

# Flow Cytometry

[www.cambridgecancer.org.uk/research/coreresources/flowcytometry](http://www.cambridgecancer.org.uk/research/coreresources/flowcytometry)



Head **Greg Veltri**<sup>†</sup> (new head **Richard Grenfell** joins in January 2009)

## Principal Scientific Officer

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## Scientific Officer

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## Visiting Workers

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The Flow Cytometry core facility provides state-of-the-art flow cytometric instrumentation, technical expertise, training, and software analysis in a collaborative environment. Our mission is to develop cytometric technologies that will best assist CRI researchers in finding answers for the treatment, prevention, and understanding of cancer.

## Scientific Achievements

In its first two years of operation the flow core has played a key role in several experiments using the ImageStream, a piece of equipment that combines flow cytometry with microscopy. We have assisted in developing assays to examine mitochondrial function, apoptosis, phagocytosis and nuclear translocation. We collaborated with the Neal laboratory to quantify the integration of clathrin and tubulin staining on DT40 cells and to isolate the mitotic phases.

Studies in development include the isolation of circulating tumour cells in human peripheral blood, isolation of mammary tumor side populations, chromosome sorting for DNA sequencing and CHIP arrays, and a collaborative pilot study with the Hemato-Oncology Diagnostic Service at Addenbrooke's Hospital in leukaemia diagnosis.

## Services

Our lab offers a full range of educational and cytometric services that includes immunophenotyping, cell cycle analysis, translocation and co-localisation of cell activation markers, chromatin density, and apoptotic and necrotic analysis. In addition we are capable of performing cell sorting for researchers so that they can isolate cell populations needed for further studies.

Users are offered an array of educational programs in the theory, anatomy, applications and science of flow cytometry. Additional workshops are offered on data analysis using all our software programs and on practical applications of current protocols in cytometry.

## Equipment

**FACS Aria SORP (BD Biosciences)** – The Aria is a high-speed sorter. It is equipped with five lasers: a UV, 407nm, 445nm, 488nm, and 633nm. Our optical configuration allows us to see three UV, six violet, three indigo, six blue and three red parameters.

**LSR II (BD Biosciences)** – The LSR II is an analytical bench top flow cytometer. It is comprised of four lasers: a UV, a violet (407nm), a blue (488 nm) and a red (633 nm). Our optical configurations allow users to see two UV, six violet, seven blue and three red fluorescent parameters.

**FACS Caliburs (BD Biosciences)** – These flow cytometers are routinely used for phenotyping (to look at antigen, cytokine, or GFP expression), cell cycle analysis, and apoptosis studies. They are equipped with 488nm and 635nm lasers that allow users six parameter analysis.

**ImageStream (Amnis)** – The powerful combination of quantitative image analysis and flow cytometry in a single platform creates exceptional new experimental capabilities. 405nm, 488nm and 635nm lasers for four colour/six parameter analysis as well as EDF capability for FISH analysis are available.

**RoboSep (Stem Cell Technologies)** – This magnetic bead separator unit has customizable programs allowing positive or negative selection of virtually any cell type from any species. Up to four samples can be processed simultaneously.

**Vi-CELL (Beckman Coulter)** – The Vi-CELL automates the widely accepted trypan blue cell exclusion method, with video imaging of the flow-through cell, to obtain results in minutes. The software conforms to key regulatory requirements with its electronic signature capability, audit trail, secure user sign on and user level permissions for clinical or preclinical studies.

**Publications listed on page 63**

<sup>†</sup>Joined during 2008 <sup>†</sup>Left during 2008