aspri, M., 2021. Optimization of UV-C Processing of Donkey Milk: An Alternative to Pasteurization? *Animals*, [online] 11(1), 42. https://doi.org/10.3390/ani11010042.

Pappi, P., Nikoloudakis, N., Fanourakis, D., Zambounis, A., Delis, C. and Tsaniklidis, G., 2021. Differential Triggering of the Phenylpropanoid Biosynthetic Pathway Key Genes Transcription upon Cold Stress and Viral Infection in Tomato Leaves. *Horticulturae*, 7(11), 448. https://doi.org/10.3390/horticulturae7110448.

Pavlidis, N., Kofinas, A., Papanikolaou, M.G., Miras, H.N., Drouza, C., Kalampounias, A.G., Kabanos, T.A., Konstandi, M. and Leondaritis, G., 2021. Synthesis, characterization and pharmacological evaluation of quinoline derivatives and their complexes with copper(II) in in vitro cell models of Alzheimer's disease. *Journal of Inorganic Biochemistry*, 217, 111393. https://doi.org/10.1016/j.jinorgbio.2021.111393.

Photiou, P., Kallis, M., Samanides, C.G., Vyrides, I., Padoan, E., Montoneri, E. and Koutinas, M., 2021a. Integrated Chemical Biochemical Technology to Reduce Ammonia Emission from Fermented Municipal Biowaste. *ACS Sustainable Chemistry & Engineering*, 9(25), pp.8402–8413. https://doi.org/10.1021/acssuschemeng.1c00689.

Photiou, P., Koutsokeras, L., Constantinides, G., Koutinas, M. and Vyrides, I., 2021b. Phosphate removal from synthetic and real wastewater using thermally treated seagrass residues of Posidonia oceanica. *Journal of Cleaner Production*, 278, 123294. https://doi.org/10.1016/j.jclepro.2020.123294.

Photiou, P. and Vyrides, I., 2021. Recovery of phosphate from dewatered anaerobic sludge and wastewater by thermally treated P.oceanica residues and its potential application as a fertilizer. *Journal of Environmental Management*, 298, 113441. https://doi.org/10.1016/j.jenvman.2021.113441.

Pissaridou, P., Cantonati, M., Bouchez, A., Tziortzis, I., Dörflinger, G. and Vasquez, M.I., 2021a. How can integrated morphotaxonomy- and metabarcoding-based diatom assemblage analyses best contribute to the ecological assessment of streams? *Metabarcoding and Metagenomics*, 5. https://doi.org/10.3897/mbmg.5.68438.

Pissaridou, P., Vasselon, V., Christou, A., Chonova, T., Papatheodoulou, A., Drakou, K., Tziortzis, I., Dörflinger, G., Rimet, F., Bouchez, A. and Vasquez, M.I., 2021b. Cyprus' diatom diversity and the association of environmental and anthropogenic influences for ecological assessment of rivers using DNA metabarcoding. *Chemosphere*, 272, 129814. https://doi.org/10.1016/j.chemosphere.2021.129814.

Prasad, M., Mc Daniel, N., Kavanagh, A. and Tzortzakis, N., 2021. Dolomitic lime rate effects on pH, available macro- and micro nutrient content, plant growth and plant nutrient content on peats of various degrees of decomposition. *Acta Horticulturae*, (1305), pp.485–492. https://doi.org/10.17660/ActaHortic.2021.1305.64.

Prasad, M. and Tzortzakis, N., 2021. Critical review of chemical properties of biochar as a component of growing media. *Acta Horticulturae*, (1317), pp.115–124. https://doi.org/10.17660/ActaHortic.2021.1317.14.

Rotter, A., Barbier, M., Bertoni, F., Bones, A.M., Cancela, M.L., Carlsson, J., Carvalho, M.F., Cegłowska, M., Chirivella-Martorell, J., Conk Dalay, M., Cueto, M., Dailianis, T., Deniz, I., Díaz-Marrero, A.R., Drakulovic, D., Dubnika, A., Edwards, C., Einarsson, H., Erdoğan, A., Eroldoğan, O.T., Ezra, D., Fazi, S., FitzGerald, R.J., Gargan, L.M., Gaudêncio, S.P., Gligora Udovič, M., Ivošević DeNardis, N., Jónsdóttir, R., Kataržytė, M., Klun, K., Kotta, J., Ktari, L., Ljubešić, Z., Lukić Bilela, L., Mandalakis, M., Massa-Gallucci, A., Matijošytė, I., Mazur-Marzec, H., Mehiri, M., Nielsen, S.L., Novoveská, L., Overlingė, D., Perale, G., Ramasamy, P., Rebours, C., Reinsch, T., Reyes, F., Rinkevich, B., Robbens, J., Röttinger, E., Rudovica, V., Sabotič, J., Safarik, I., Talve, S., Tasdemir, D., Theodotou Schneider, X., Thomas, O.P., Toruńska-Sitarz, A., Varese, G.C. and Vasquez, M.I., 2021a. The Essentials of Marine Biotechnology. *Frontiers in Marine Science*, 8. https://doi.org/10.3389/fmars.2021.629629.

Rotter, A., Gaudêncio, S.P., Klun, K., Macher, J.-N., Thomas, O.P., Deniz, I., Edwards, C., Grigalionyte-Bembič, E., Ljubešić, Z., Robbens, J., Varese, G.C. and Vasquez, M.I., 2021b. A New Tool for Faster Construction of Marine Biotechnology Collaborative Networks. *Frontiers in Marine Science*, 8. https://doi.org/10.3389/fmars.2021.685164.

