# Newsletter

RIA4FOOD + 28 November 2024



#### **PROJECT COORDINATOR - REZOS BRANDS**

# Here's what has happened in the last year and what's to come!

The RIA4FOOD project is dedicated to establishing a framework that leverages interdisciplinary technologies to develop food products with scientifically validated

#### health benefits. **Key Objectives:**

- Foster collaboration between diverse stakeholders in the agrifood sector, including farmers, companies, academics, research organizations, and other industries.
- Encourage the development, adoption, and exchange of innovative approaches to functional food production.

#### **Focus Ingredient:**

The project centers on **Sea Buckthorn** berry, a nutrient-rich fruit known for its bioactive compounds, such as:

- Vitamins
- Carotenoids
- Phytosterols
- Fatty acids
- Flavonoids

Through these efforts, the project aims to advance the field of functional foods and promote health and wellness through scientifically backed solutions.

Enjoy this annual's newsletter!



In this newsletter you can expect:

**Project Partners** 

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The activities of the UPAT's Department of Pharmacy group of the Biomolecular NMR (PI: Prof. G.A.Spyroulias) encompass the conformational dynamics of biomolecules, the analysis of natural products and identification of signature molecules in foods or biomarkers for human diseases. The group applies methods for (a) Protein expression, labeling and purification, (b) Biomolecular NMR for 3D structure determination and drug design, (c) biophysical and functional characterization, (d) NMR based food analysis and clinical metabolomics, using state-ofthe-art facilities, such as High-definition 700MHz-NMR/CD/UV-Visible/Fluorescence spectrometers, SEC-MALS, Micro Isothermal Titration Calorimetry (ITC), and others. The lab is recognized as a core facility in 2 National/Greek Research Infrastructure (RIs, namely INSPIRED and OMIC-ENGINE), and has participated or coordinated >30 National/EU projects since 2008, demonstrating significant fund raising and management capacity. Currently, the UPAT team participates and is a Steering Board Member in the HORIZON EUROPE e-Infrastructure REMOTE-NMR, while it coordinates an ambitious WIDERA program at UPAT, the ESPERANCE project.



UNIVERSITY OF



The University of Piemonte Orientale - UPO, is a public University established 1998. Italian in lt has 8 Departments, one School of Medicine, 400 professors/researchers, more than 150 PhD students, and more than 100 post-doc positions. UPO offers a full range of academic disciplines (Economics, Pharmaceutical Sciences, Law and Political Science, Social Science, Medicine and Surgery, Natural Sciences, Humanities) to embrace a large number of activities: basic and representative courses, laboratories, apprenticeships, training periods and international exchanges. UPO has been acknowledged as a competent partner of the European Food Safety Authority (EFSA), the European Union body for risk assessment regarding food safety. UPO have also established a significant number of international relationships with European and non-European universities: currently there are nearby 30 agreements for research activities and exchanges and about 100 Erasmus agreements for student exchanges. UPO is partner of several European research and education program; it has been involved in 21 FP7 Projects and 17 H2020 Projects (4 as Coordinator).





UNIVERSITÀ DEL PIEMONTE ORIENTALE

# "ALEXANDER FLEMING" Biomedical Sciences Research Center

a top-ranked Greek non-profit research organization with a mission to perform cutting edge basic and translational research in biomedical sciences, provide state-of-the-art training and mentorship to scientists and students of all levels, offer high-end scientific and technological services, and engage in technology transfer and innovation. The Center was established in 1998, and operates under the supervision of the General Secretariat for Research and Technology (GSRT). The Proteomics facility offers services for the quantitative analysis of

Biomedical Sciences Research Center "Alexander Fleming" is

Biomedical Sciences Research Center Proteins and the characterization of their interactions and posttranslational modifications. A Thermo Scientific Q Exactive HF-X Hybrid Quadrupole-Orbitrap mass spectrometer and an LTQ Orbitrap XL Hybrid Ion Trap are available, providing outstanding tools for advanced proteomics. Both instruments are coupled to specialized RSLCnano systems for peptide separation



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University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca stands as a diverse research consortium, uniting experts in chemical engineering, food engineering, process technology, and biochemistry. The group is actively engaged in a spectrum of research and development initiatives within the realm of food technology, focusing particularly on the industrial sector. Their primary emphasis lies in pioneering innovative approaches to food processing and the development of novel functional food products and ingredients. Within the framework of the FRIETS project, UASVMCN assumes a pivotal role in optimizing extraction processes, encapsulation, and freeze-drying methodologies. Their research extends to the comprehensive characterization of extracts. the study of fungal prevalence, quality assessment, and the evaluation of shelf-life. By leveraging their multidisciplinary expertise, UASVMCN is at the forefront of advancing methodologies and technologies in the pursuit of enhancing food processes and creating highquality functional food products and ingredients.







