Participant	EFEVRE TECH LTD		
Short name	EFEVRE	Type	SME
Role	Coordinator	Country	Cyprus
Website	www.efevre.com		

EFEVRE TECH LTD

Brief description of the participant

EFEVRE (named after a Greek word meaning 'to invent'), is a Biomedical engineering SME focusing on developing high quality technological solutions intended for the global healthcare market. EFEVRE (www.efevre.com) was founded in Cyprus by three highly skilled and passionate individuals in their respective scientific fields: Dimitris Kyriakou, PhD in Molecular Biology, Antonios Inglezakis, Masters in Electronics and Computers engineering and Embedded systems engineering and Constantinos Odysseos, Mechanical Engineer. EFEVRE aspires to generate a series of robotic products for life-science researcher and diagnostic analysis. One ambitious project of EFEVRE is AMGEL, an adjustable robotic system that can automate any laboratory procedure autonomously - without the need of experienced laboratory personnel to be present. Since its establishment, EFEVRE managed to acquire two competitive funding grants through Research and Innovation Foundation of Cyprus (START-UPS grant) and the Cypriot Ministry of Industry and Commerce (Young Entrepreneurship Award) with a combined value of approximately 120 thousand euros. Dr Kyriakou was the coordinator on both grants and he successfully saw them through completion. Also, Dr. Kyriakou and Mr. Inglezakis have prior expertise in the development of biotech devices currently in the market. In 2020, EFEVRE has been certified as an innovative company by the Cypriot Ministry of Trade. EFEVRE is supported by strategic collaborations and alliances both in Industry (consulting on business development / branding / marketing, investor acquisition, distributors, and biotech companies) and Academia (e.g. University of Cyprus (UCY), Cyprus Technological University (CUT), University of Nicosia (UNIC), European University of Cyprus (EUC) and Frederick University). AMGEL will be used as a tool for detecting microbes and other pathogens in feed, water, farm environment, meet or animal waste etc. to determine the pathogenic load in the farm and allow adjustment of antimicrobial drug doses and selection. AMGEL can run tests non-stop (autonomously) within a day thus generating big number of useful data for managing livestock health within 24 hours' time. AMGEL can automate microbiological laboratory procedures, genetic and molecular tests for detecting, identifying/categorizing, and quantifying multiple different microbes and pathogens (species-agnostic approach).

Role in the project

EFEVRE will be responsible for optimizing AMGEL technology as a tool for performing automated and autonomous microbial analysis of farm samples to generate meaningful information for the microbial loads and thus supporting the decision-making processes regarding reducing antimicrobial drugs and precision farming.

Team members involved in the project

Dimitris Kyriakou, **Coordinator** is the cofounder and CEO of EFEVRE TECH LTD and inventor of AMGEL. AMGEL was the vision of Dr Kyriakou as a solution born out of necessity, since during his PhD studies in life-science research (Epigenetics), he realized that most of his laboratory work was composed of mainstream repetitive tedious steps that cause result inconsistencies, which can be automated instead. Dr Kyriakou as CEO of EFEVRE TECH LTD has acquired able experience in project management since he is the Coordinator of the Project STARTUPS/0618/0021 which is co-financed by the European Regional Development Fund and the Republic of Cyprus through the Research and Innovation Foundation. In parallel he managed all financial and implementation aspects of a Youth enterprise grant form Ministry of Trade. Through his work he ensured the successful implementation and generation of the anticipated high-impact results of these two projects. Dr Kyriakou has also ample experience in the successful progression of technology developing

projects, including the successful implementation of an FP7 grant called 'Foodscan' during his employment in SK EMBIO DIAGNOSTICS LTD in Jan/2012-Nov/2013 and the successful organization of the scientific team during an industrial research program called BELD in July/2017-June/2018 at EMBIO. His involvement in the latter project has empowered him with the knowledge of all the necessary steps to formulate a new commercialized high-tech product from concept into the market. In fact, the CEO of SK Embio Diagnostics suggested Dr Kyriakou as candidate for the Cyprus Research Award for young researchers (CULTURE/AWARD-YR/0418) for his contribution in this project. Dr. Kyriakou was also involved in organizing large consortia for up to 15 entities (companies and universities across EU) during his last year of employment in SK EMBIO DIAGNOSTICS LTD. Dr. Kyriakou will ensure success of this project, through his experience, determination and focus. Dr Kyriakou has able experience in people management, since he has worked in a prestigious European Research Council (ERC) grant, where he assisted in managing 3 undergraduate students and one research manager towards the implementation and development of the project. Additionally, during his Post-Doctoral work in UCY, (2018-2020), Dimitris was responsible for the laboratory management and supervision of 5 junior researchers. As the CEO of EFEVRE TECH LTD, has supervised and instruct 2 interns and 4 employees. Collectively, Dr Kyriakou's background in life-science, experimental development and industrial research (Foodscan, BELD and AMGEL projects) will be essential to bridge the gap between industry and academia during this project and solve any problems through a swift and efficient resolvent.