Sagova-Mareckova, M., Boenigk, J., Bouchez, A., Cermakova, K., Chonova, T., Cordier, T., Eisendle, U., Elersek, T., Fazi, S., Fleituch, T., Frühe, L., Gajdosova, M., Graupner, N., Haegerbaeumer, A., Kelly, A.-M., Kopecky, J., Leese, F., Nõges, P., Orlic, S., Panksep, K., Pawlowski, J., Petrusek, A., Piggott, J.J., Rusch, J.C., Salis, R., Schenk, J., Simek, K., Stovicek, A., Strand, D.A., Vasquez, M.I., Vrålstad, T., Zlatkovic, S., Zupancic, M. and Stoeck, T., 2021. Expanding ecological assessment by integrating microorganisms into routine freshwater biomonitoring. *Water Research*, 191, 116767. https://doi.org/10.1016/j.watres.2020.116767.

Shahrajabian, M.H., Chaski, C., Polyzos, N., Tzortzakis, N. and Petropoulos, S.A., 2021. Sustainable Agriculture Systems in Vegetable Production Using Chitin and Chitosan as Plant Biostimulants. *Biomolecules*, 11(6), 819. https://doi.org/10.3390/biom11060819.

Singh, S., Husain, T., Kushwaha, B.K., Suhel, Mohd., Fatima, A., Mishra, V., Singh, S.K., Bhatt, J.A., Rai, M., Prasad, S.M., Dubey, N.K., Chauhan, D.K., Tripathi, D.K., Fotopoulos, V. and Singh, V.P., 2021. Regulation of ascorbate-glutathione cycle by exogenous nitric oxide and hydrogen peroxide in soybean roots under arsenate stress. *Journal of Hazardous Materials*, 409, 123686. https://doi.org/10.1016/j.jhazmat.2020.123686.

Skountzos, E.N., Tsalikis, D.G., Stephanou, P.S. and Mavrantzas, V.G., 2021. Individual Contributions of Adsorbed and Free Chains to Microscopic Dynamics of Unentangled poly(ethylene Glycol)/Silica Nanocomposite Melts and the Important Role of End Groups: Theory and Simulation. *Macromolecules*, 54(10), pp.4470–4487. https://doi.org/10.1021/acs.macromol.0c02485.

Spanos, A., Athanasiou, K., Ioannou, A., Fotopoulos, V. and Krasia-Christoforou, T., 2021. Functionalized Magnetic Nanomaterials in Agricultural Applications. *Nanomaterials*, 11(11), 3106. https://doi.org/10.3390/nano11113106.

Spiliotopoulou, A., Antoniou, M.G. and Andersen, H.R., 2021. Natural fluorescence emission – an indirect measurement of applied ozone dosages to remove pharmaceuticals in biologically treated wastewater. *Environmental Technology*, 42(4), pp.584–596. https://doi.org/10.1080/09593330.2019.1639827.

Stavropoulou, A., Chrysargyris, A., Goumas, D., Magan, N., Loulakakis, K. and Tzortzakis, N., 2021. Postharvest grey mould development was suppressed by *Origanum dictamnus* oil vapours in tomato, pepper and eggplant fruit. *Acta Horticulturae*, (1323), pp.43–50. https://doi.org/10.17660/ActaHortic.2021.1323.8.

Stephanou, P.S., 2021a. Elucidating the rheological implications of adding particles in blood. *Rheologica Acta*, 60(10), pp.603–616. https://doi.org/10.1007/s00397-021-01289-x.

Stephanou, P.S., 2021b. Erratum: "A constitutive hemorheological model addressing both the deformability and aggregation of red blood cells" [Phys. Fluids **32** , 103103 (2020)]. *Physics of Fluids*, 33(3), 039901. https://doi.org/10.1063/5.0043721.

Stephanou, P.S., 2021c. On the consistent modeling of shear-thickening polymer solutions. *Physics of Fluids*, 33(6), p.063107. https://doi.org/10.1063/5.0053604.

Stylianou, M., Vyrides, I. and Agapiou, A., 2021. Oil biodesulfurization: A review of applied analytical techniques. *Journal of Chromatography B*, 1171, 122602. https://doi.org/10.1016/j.jchromb.2021.122602.

Symeou, S., Miltiadou, D., Constantinou, C., Papademas, P. and Tzamaloukas, O., 2021. Feeding olive cake silage up to 20% of DM intake in sheep improves lipid quality and health-related indices of milk and ovine halloumi cheese. *Tropical Animal Health and Production*, 53(2), 229. https://doi.org/10.1007/s11250-021-02674-7.

Taheri-Garavand, A., Nasiri, A., Fanourakis, D., Fatahi, S., Omid, M. and Nikoloudakis, N., 2021. Automated In Situ Seed Variety Identification via Deep Learning: A Case Study in Chickpea. *Plants*, 10(7), 1406. https://doi.org/10.3390/plants10071406.

Theofilou, S.P., Antoniou, C., Potamiti, L., Hadjisavvas, A., Panayiotidis, M., Savva, P.G., Costa, C.N. and Fotopoulos, V., 2021. Immobilized Ag-nanoparticles (iNPs) for environmental applications: Elucidation of immobilized silver-induced

inhibition mechanism of Escherichia coli. *Journal of Environmental Chemical Engineering*, 9(5), 106001. https://doi.org/10.1016/j.jece.2021.106001.

Tomou, E.-M., Lytra, K., Chrysargyris, A., Tzortzakis, N. and Skaltsa, H., 2021. NMR Fingerprint Comparison of Cultivated Sideritis spp. from Cyprus. *Agronomy*, 11(8), 1503. https://doi.org/10.3390/agronomy11081503.