The Cyprus Institute of Neurology & Genetics (CING) is established in Nicosia, Cyprus and has commenced operations in 1990. It is a medical and biomedical translation center, which is probably the most successful model nowadays as it combines education, service and research activities in one center, providing major medical benefits to the people, society and the country. CING was one of the first, and today one of the best, examples in Europe where postgraduate education, research and service have been successfully combined. In particular, the Department of Cancer Genetics, Therapeutics & Ultrastructural Pathology (Beneficiary in RIA4FOOD) provides a spectrum of diagnostic services on various types of cancer and other disease pathologies as well as conducts research activities in the areas of cancer genetics / epigenetics, cancer therapeutics, nutrition and cancer, among others. To this end, the department is involved in various research proposals some of which include Horizon 2020, Horizon-Europe and various Marie Sklodowska-Curie actions.



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NovaMechanics (NovaM) is an SME based in Cyprus with over 10 years of experience in R&D projects. NovaM focuses on developing scientific solutions and software tools in the fields of chem/bio/nano informatics, simulation, and medicinal & materials chemistry. NovaM applies state-of-the-art mathematical techniques to create, implement, and interpret validated predictive models for big data computer-aided drug analysis, discovery. and materials science. NovaM's goal is to increase profitability, reduce risk, and decrease experimental costs in the process of designing and producing new materials or drugs by conceiving new modeling ideas and designing and performing simulations, testing, and validation procedures. NovaM's staff has strong managerial and scientific expertise in large-scale projects scientific R&D (>12M). NovaM has participated as a major partner or coordinator in over 35 EU & National funded multidisciplinary research projects (23 European projects ) in the areas of Data Analytics, Cheminformatics & Nanoinformatics, Machine Learning Artificial Intelligence, / Personalized Medicine, Drug Discovery, and Materials Simulations and Design.







Inspire Science (INSPSCI) is a pioneering company dedicated to advancing the science of nutrition. INSPSCI's overarching mission is to inspire positive change in how we approach food and nutrition. Through a culture of scientific inquiry and effective communication, the company aims to contribute to a healthier and more informed society. Beyond research and dissemination, INSPSCI implements strategic actions to optimize project value and strengthen its impact. This includes innovative methodologies, collaboration with industry research leaders. and the development of evidence-based recommendations.



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Our collaborative initiative brings together a diverse group of nations, working in synergy and leveraging each country's unique strengths for a collective impact.



In the realm of scientific exploration, we embark on a journey to unlock the secrets of nature's bounty, merging cutting-edge research with the art of functional food development. Our commitment is to pioneer a new era of wellness, where the harmonious communication of science and nutrition creates a tapestry of health, vitality, and longevity for all.





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## Project Work Packages





WP1. Metabolomic profile of fresh and osmotic sea buckthorn

#### Duration months: 1-45

**Objectives:** (1) Define the metabolites of the different SB varieties. (2) Compare the metabolomic profiles of fresh and osmotic SB. (3) Provide feedback for the optimization of cultivation and processing.



WP2. Evaluation of fresh and osmotic sea buckthorn effect on in vitro human-relevant disease models

#### Duration months: 4-21

Objectives: (1) Assess SB of disease-preventive properties (anti-cancer, antiinflammatory, gut microbiota regulating) of SB. (2) Determine the metabolomic, epiproteomic and proteomic changes incurred by fresh and osmotic fractions of SB. WP3. Association of sea buckthorn metabolic. epiproteomic, and proteomic signatures on human physiology

#### Duration months: 1-45

**Objectives**: (1) Assess SB metabolites as disease risk biomarkers (2) Determine the pathways through which SB sustains human health. (3) Compute algorithm to an facilitate the design of functional food products of tailored SB bioactive ingredients' consumption..