Antonios Inglezakis, Electrical engineer and Computer expert is the co-founder of EFEVRE TECH LTD. He is a passionate electrical, electronics and computer engineer who loves to find solutions for problems. His engineering studies in Technical University of Crete, Greece provided the knowledge and the expertise in a wide range of Electronics and Computers Engineering. During his studies he was an active member on students open-source community and member of the innovation team Daedalus Aerial Platform, which awarded twice, once from Technical University of Crete innovation ideas awards (2011) and was on the top twenty finalists of the first call of Athens Center for Entrepreneurship and Innovation (2012-13). His interests are in the field of automation and systems integration along with open-source projects. From January of 2016 till 2018, he worked at SK EMBIO Diagnostics Ltd as Embedded Systems Engineer, developing a portable diagnostic device from scratch to final product. During, his employment at SK EMBIO Diagnostics Ltd, he designed and developed three working prototypes and developed the firmware (embedded software) for them. He has worked for the Project STARTUPS/0618/0021 for EFEVRE TECH LTD and he is currently actively involved in a procedure of the company. Summarizing, both the technical and scientific knowledge and his experiences with project implementation Antonios Inglezakis acquired during his studies and employment are key for the success of this project.

Constantinos Odysseos, Mechanical Engineer is a mechanical engineer with passion for engineering problems who joined and elevated EFEVRE core skills in 2019. He graduated from Cyprus University of Technology in 2019 with his Bachelor (BSc) in Mechanical Engineering and Material Science and Engineering with overall 7 out of 10. His bachelor thesis was related to the Design, Manufacturing and Programming of an Underwater Robotic Arm with 2 degree of freedom (DOF). During his studies took over some projects in the field of Mechatronics, Computer Aided Design and Manufacturing, Energy Systems, Mechanics and Dynamical Systems, Materials Science and Engineering. Currently, he is the operating engineer at Photos Photiades Distributors Ltd. Finally, he participated as a member of the External Evaluation Committee for the evaluation of the Foundation 'School of Automotive Engineering' (SOAE) and his curriculum 'Higher Diploma in Automotive Engineering'.

Katerina Marinou, Research manager is a biologist with a successful academic research career. She received her Bachelor (BSc) in Biological Sciences with overall GPA 8.07 out of 10 from University of Cyprus in 2012 and has proceeded to the successful completion of Master in Science (MSc) in Neuroscience in Neurodegeneration from King's College London (London, United Kingdom) in 2013. She worked as an assistant to a Post-Doctoral researcher and to repeat life-science experiments and also train the new BSc student on experimental

techniques. Katerina worked for EFEVRE TECH LTD as the Research manager of Project STARTUPS/0618/0021 and she has formed an excellent professional relationship with the EFEVRE team. She is currently working as a Personal Assistant next to a Medical Oncologist, thus she has developed her administrative and organization abilities and raised her interpersonal skills to a proficient level. Collectively, her assets, along with the good communication established with the other consortium members, will prove useful in the research management position of the proposed work.

Publications and/or products, services related to the project (max 5 publications)

Scientific publications that support the technological and scientific background of EFEVRE team :

1. Kyriakou D, Constantinou M, Kirmizis A. Synthetic dosage lethal (SDL) interaction data of Hmt1 arginine methyltransferase Data Brief 2020 Jun 21;31:105885

2. Molina-Serrano D, Kyriakou D, Kirmizis A. Histone Modifcations as an Intersection Between Diet and Longevity. Front Genet. 2019 Mar 12;10:192. doi: 10.3389/fgene.2019.00192.

3. Kyriakou D, Stavrou E, Demosthenous P, Angelidou G, San Luis BJ, Boone C, Promponas VJ, Kirmizis A. Functional characterisation of long intergenic non-coding RNAs through genetic interaction profiling in Saccharomyces cerevisiae. BMC Biology 2016 Dec 7;14(1):106.

4. Antonios Igglezakis, Antonios Deligiannakis, Aggelos Bletsas, "Geometric Monitoring for CSI Reduction in Amplify-and-Forward Relay Networks", ICASSP2014-Signal Processing for Communications and Networking.

Publication of AMGEL development report:

5.   https://www.linkedin.com/posts/dimitris-kyriakou-54209873_build-and-test-a-robotic-laboratory-angel-activity-6662436724368519169-Yid4

Previous projects or activities connected to the subject of this proposal

2020 United States Patent and Trademark Office (USPTO) - US provisional patent (Utility) 62,993/393 - on going.

2019 Research and Innovation foundation of Cyprus grant for AMGEL pilot testing in University of Cyprus (€93.000) - completed.

2018 Ministry of Energy, Commerce, and Industry of Cyprus grant for AMGEL prototype initiation (approx. €38.000) completed.

Description of infrastructure and/or technical equipment relevant to the proposal work

EFEVRE has all the necessary facilities, equipment, designing software and expertise to successfully carry out all its tasks in the project related to development of tools for monitoring and/or supporting livestock health.

Particularly, EFEVRE laboratory is fully equipped for designing and manufacturing new parts:

- SolidWorks, AutoCAD and SketchUp for designing,
- 3D printer, Plastic molding/bending equipment and CNC laser cutter for manufacturing prototype pieces, CNC milling machine
- Soldering station, multimeters, and other equipment for creating custom circuit boards (PCBs)
- Standard electronic and hand workshop tools
- Electronics (sensors, transistors, microchips, fuses, wires etc.)
- PCs with all software designing tools needed
- AMGEL design : Pipetting station, heating/cooling station, cooling centrifuge, shaking station, robotic arm, mechatronic-robotic systems, electronic control platform of AMGEL, electrical boards, and frame, Robotic operating system (software).