

AUTOPILOT, Automated High-Throughput Analysis of Cellular Phenotyping

Led by Prof. Andrew Kellett, Dublin City University



A first in Ireland, the high-throughput screening core, called AUTOPILOT, is an automated analysis and cellular phenotyping platform. It is a breakthrough robotic facility which provides seamless end-to-end workflows in therapeutic and diagnostic research through automated liquid handling, nano volume acoustic transfer, flow cytometry and cell sorting, and high-content imaging with AI machine learning. These automated workflows can deliver comprehensive cell characterisation and profiles of phenotypic states in 2D and 3D systems.

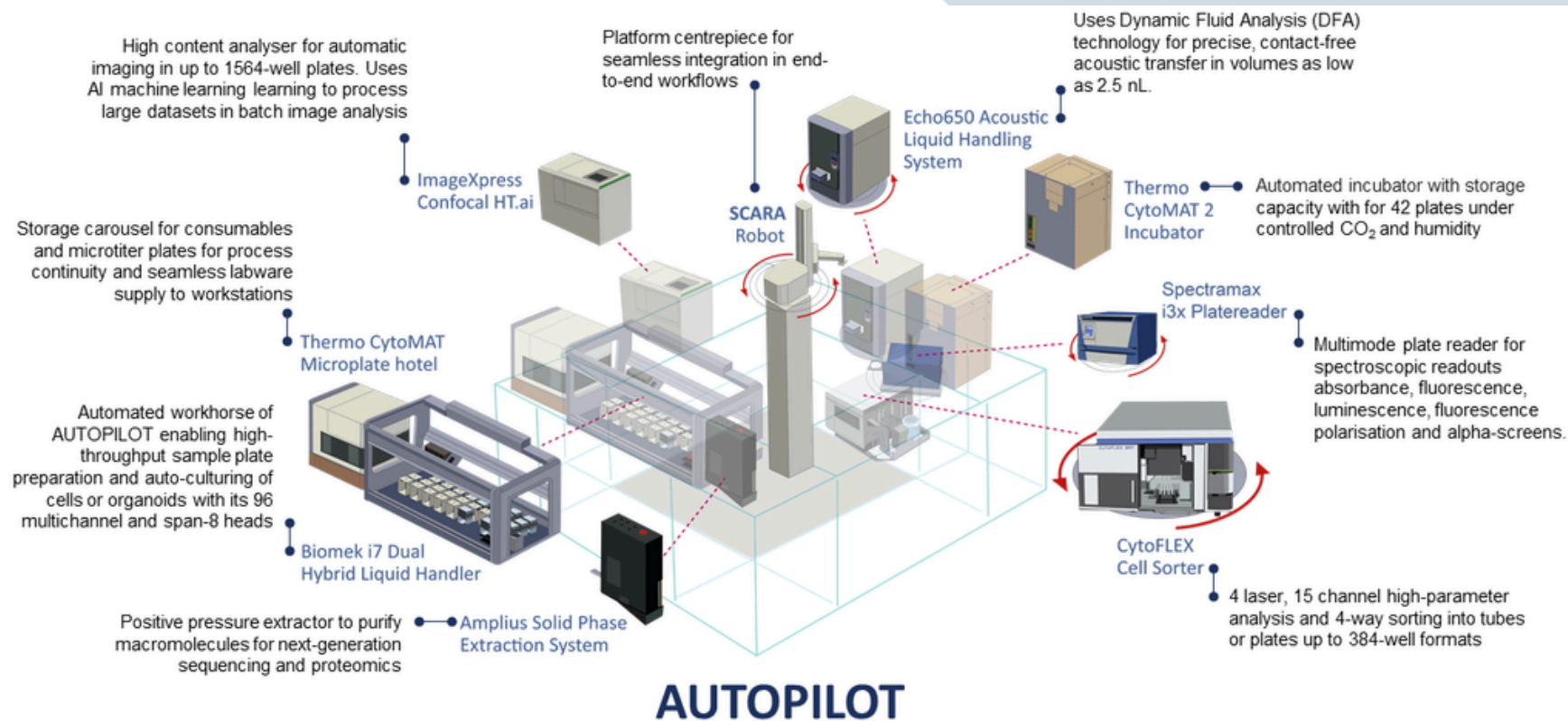
Why AUTOPILOT

Late diagnosis and a lack of curative treatments for aggressive cancers is likely to remain one of the most complex and expensive health issues of the 21st century in Ireland and beyond. Despite advances in our understanding of disease states and tandem targeted drug discoveries, clinical drug failure rates remain stubbornly high. This failure is partly associated with the analysis of complex disease states under narrow conditions with limited read-out and target pool screening capabilities.

This system is a breakthrough robotic automated cell culture characterisation suite that can address this limitation

The system comprises of the following components which are all integrated using a SCARA robot and housed in a specially designed Class II BSC enclosure:

- Biomek i7 Liquid Handler
- Echo 650 Acoustic Dispenser
- SpectraMax i3x Plate Reader
- CytoFLEX-SRT Cell Sorter
- ImageXpress Confocal HT.ai
- Amplus Solid Phase Extractor



Led by Prof. Andrew Kellett (School of Chemical Sciences), DCU was awarded €2.41M for the AUTOPILOT system from SFI's Infrastructure call. The proposal was developed as part of a team effort in collaboration with Dr Alex Eustace (Biotechnology, DCU), Dr Denis Collins (NICB, DCU), and Dr Creina Slator (Chemistry, DCU).

The AUTOPILOT system will be managed by DCU's Core Technology Team, please contact Una Prendergast (una.prendergast@dcu.ie) for further information

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