WP4. Formulation of new functional food products of tailored health benefits

#### Duration months: 22-48

**Objectives**: (1) Testing *in-vitro* the SB bioactive compounds' release and bioavailability in the gastrointestinal tract;

(2) Development and optimization of tailored functional food products, equilibrated from nutritional and bioactive point of view, and optimized to fulfil all the necessary conditions to be marketed in complete safety



## WP5. Sustainability assessment

**Duration months:** 13-48 **Objectives**: (1) Quantify the environmental impact of the different final food products. (2) Identify the environmental hotspots and the possible mitigation solutions for the different final food products



WP6. Dissemination, communication, and impact strategy

#### Duration months: 1-48

Objectives: (1) Continuously present and promote project results ensuring large awareness of the academic community, industry and end-users; (2) Organize and deliver a set of newsletters and magazines, press releases, brochures and leaflets, posters and other printed materials, Web page construction together with on-line/social media dissemination strategies; (3) Organize and moderate of partner meetings and workshops; (4) Prepare the ground for the introduction of the project solutions in European markets.



WP7. Project management

#### Duration months: 1-48

Objectives: (1) Supervise and confirm seamless collaboration between project partners (2) Guarantee overall project planning and prompt risks' alleviation (3) Ensure effective coordination and progress monitoring. (4) Coordinate project on technical and financial level meetings (5) Arrange project (6) Represent the project consortium towards the EC and delegates of other projects (7) Coordinate internal & external (to the EC) reporting and documentation



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## Dissemination materials



To effectively communicate the goals and progress of the RIA4FOOD project, we have created a range of dissemination materials designed to engage and inform various stakeholders.



### **Promotional materials: Brochures**



### **Promotional materials: Leaflets**



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## Dissemination materials



These materials aim to enhance visibility, encourage collaboration, and foster a deeper understanding of the RIA4FOOD initiative.



### Promotional materials: Poster



## Promotional materials: Bookmarks



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## Social Media and Events



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## RIA4FOOD .

HORIZON-MSCA-2022 Multi-Actor Research and Innovation...

Cluj







## **RIA4FOOD**

@RIA4FOOD · Un abonat · 1 videoclip

Mai multe despre canal ...mai multe

Personalizează canalul

Gestionează vic



RIA4FOOD 43 posts

HORIZON-MSCA-2022-Multi-Actor Research and Innovation Approaches for Food Functionality



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## Social Media and Events



## Superfoods Festival

#### Period: 24.04.2024-28.04.2024

Target audience: Food sector, Organizations, Associations of stakeholders, Professionals and consultancy.







## 3rd FRIETS Project Workshop

#### Period: 21.05.2024

Target audience: Higher Education (teachers, researchers), Research centers, Organizations







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## Social Media and Events



## European Researchers' Night in Cluj-Napoca

#### Period: 27.09.2024

**Target audience**: Higher Education (teachers, researchers), Research centers, Organizations, Associations of stakeholders.







## European Researchers' Night in Cyprus

#### Period: 21.05.2024

Target audience: Higher Education (teachers, researchers), Research centers, Organizations







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## Secondee Experience



Dimitrios (REZOS to USAMV)

During his secondment at USAMV, Dimitrios gained valuable experience in using a three-phase in vitro static digestion model for fresh and osmotic Sea Buckthorn. Many thanks to the **RIA4FOOD** project for enabling this rewarding collaboration with an excellent team.







## Diana Plamada (USAMV to REZOS)

"My time at REZOS was an incredibly enriching experience. I gained valuable insights into the principles of Smart Agriculture and the practical applications of crop cultivation, harvesting, and storage. Working with the Smart Agriculture Tools at the "Hippocrates Farm" provided hands-on experience in data collection and analysis. This exchange between academia and industry was invaluable, as it allowed me to see firsthand the challenges and the opportunities facing agricultural sector today."



## Venetia Tragkola (CING to REZOS)

"Joining RIA4FOOD the secondment programme was truly transformative and expanded my skillset through working with specialists in the field. During my secondment in REZOS BRANDS, I had the opportunity to learn how to keep records of crop cultivation, harvesting and storage conditions as well as data acquisition from Sensors. Furthermore, I learned how to analyse the agricultural data extracted (such as temperature, humidity, rainfall, soil moisture, and wind speed and direction) based on both months and seasons. I'm grateful for the opportunity to contribute to this project and to see how the skills of other professions can be applied to our jobs. It was truly a unique experience."





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## Secondee Experience





## Amalia Antal (INSPSCI to UPAT)

"I recently had the privilege of visiting the University of Patras as part of the RIA4FOOD project. During this time, I contributed to the metabolomic profiling of fresh and osmotic sea buckthorn, with a focus on the development and optimization of extraction protocols. I would like to extend my gratitude to the outstanding team for their warm welcome and productive collaboration. Looking forward to future advancements in this exciting field."



