

Dundee University Invests £600,000 to Upgrade Imaging Facilities with Image Solutions (UK) Ltd

The DeltaVision family of live-cell imaging systems, supplied by Preston-based Image Solutions (UK) Ltd. (IMSOL), is helping to ensure that the College of Life Sciences at the University of Dundee maintains its premier position in Scotland for life sciences research.

Presently there are seven DeltaVision systems that form the heart of Dundee's College of Life Sciences Light Microscope Facility (LMF). Established six years ago, Dundee's LMF is extensively used by researchers at the "cutting edge" of life sciences research for investigating the biochemical and genetic mechanisms behind such diseases as cancer, diabetes, tropical disease and rheumatoid arthritis.

As part of a new Wellcome Trust award forming the new Wellcome Trust Center for Gene regulation and Expression, 4 of the existing DeltaVisions have been upgraded to the latest DeltaVision model, and a new DV core system has been recently installed following further investment from the Trust.

The newest innovation in the DeltaVision family of live cell microscopy systems, DeltaVision Core, is designed to enable scientists to image live samples over much longer periods of time and allows for imaging of live and fixed samples with greater speed and with significant improvements to signal over noise. Personal DeltaVision is designed for users who have similarly high demands in image quality without the requirement for system flexibility.

"We chose DeltaVision because it is the best in class for the majority of our applications when it comes to widefield microscopy. The improvements to speed of acquisition are such that we are able to learn about biological systems in a way that many other technologies simply don't allow. In addition, we do a vast amount of high resolution 3D imaging and are now able to work with samples with very low expression levels," explained Imaging Facility Director Dr. Sam Swift (see figure 1).

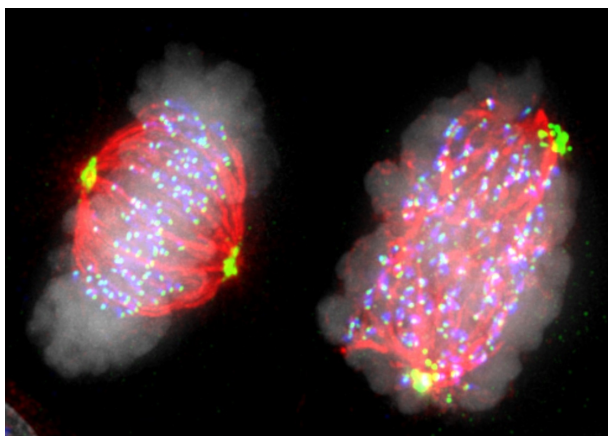


Fig 1: Control (left) or Bod1-depleted (right) HeLa cells fixed and stained to reveal chromosomes (white), microtubules (red), or spindle pole and kinetochore components (green). Three-dimensional images were recorded on a DeltaVision Spectris microscope, and deconvolved and projected using softWoRx. Images by Dr Iain Porter (Swedlow lab), University of Dundee.

One example of this work has been a joint effort between scientists at Dundee, the University of Southern Denmark and the University of Calgary in Canada. They used the time lapse imaging function of DeltaVision in combination with quantitative proteomics to identify a novel protein phosphatase 1 (PP1) targeting protein. PP1 is a ubiquitous serine/threonine phosphatase that regulates many cellular processes. The scientists were able to show that the protein Repo-man (Recruits PP1 Onto Mitotic chromatin at Anaphase) forms an essential complex with a specific isoform of PP1 and targets its activity to chromatin at specific times during the cell cycle.

“We have over 100 current users of the light microscope facility from a wide variety of research backgrounds. Their experience varies from first time users to highly experienced microscopists. We have found the DeltaVision platform to be highly suited to this environment. It has also proved extremely beneficial to have the same equipment throughout the Imaging Facility in order to meet the challenging demands of our user base. Aside from outright system performance, the DeltaVision software is very intuitive and very easy to learn, which also reduces the time we need to spend on training before users are able to acquire high quality data on these systems without supervision,” added Dr. Swift.

In fact Dr. Swift is so impressed that he recently oversaw the installation of a further DeltaVision Core system which is being heavily used to continue important work into the birth of neurons in developing tissues. He is also considering upgrading the facility’s RT model to Core as well.

Imsol Service and Support Manager Peter Sumner is also delighted. “At approaching £600,000, this has been our biggest installation and upgrade contract to date and our continued success is based on the excellent working relationship we have established with Dundee over many years.”