Tsaniklidis, G., Charova, S.N., Fanourakis, D., Tsafouros, A., Nikoloudakis, N., Goumenaki, E., Tsantili, E., Roussos, P.A., Spiliopoulos, I.K., Paschalidis, K.A. and Delis, C., 2021a. The role of temperature in mediating postharvest polyamine homeostasis in tomato fruit. *Postharvest Biology and Technology*, 179, 111586. https://doi.org/10.1016/j.postharvbio.2021.111586.

Tsaniklidis, G., Chatzistathis, T., Fanourakis, D., Nikoloudakis, N., Kotsiras, A., Delis, C. and Tzortzakakis, E.A., 2021b. Leaf antioxidant machinery stimulation by Meloidogyne javanica infestation: A case study on Cucumis melo seedlings. *Plant Stress*, 1, 100002. https://doi.org/10.1016/j.stress.2021.100002.

Tzamaloukas, O., Neofytou, M.C. and Simitzis, P.E., 2021. Application of Olive By-Products in Livestock with Emphasis on Small Ruminants: Implications on Rumen Function, Growth Performance, Milk and Meat Quality. *Animals*, 11(2), 531. https://doi.org/10.3390/ani11020531.

Tzamaloukas, O., Neofytou, M.C., Simitzis, P.E. and Miltiadou, D., 2021. Effect of Farming System (Organic vs. Conventional) and Season on Composition and Fatty Acid Profile of Bovine, Caprine and Ovine Milk and Retail Halloumi Cheese Produced in Cyprus. *Foods*, 10(5), 1016. https://doi.org/10.3390/foods10051016.

Tzortzakis, N., Papadaki, A. and Chrysargyris, A., 2021. Municipal solid waste compost as a growing media component in combination with fertilizers for the marigold seedlings production. *Acta Horticulturae*, (1305), pp.271–278. https://doi.org/10.17660/ActaHortic.2021.1305.37.

Vink, S.N., Chrysargyris, A., Tzortzakis, N. and Salles, J.F., 2021. Bacterial community dynamics varies with soil management and irrigation practices in grapevines (Vitis vinifera L.). *Applied Soil Ecology*, 158, 103807. https://doi.org/10.1016/j.apsoil.2020.103807.

Xylia, P., Botsaris, G., Chrysargyris, A., Skandamis, P. and Tzortzakis, N., 2021a. Survival and transfer of *Salmonella* Enteritidis in lettuce cultivated in hydroponics as affected by different pH of nutrient solution. *Acta Horticulturae*, (1321), pp.47–54. https://doi.org/10.17660/ActaHortic.2021.1321.7.

Xylia, P., Botsaris, G., Skandamis, P. and Tzortzakis, N., 2021b. Expiration Date of Ready-to-Eat Salads: Effects on Microbial Load and Biochemical Attributes. *Foods*, 10(5), 941. https://doi.org/10.3390/foods10050941.

Xylia, P., Chrysargyris, A., Ahmed, Z.F.R. and Tzortzakis, N., 2021c. Application of Rosemary and Eucalyptus Essential Oils and Their Main Component on the Preservation of Apple and Pear Fruits. *Horticulturae*, 7(11), 479. https://doi.org/10.3390/horticulturae7110479.

Xylia, P., Chrysargyris, A., Botsaris, G. and Tzortzakis, N., 2021d. Assessment of mint and pomegranate extracts/oils as antimicrobial agents to inhibit growth of *Escherichia coli* O157:H7 and *Listeria monocytogenes* on shredded carrots. *Acta Horticulturae*, (1323), pp.201–208. https://doi.org/10.17660/ActaHortic.2021.1323.32.

Xylia, P., Chrysargyris, A. and Tzortzakis, N., 2021. The Combined and Single Effect of Marjoram Essential Oil, Ascorbic Acid, and Chitosan on Fresh-Cut Lettuce Preservation. *Foods*, 10(3), 575. https://doi.org/10.3390/foods10030575.

Xylia, P., Ioannou, I., Chrysargyris, A., Stavrinides, M.C. and Tzortzakis, N., 2021e. Quality Attributes and Storage of Tomato Fruits as Affected by an Eco-Friendly, Essential Oil-Based Product. *Plants*, 10(6), 1125. https://doi.org/10.3390/plants10061125.

Zerveas, S., Kydonakis, E., Mente, M.-S., Daskalakis, V. and Kotzabasis, K., 2021. Hydrogen gas as a central on-off functional switch of reversible metabolic arrest – New perspectives for biotechnological applications. *Journal of Biotechnology*, 335, pp.9–18. https://doi.org/10.1016/j.jbiotec.2021.06.005.

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Agathokleous, E., Barceló, D., Aschner, M., Azevedo, R.A., Bhattacharya, P., Costantini, D., Cutler, G.C., de Marco, A., Docea, A.O., Dórea, J.G., Duke, S.O., Efferth, T., Fatta-Kassinos, D., Fotopoulos, V., Ginebreda, A., Guedes, R.N.C., Hayes, A.W., Iavicoli, I., Kalantzi, O.-I., Koike, T., Kouretas, D., Kumar, M., Manautou, J.E., Moore, M.N., Paoletti, E., Peñuelas, J., Picó, Y., Reiter, R.J., Rezaee, R., Rinklebe, J., Rocha-Santos, T., Sicard, P., Sonne, C., Teaf, C., Tsatsakis, A., Vardavas, A.I., Wang, W., Zeng, E.Y. and Calabrese, E.J., 2022. Rethinking Subthreshold Effects in Regulatory Chemical Risk Assessments. *Environmental Science & Technology*, [online] 56(16), pp.11095–11099. https://doi.org/10.1021/acs.est.2c02896.