Panagiotis (REZOS to CING)

During his secondment at CING, Panagiotis was trained on various protocols and methodologies relevant to the assessment of the anti-inflammatory properties of each Sea Buckthorn fraction (fresh and osmotic). This secondment provided him with valuable experience and knowledge, allowing him to collaborate with an outstanding team of researchers and develop skills in the field.







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## Messages from Our Partner Coordinators

In this section, we are pleased to share insights from the dedicated coordinators of each RIA4FOOD partner organization. Each coordinator brings a unique perspective, reflecting their team's role, expertise, and vision for advancing our shared goals. These messages highlight the collaborative spirit, innovation, and commitment driving the project forward. As you read, you'll discover each partner's priorities, progress, and hopes for the future of functional food development. Together, we are paving the way for a healthier, more sustainable food landscape.



**REZOS BRANDS** 

"We are excited to coordinate the RIA4FOOD project, utilizing sea buckthorn and multidisciplinary technologies to develop functional foods with proven health benefits. Our goal is to enhance food quality and sustainability, addressing global food demands and health needs. Looking ahead, this collaboration between diverse disciplines promises positive impact within our community and the food industry."

> Marianna Lagonikou, project coordinator



## USAMV Cluj-Napoca

"The RIA4FOOD project is a great chance to improve our food systems. We are excited to work with our partners to find practical solutions that can help our community and the food industry. I look forward to seeing the positive changes our efforts will bring."

Dan Vodnar, Senate President of University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca



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## **INSPIRE SCIENCE**

"The RIA4FOOD project is an exciting opportunity for us to collaborate in advancing food research and innovation. We are excited to work closely with our partners to collectively find impactful solutions, and we anticipate not only the benefits our work will bring to the community and food industry but also our role in disseminating these outcomes."

Amalia Antal, PhD scientific researcher



## | University of Piemonte Orientale

"The RIA4FOOD project is introducing a new framework for functional food design. Food and health sciences together for the development of food of the future"

> Prof. Marcello Manfredi, DiMeT, Biochemistry



## | Biomedical Sciences Research Center "Alexander Fleming"

"I always wondered what defines a superfood? Now I have the opportunity to test by myself what will happen after giving a superfood extract to our cells! Will the proteome change? Will histones react?"

> Martina Samiotaki, PhD, Proteomic Operational Scientist



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## | The Cyprus Institute of Neurology & Genetics

"Our research has been primarily focused in identifying various dietarybased phytochemicals with potential therapeutic lanti-cancer. antiinflammatory, anti-aging, etc.) properties. RIA4FOOD is giving us the opportunity to document a potential therapeutic value of a superfood in a more holistic approach. It is indeed our inspiration to being able to translate basic scientific findings into consumer products of potential added value."

Prof. dr. Mihalis Panagiotidis, senior scientist & department head



## University of Patras

"Our research activities in RIA4FOOD project is focused on the establishment of experimental protocols to extract the most significant bioactive ingredients of the Sea Buckthorn berries and monitor via a wide-range of biophysical methods (with bioNMR spectroscopy being at the core of our activities) their concentration and integrity through the production and processina pipelines. Collaboration with RIA4FOOD beneficiaries, will allow us to identify the metabolites of the different SB varieties, define the metabolomic profile of fresh and osmotic sea buckthorn and finally to provide feedback for the optimisation of cultivation and processing. This will also be exemplary on how agri-food sector can implement and exploit UPAT's established stateof-the-art scientific tools in the production of value high-nutrient food products and functional foods."

> Prof. Georgios A. Spyroulias, Departament of Pharmacy



## NovaMechanics

RIA4FOOD "As part of the project, NovaMechanics is excited to bring our expertise in AI and machine learning to support the development of functional foods. Our role involves creating a predictive nutritional algorithm with the aid of the Analytics Platform, advancing Isalos sustainable, science-backed innovations in the food industry."

> Antreas Afantitis, PhD, Managing Director



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## Connect with Us

Stay informed and get involved with the RIA4FOOD project. For more information, please reach out through the following channels.

## Connect with Us

Scan the QR code below to access our Linktree for all RIA4FOOD resources, updates, and social media channels in one place.

Stay up-to-date and explore everything we're working on with just one click!



## Thank You for Your Support!

Thank you for following the RIA4FOOD journey.

Together, we're creating a future where science and nutrition come together for lasting health and wellness. Stay tuned for more updates!



