

# High Definition Haematology at the Royal Berkshire Hospital

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In 2009 the Royal Berkshire Hospital (RBH) made the decision to update its [microscope camera system](#). Located in the Haematology Department, the equipment originally consisted of a microscope mounted analogue video camera connected to a 21-inch professional monitor. This was used for presentations and training purposes for over ten years until it started to fail and display picture defects. Douglas Denton, a Biomedical Scientist within the department, was asked to research and find a replacement that could offer the same reliability whilst offering state of the art visuals.

## The Decision Process

The brief initially seemed quite simple; find a camera that was capable of outputting a digital picture that could be displayed on a large widescreen LCD monitor, ideally with screenshot capabilities that could be used to catalogue and record interesting cells. Whilst this in principle seemed straightforward, finding suitable technology was not. High definition video was still in its infancy in 2009 and although many of the digital microscope cameras supported greater resolutions they were heavily biased towards still images, square aspect ratios, and poor frame rates, thus lacking the fluidity of movement that was required. Many of the digital cameras required proprietary software and an accompanying computer. This was equipment that seemed excessive for such a simple task. A conscious decision was made to steer away from conventional digital morphology cameras and search within the high definition surgical video camera field. It was during this process that the Optronics Microcast® HD camera was trialled and chosen.

## High Definition Arrives

The [Optronics Microcast® HD™ Studio](#) is a powerful stand alone solution that consists of a camera and base unit. The camera is a small 9 oz. c-mountable unit that is capable producing high definition video at 1080p (1920 x 1080 pixels) at 60 frames per second. This ensures that all microscope stage movement is translated as smooth and fluid motion on attached displays. The technology employs 3 high resolution CCD arrays that ensure incredible clarity and colour reproduction.

The camera is directly connected to a small base unit which then provides the hardware to output the signal through a DVI socket to any consumer LCD that has an HDMI interface. At the touch of a button the base unit has the ability to directly record screenshots or video to a memory stick, even print to an attached printer. At no point is extraneous hardware required.

The technology must be seen to be believed: Auer Rods in AML blasts cells, the folds of clefted lymphocytes, and the cellularity of bone marrow trephines are some of the morphological features that can be seen with striking visual acuity.

## Presenting to the Masses

The Haematology Department currently has the system connected to a 40-inch Samsung LCD where it is used regularly to facilitate meetings, presentations and training. Fortnightly multidisciplinary team (MDT) meetings are held by the clinical haematology staff enabling presentation of interesting and challenging cases. Approximately 140 patients are presented each year where opinions are aired following presentation of the blood films, bone marrow aspirates, trephine biopsy and histology slides. Dr Stuart Mucklow, Chief Haematology Consultant at the RBH, comments that *"The increased*

*size, clarity and detail that the Optronics camera produces has enabled us to make the MDT meetings accessible to a greater number of staff members". Alternating with the MDT is an in house laboratory meeting. This meeting is purely aimed at laboratory staff and allows the more technical aspects of haematology to be discussed. Interesting blood films and NEQAS EQA slides are often shown as a skills update to experienced staff and as a teaching lesson for the more inexperienced.*

The secondary functions of the unit have also been well received. The screen capture function has been particularly utilised. Not only do medical staff use it to capture pictures for publication, but it has facilitated the gathering of evidence for the IBMS registration portfolio. Chris Doherty, a Trainee Biomedical Scientist at the RBH says *"The camera enables me to capture screenshots at the touch of a button which are then saved directly to my memory stick for use in my portfolio. Not only can I quickly acquire images of the usual haematological disorders but I can also use it to produce more practical images, such as the effect of a poorly spread blood film on the distribution of the red cells."*

## **Future Proof**

Three years later and the Microcast® HD™ camera is still the only high definition 1080p video solution for microscopy on the market. Since the system has been installed it has been well received by clinical and laboratory staff alike who are amazed at the detail achievable. It is conceivable that the unit is future proof until a new higher definition resolution is introduced; however, currently the only limit seems to be only the optics that are attached.

## **Reference**

The Optronics Microcast® HD™ Studio is distributed in the UK by [Grafton Optical](http://Grafton Optical). For additional information on North American distribution please visit: [www.optronics.com](http://www.optronics.com)