University of Cyprus
Department of Biological Sciences

Postgraduate Seminars

Seminar Series 2019 - 2020

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Co-founder, CEO
EFEVRE TECH LTD, Larnaca, Cyprus

"Reveal the secrets of life by hard work and robotic support!"

Wednesday, 8 April 2020, at 17:00
Building CTF (ΧΩΔ) 01, Room 110, Panepistimioupoli Campus

This seminar is open to the public

Thousand health science laboratories worldwide are facing the enormous task of analyzing the biological and cellular mechanisms associated with numerous diseases in an attempt to discover therapeutic targets and develop new efficient drugs. However, the performance of most experimental procedures is currently very time consuming thus, delaying drug discovery and increasing their cost. Additionally, more than 50% of experimental results are not reproducible revealing a huge problem in experimental inconsistency. The rising market of laboratory automation provide solutions to these problems, however only a fraction of experimental procedures has been automated so far. The majority of laboratory work is still performed manually using basic/core equipment, thus creating a bottleneck in the way of research progress and delaying the advancement of medicine. EFEVRE TECH LTD has developed a prototype device that provides automation to core laboratory procedures performed in health science laboratories, called Automate Molecular and Genetics Laboratory (AMGL). **AMGL will innovate the way life-science research studies are performed since it will:** **1)** Increase consistency by achieving high levels of reproducibility due to 100% robotic accuracy. **2)** Maximize efficiency due to its full autonomy and remote access capabilities. Thus, at least 3 times more experiments (24 hours) will be executed than before (8-hour manual work). Also overlapping experimental execution and mistake avoidance will increase efficiency. **3)** Generate results in cases of shortage in human resources. **4)** Save time for researchers, which they can utilize in other important research tasks (e.g. studying, conferences and publications). **5)** Reduce time and cost for drug development due to increased consistency and efficiency. **6)** Eliminate the waste of samples and reagents by estimated more than 50%. **7)** Document with pictures and video the progress of each experiment for troubleshooting. **8)** Harvest samples throughout the experimental procedure which could be used as efficiency controls. This task,

even though crucial for ensuring consistency of results, is very difficult to be performed manually due to time-constrains and the large number of samples needed. Through the collaboration with University of Cyprus we are aiming to the the significant improvement of AMGL prototype through testing in a relevant laboratory environment in order to significantly development its technological maturity and promote it towards a marketable, high added value product. The pilot testing of AMGL will be performed in collaboration with the Laboratory of Epigenetics and Gene Regulation at the University of Cyprus. Using AMGL, the scientific team will be able to efficiently explore the epigenome of more than 5000 distinct yeast strains in an attempt to discover the regulatory network of a cancer-related epigenetic mark (Histone H4 serine 1 phosphorylation). Collectively, viaAMGL project will result to the improvement and promotion AMGL towards the automation market offering a new way of addressing the everyday needs of health science research laboratories.