Al-Salem, S.M., Alosairi, Y. and Constantinou, A., 2022. Effect of COVID-19 lockdown measures on the plastic waste generation trends and distribution of microplastics in the Northwestern Arabian/Persian Gulf. *Ocean & Coastal Management*, [online] 216, 105979. https://doi.org/10.1016/j.ocecoaman.2021.105979.

Anagnostopoulos, D.A. and Tsaltas, D., 2022. Current Status, Recent Advances, and Main Challenges on Table Olive Fermentation: The Present Meets the Future. *Frontiers in Microbiology*, 12. https://doi.org/10.3389/fmicb.2021.797295.

Andronikou, M., Adamou, V., Koutsokeras, L., Constantinides, G. and Vyrides, I., 2022a. Magnesium ribbon and anaerobic granular sludge for conversion of CO2 to CH4 or biogas upgrading. *Chemical Engineering Journal*, 435, 134888. https://doi.org/10.1016/j.cej.2022.134888.

Angelis-Dimakis, A., Arampatzis, G., Alexopoulos, A., Pantazopoulos, A., Vyrides, I., Chourdakis, N. and Angelis, V., 2022. Waste Management and the Circular Economy in Cyprus—The Case of the SWAN Project. *Environments*, 9(2), 16. https://doi.org/10.3390/environments9020016.

Blancher, P., Lefrançois, E., Rimet, F., Vasselon, V., Argillier, C., Arle, J., Beja, P., Boets, P., Boughaba, J., Chauvin, C., Deacon, M., Duncan, W., Ejdung, G., Erba, S., Ferrari, B., Fischer, H., Hänfling, B., Haldin, M., Hering, D., Hette-Tronquart, N., Hiley, A., Järvinen, M., Jeannot, B., Kahlert, M., Kelly, M., Kleinteich, J., Koyuncuoğlu, S., Krenek, S., Langhein-Winther, S., Leese, F., Mann, D., Marcel, R., Marcheggiani, S., Meissner, K., Mergen, P., Monnier, O., Narendja, F., Neu, D., Onofre Pinto, V., Pawlowska, A., Pawlowski, J., Petersen, M., Poikane, S., Pont, D., Renevier, M.-S., Sandoy, S., Svensson, J., Trobajo, R., Tünde Zagyva, A., Tziortzis, I., van der Hoorn, B., Vasquez, M.I., Walsh, K., Weigand, A. and Bouchez, A., 2022. A strategy for successful integration of DNA-based methods in aquatic monitoring. *Metabarcoding and Metagenomics*, 6. https://doi.org/10.3897/mbmg.6.85652.

Christou, A., Agathokleous, E. and Fotopoulos, V., 2022. Safeguarding food security: Hormesis-based plant priming to the rescue. *Current Opinion in Environmental Science & Health*, [online] 28, 100374. https://doi.org/10.1016/j.coesh.2022.100374.

Christou, A., Stylianou, M., Georgiadou, E.C., Gedeon, S., Ioannou, A., Michael, C., Papanastasiou, P., Fotopoulos, V. and Fatta-Kassinos, D., 2022. Effects of biochar derived from the pyrolysis of either biosolids, manure or spent coffee grounds on the growth, physiology and quality attributes of field-grown lettuce plants. *Environmental Technology & Innovation*, [online] 26, 102263. https://doi.org/10.1016/j.eti.2021.102263.

Chrysargyris, A., Höfte, M., Tzortzakis, N., Petropoulos, S.A. and di Gioia, F., 2022. Editorial: Micronutrients: The Borderline Between Their Beneficial Role and Toxicity in Plants. *Frontiers in Plant Science*, 13. https://doi.org/10.3389/fpls.2022.840624.

Chrysargyris, A., Petropoulos, S.A. and Tzortzakis, N., 2022. Essential Oil Composition and Bioactive Properties of Lemon Balm Aerial Parts as Affected by Cropping System and Irrigation Regime. *Agronomy*, [online] 12(3), 649. https://doi.org/10.3390/agronomy12030649.

Fanourakis, D., Nikoloudakis, N., Paschalidis, K., Christopoulos, M. v., Goumenaki, E., Tsantili, E., Delis, C. and Tsaniklidis, G., 2022. Gene Expression, Activity and Localization of Beta-Galactosidases during Late Ripening and Postharvest Storage of Tomato Fruit. *Agriculture*, [online] 12(6), 778. https://doi.org/10.3390/agriculture12060778.

Gatidou, G., Constantinou, M., Koutsokeras, L., Vyrides, I. and Constantinides, G., 2022a. Efficiency of Carbon-Based Electrodes on a Microbial Electrolysis System for the Treatment of Bilge Water. *Frontiers in Environmental Science*, 10. https://doi.org/10.3389/fenvs.2022.894240.

Gatidou, G., Drakou, E.-M. and Vyrides, I., 2022. Assessment of Bilge Water Degradation by Isolated Citrobacter sp. and Two Indigenous Strains and Identification of Organic Content by GC-MS. *Water*, 14(9), 1350. https://doi.org/10.3390/w14091350.

Gatidou, G., Samanides, C.G., Fountoulakis, M.S. and Vyrides, I., 2022b. Microbial electrolysis cell coupled with anaerobic granular sludge: A novel technology for real bilge water treatment. *Chemosphere*, 296, 133988. https://doi.org/10.1016/j.chemosphere.2022.133988.

Georgiou, S., Koutsokeras, L., Constantinou, M., Majzer, R., Markiewicz, J., Siedlecki, M., Vyrides, I. and Constantinides, G., 2022. Microbial Electrosynthesis Inoculated with Anaerobic Granular Sludge and Carbon Cloth Electrodes Functionalized with Copper Nanoparticles for Conversion of CO2 to CH4. *Nanomaterials*, 12(14), 2472. https://doi.org/10.3390/nano12142472.

González Guzmán, M., Cellini, F., Fotopoulos, V., Balestrini, R. and Arbona, V., 2022. New approaches to improve crop tolerance to biotic and abiotic stresses. *Physiologia Plantarum*, [online] 174(1). https://doi.org/10.1111/ppl.13547.

Goulas, V., Banegas-Luna, A.J., Constantinou, A., Pérez-Sánchez, H. and Barbouti, A., 2022. Computation Screening of Multi-Target Antidiabetic Properties of Phytochemicals in Common Edible Mediterranean Plants. *Plants*, [online] 11(13), 1637. https://doi.org/10.3390/plants11131637.

Gray, C., Wei, T., Polívka, T., Daskalakis, V. and Duffy, C.D.P., 2022. Trivial Excitation Energy Transfer to Carotenoids Is an Unlikely Mechanism for Non-photochemical Quenching in LHCII. *Frontiers in Plant Science*, [online] 12. https://doi.org/10.3389/fpls.2021.797373.

Hadjimbei, E., Botsaris, G. and Chrysostomou, S., 2022. Beneficial Effects of Yoghurts and Probiotic Fermented Milks and Their Functional Food Potential. *Foods*, [online] 11(17), 2691. https://doi.org/10.3390/foods11172691.

Hafeez, S., Al-Salem, S.M., Bansode, A., Villa, A., Dimitratos, N., Manos, G. and Constantinou, A., 2022a. Computational Investigation of Microreactor Configurations for Hydrogen Production from Formic Acid Decomposition Using a Pd/C Catalyst. *Industrial & Engineering Chemistry Research*, [online] 61(4), pp.1655–1665. https://doi.org/10.1021/acs.iecr.1c04128.

Hafeez, S., Harkou, E., Al-Salem, S.M., Goula, M.A., Dimitratos, N., Charisiou, N.D., Villa, A., Bansode, A., Leeke, G., Manos, G. and Constantinou, A., 2022b. Hydrogenation of carbon dioxide (CO_2) to fuels in microreactors: a review of set-ups and value-added chemicals production. *Reaction Chemistry & Engineering*, [online] 7(4), pp.795–812. https://doi.org/10.1039/D1RE00479D.

Ioannidou, S.C., Litskas, V.D., Stavrinides, M.C. and Vogiatzakis, I.N., 2022. Linking management practices and soil properties to Ecosystem Services in Mediterranean mixed orchards. *Ecosystem Services*, 53, 101378. https://doi.org/10.1016/j.ecoser.2021.101378.

Ioannou, K., Eleftheriou, C., Drouza, C., Pafiti, K.S., Panayi, T., Keramidas, A.D., Zacharia, L.C. and Vlasiou, M.C., 2022. Novel Zinc and Vanadium (V) Hydroquinonate Complexes: Synthesis and Biological Solution Evaluation. *Journal of Molecular Structure*, 1257. https://doi.org/10.1016/J.MOLSTRUC.2022.132582.

Jafari, S., Mousavi-Fard, S., Rezaei Nejad, A., Mumivand, H., Sorkheh, K., Nikoloudakis, N. and Fanourakis, D., 2022. Chitosan and Titanium Dioxide Are More Effective in Improving Seed Yield and Quality in Nanoparticle Compared to Non-Structured Form: A Case Study in Five Milk Thistle Ecotypes (Silybum marianum (L.) Gaertn.). *Agronomy*, [online] 12(8), 1827. https://doi.org/10.3390/agronomy12081827.

Kamilari, E., Tsaltas, D., Stanton, C. and Ross, R.P., 2022. Metataxonomic Mapping of the Microbial Diversity of Irish and Eastern Mediterranean Cheeses. *Foods*, [online] 11(16), 2483. https://doi.org/10.3390/foods11162483.

Keliri, E., Adamou, P., Efstathiou, N., Kokkinidou, D., Kapnisis, K., Anayiotos, A.S., Mazur-Marzec, H. and Antoniou, M.G., 2022. Calcium peroxide (CaO2) granules enclosed in fabrics as an alternative H2O2 delivery system to combat Microcystis sp. *Chemical Engineering Journal Advances*, [online] 11, 100318. https://doi.org/10.1016/j.ceja.2022.100318.

Keramidas, A.D., Hadjithoma, S., Drouza, C., Andrade, T.S. and Lianos, P., 2022. Four electron selective O_2 reduction by a tetranuclear vanadium(IV/V)/hydroquinonate catalyst: application in the operation of Zn–air batteries. *New Journal of Chemistry*, [online] 46(2), pp.470–479. https://doi.org/10.1039/D1NJ03626B.

Kyratzis, A.C., Pallides, A. and Katsiotis, A., 2022. Investigating Stability Parameters for Agronomic and Quality Traits of Durum Wheat Grown under Mediterranean Conditions. *Agronomy*, [online] 12(8), 1774. https://doi.org/10.3390/agronomy12081774.

Maggini, R., Tzortzakis, N. and Currey, C.J., 2022. Editorial: Soilless Culture for Vegetative Biomass Production and Specialized Metabolites: Medicinal, Aromatic, and Edible Plants. *Frontiers in Plant Science*, [online] 13. https://doi.org/10.3389/fpls.2022.887487.

Makris, G., Solonos, S., Christodoulou, M. and Kanetis, L.I., 2022. First Report of *Diaporthe foeniculina* Associated with Grapevine Trunk Diseases on *Vitis vinifera* in Cyprus. *Plant Disease*, [online] 106(4), 1294. https://doi.org/10.1094/PDIS-03-21-0503-PDN.

Markakis, E.A., Soultatos, S.K., Koubouris, G.C., Psarras, G., Kanetis, L., Papadaki, A.A. and Goumas, D.E., 2022. First Report of *Pseudophaeomoniella oleae* Causing Wood Streaking and Decay on Olive Trees in Greece. *Plant Disease*, [online] 106(8), 2263. https://doi.org/10.1094/PDIS-10-21-2353-PDN.

Martínez-Campos, S., Pissaridou, P., Drakou, K., Shammas, C., Andreou, K., González-Pleiter, M., Fernández-Piñas, F., Leganes, F., Rosal, R., Koutinas, M., Kapnisis, K. and Vasquez, M.I., 2022. Evolution of prokaryotic colonisation of greenhouse plastics discarded into the environment. *Ecotoxicology and Environmental Safety*, 232, p.113213. https://doi.org/10.1016/j.ecoenv.2022.113213.

Meléndez-Martínez, A.J., Mandić, A.I., Bantis, F., Böhm, V., Borge, G.I.A., Brnčić, M., Bysted, A., Cano, M.P., Dias, M.G., Elgersma, A., Fikselová, M., García-Alonso, J., Giuffrida, D., Gonçalves, V.S.S., Hornero-Méndez, D., Kljak, K., Lavelli, V., Manganaris, G.A., Mapelli-Brahm, P., Marounek, M., Olmedilla-Alonso, B., Periago-Castón, M.J., Pintea, A., Sheehan, J.J., Tumbas Šaponjac, V., Valšíková-Frey, M., Meulebroek, L. van and O'Brien, N., 2022. A comprehensive review on carotenoids in foods and feeds: *status quo* , applications,

patents, and research needs. *Critical Reviews in Food Science and Nutrition*, [online] 62(8), pp.1999–2049. https://doi.org/10.1080/10408398.2020.1867959.

Michael, C., Gil, E., Gallart, M., Kanetis, L. and Stavrinides, M.C., 2022. Evaluating the effectiveness of low volume spray application using air-assisted knapsack sprayers in wine vineyards. *International Journal of Pest Management*, [online] 68(2), pp.148–157. https://doi.org/10.1080/09670874.2020.1807652.

Neokleous, I., Tarapata, J. and Papademas, P., 2022. Nonthermal turbulent flow ultraviolet-C (UV-C) radiation processing for cheese whey-brines purification. *International Journal of Dairy Technology*, [online] 75(3), pp.710–716. https://doi.org/10.1111/1471-0307.12883.

Neoκleous, I., Tarapata, J. and Papademas, P., 2022. Non-thermal Processing Technologies for Dairy Products: Their Effect on Safety and Quality Characteristics. *Frontiers in Sustainable Food Systems*, [online] 6. https://doi.org/10.3389/fsufs.2022.856199.

Nicodemou, A., Kallis, M., Agapiou, A., Markidou, A. and Koutinas, M., 2022. The Effect of Trophic Modes on Biomass and Lipid Production of Five Microalgal Strains. *Water*, [online] 14(2), 240. https://doi.org/10.3390/w14020240.

Nisiforou, O., Shakou, L.M., Magou, A. and Charalambides, A.G., 2022. A Roadmap towards the Decarbonization of Shipping: A Participatory Approach in Cyprus. *Sustainability*, [online] 14(4), 2185. https://doi.org/10.3390/su14042185.

Oudejans, D., Offidani, M., Constantinou, A., Albonetti, S., Dimitratos, N. and Bansode, A., 2022. A Comprehensive Review on Two-Step Thermochemical Water Splitting for Hydrogen Production in a Redox Cycle. *Energies*, [online] 15(9), 3044. https://doi.org/10.3390/en15093044.

Papademas, P., Aspri, M., Malissiova, E., Fantuz, F. and Salimei, E., 2022. Donkey Milk. In: *Encyclopedia of Dairy Sciences*. Elsevier. pp.522–529. https://doi.org/10.1016/B978-0-12-818766-1.00365-2.

Papademas, P. and Bintsis, T., 2022. Cheese from Non-Bovine Milk. In: *Encyclopedia of Dairy Sciences*. [online] Elsevier. pp.91–100. https://doi.org/10.1016/B978-0-12-818766-1.00216-6.

Papadopoulos, K.P., Economou, C.N., Markou, G., Nicodemou, A., Koutinas, M., Tekerlekopoulou, A.G. and Vayenas, D. v., 2022. Cultivation of Arthrospira platensis in Brewery Wastewater. *Water*, [online] 14(10), 1547. https://doi.org/10.3390/w14101547.

Parmaki, S., Ferreira, F.C., Esteves, T., Afonso, C.A.M. and Koutinas, M., 2022. Sustainable chemical and biological technologies for the production of enantiopure added-value molecules in biorefineries. In: *Biomass, Biofuels, Biochemicals*. Elsevier. pp.295–335. https://doi.org/10.1016/B978-0-323-89855-3.00006-6.

Photiou, P. and Vyrides, I., 2022. Calcined eggshells in anaerobic digestion: Buffering acidification in AD and evaluating end products from phosphate adsorption as soil conditioners. *Journal of Environmental Chemical Engineering*, 10(3), 107957. https://doi.org/10.1016/j.jece.2022.107957.

Pirintsos, S., Panagiotopoulos, A., Bariotakis, M., Daskalakis, V., Lionis, C., Sourvinos, G., Karakasiliotis, I., Kampa, M. and Castanas, E., 2022. From Traditional Ethnopharmacology to Modern Natural Drug Discovery: A Methodology Discussion and Specific Examples. *Molecules*, 27(13), 4060. https://doi.org/10.3390/molecules27134060.

Raza, A., Tabassum, J., Fakhar, A.Z., Sharif, R., Chen, H., Zhang, C., Ju, L., Fotopoulos, V., Siddique, K.H.M., Singh, R.K., Zhuang, W. and Varshney, R.K., 2022. Smart reprograming of plants against salinity stress using

modern biotechnological tools. *Critical Reviews in Biotechnology*, [online] pp.1–28. https://doi.org/10.1080/07388551.2022.2093695. Early Access

Rotter, A., Gaudêncio, S.P., Dubnika, A. and Vasquez, M.I., 2022. Editorial: Marine Biotechnology, Revealing an Ocean of Opportunities. *Frontiers in Marine Science*, 9. https://doi.org/10.3389/fmars.2022.887630.

Schneider, X.T., Stroil, B.K., Tourapi, C., Rebours, C., Gaudêncio, S.P., Novoveska, L. and Vasquez, M.I., 2022. Responsible Research and Innovation Framework, the Nagoya Protocol and Other European Blue Biotechnology Strategies and Regulations: Gaps Analysis and Recommendations for Increased Knowledge in the Marine Biotechnology Community. *Marine Drugs*, 20(5), 290. https://doi.org/10.3390/md20050290.

Sheikhalipour, M., Mohammadi, S.A., Esmaielpour, B., Zareei, E., Kulak, M., Ali, S., Nouraein, M., Bahrami, M.K., Gohari, G. and Fotopoulos, V., 2022. Exogenous melatonin increases salt tolerance in bitter melon by regulating ionic balance, antioxidant system and secondary metabolism-related genes. *BMC Plant Biology*, [online] 22(1), 380. https://doi.org/10.1186/s12870-022-03728-0.

Silva, S.R., Sacarrão-Birrento, L., Almeida, M., Ribeiro, D.M., Guedes, C., González Montaña, J.R., Pereira, A.F., Zaralis, K., Geraldo, A., Tzamaloukas, O., Cabrera, M.G., Castro, N., Argüello, A., Hernández-Castellano, L.E., Alonso-Diez, Á.J., Martín, M.J., Cal-Pereyra, L.G., Stilwell, G. and de Almeida, A.M., 2022. Extensive Sheep and Goat Production: The Role of Novel Technologies towards Sustainability and Animal Welfare. *Animals*, [online] 12(7), p.885. https://doi.org/10.3390/ani12070885.

Stasinakis, A.S., Charalambous, P. and Vyrides, I., 2022. Dairy wastewater management in EU: Produced amounts, existing legislation, applied treatment processes and future challenges. *Journal of Environmental Management*, 303, 114152. https://doi.org/10.1016/j.jenvman.2021.114152.

Tomou, E.-M., Lytra, K., Chrysargyris, A., Christofi, M.-D., Miltiadous, P., Corongiu, G.L., Tziouvelis, M., Tzortzakis, N. and Skaltsa, H., 2022. Polar constituents, biological effects and nutritional value of *Sideritis sipylea* Boiss. *Natural Product Research*, 36(16), pp.4200–4204. https://doi.org/10.1080/14786419.2021.1969649.

Tziona, P., Theodosis-Nobelos, P., Papagiouvannis, G., Petrou, A., Drouza, C. and Rekka, E.A., 2022. Enhancement of the Anti-Inflammatory Activity of NSAIDs by Their Conjugation with 3,4,5-Trimethoxybenzyl Alcohol. *Molecules*, [online] 27(7), 2104. https://doi.org/10.3390/molecules27072104.

Tzortzakis, N., Massa, D. and Vandecasteele, B., 2022. The Tripartite of Soilless Systems, Growing Media, and Plants through an Intensive Crop Production Scheme. *Agronomy*, [online] 12(8), 1896. https://doi.org/10.3390/agronomy12081896.

Tzortzakis, N., Pitsikoulaki, G., Stamatakis, A. and Chrysargyris, A., 2022. Ammonium to Total Nitrogen Ratio Interactive Effects with Salinity Application on Solanum lycopersicum Growth, Physiology, and Fruit Storage in a Closed Hydroponic System. *Agronomy*, [online] 12(2), 386. https://doi.org/10.3390/agronomy12020386.

Varotsis, C., Tselios, C., Yiannakkos, K.A., Andreou, C., Papageorgiou, M. and Nicolaides, A., 2022. Application of double-pulse laser-induced breakdown spectroscopy (DP-LIBS), Fourier transform infrared micro-spectroscopy and Raman microscopy for the characterization of copper-sulfides. *RSC Advances*, [online] 12(2), pp.631–639. https://doi.org/10.1039/D1RA07189K.

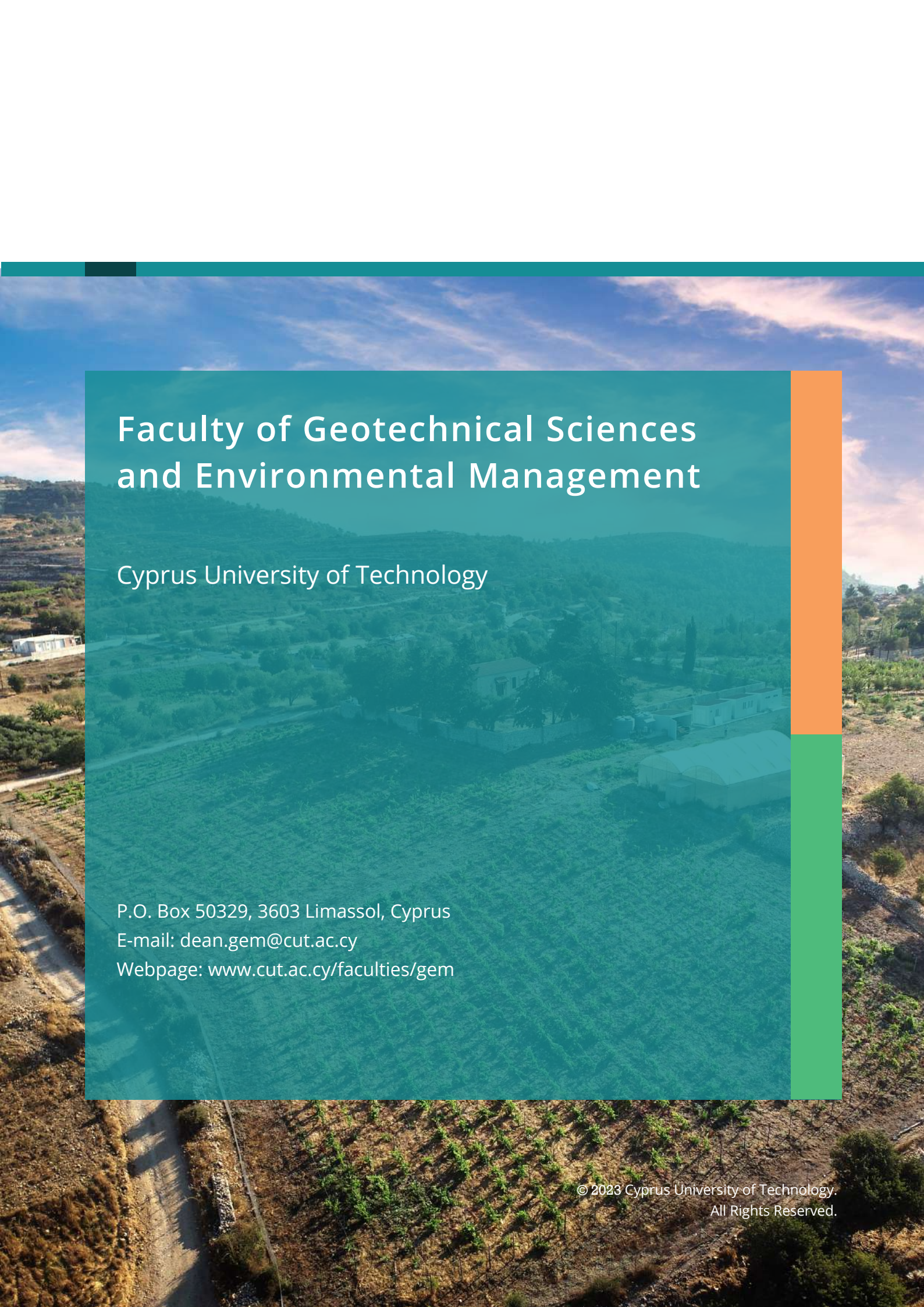
Vicente, A.R., Manganaris, G.A., Darre, M., Ortiz, C.M., Sozzi, G.O. and Crisosto, C.H., 2022. Compositional determinants of fruit and vegetable quality and nutritional value. In: *Postharvest Handling*. [online] Elsevier. pp.565–619. https://doi.org/10.1016/B978-0-12-822845-6.00019-1.

Wang, K., Cai, S., Xing, Q., Qi, Z., Fotopoulos, V., Yu, J. and Zhou, J., 2022. Melatonin delays dark-induced leaf senescence by inducing *miR171b* expression in tomato. *Journal of Pineal Research*, [online] 72(3). https://doi.org/10.1111/jpi.12792.

Xylia, P., Chrysargyris, A., Botsaris, G., Skandamis, P. and Tzortzakis, N., 2022a. Salmonella Enteritidis survival in different temperatures and nutrient solution pH levels in hydroponically grown lettuce. *Food Microbiology*, [online] 102, 103898. https://doi.org/10.1016/j.fm.2021.103898.

Xylia, P., Fasko, K.G., Chrysargyris, A. and Tzortzakis, N., 2022b. Heat treatment, sodium carbonate, ascorbic acid and rosemary essential oil application for the preservation of fresh Rosmarinus officinalis quality. *Postharvest Biology and Technology*, 187, 111868.
https://doi.org/10.1016/j.postharvbio.2022.111868.

Yousefzadeh, K., Houshmand, S., Shiran, B., Mousavi-Fard, S., Zeinali, H., Nikoloudakis, N., Gheisari, M.M. and Fanourakis, D., 2022. Joint Effects of Developmental Stage and Water Deficit on Essential Oil Traits (Content, Yield, Composition) and Related Gene Expression: A Case Study in Two Thymus Species. *Agronomy*, 12(5), 1008. https://doi.org/10.3390/agronomy12051008.



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