2000-2001
RESEARCH CYTOMETRY LABORATORY
SUMMARY OF ACTIVITIES

The Research Cytometry Laboratory (RCL) provides a wide range of cell-analysis techniques including three-color immunophenotyping, apoptosis quantitation, GFP detection, cell sorting and cell cloning, immunofluorescence detection of intracellular markers, confocal fluorescence imaging and 3-D reconstruction, DNA (ploidy) analysis, and cellular activation studies such as kinetics analysis of intracellular Ca^{++} and pH modulation.

Instrumentation in the Laboratory includes a triple-laser Leica TCS SP2 confocal laser scanning microscope, dual-laser Becton Dickinson FACSVantage SE flow cytometer, Photon Technology Incorporated (PTI) M-Series fluorescence detection system, Molecular Devices Cytosensor microphysiometer, Olympus BX50 fluorescence microscope, and an Olympus SZX12 stereo zoom microscope.

Laboratory Utilization (through Aug 31)	2000-2001	1999-2000
FACS flow cytometer - samples	1,091	1,770
Leica TCS confocal miscroscope - hours	70	[purchased 9/00]
Olympus fluorescence microscope - hours	66	[acquired 1/01]

Sixteen investigators representing the following eight areas used the services of the RCL during 2000-2001: Biochemistry and Molecular Biology, Microbiology and Immunology, Pediatrics, Pharmacology, Physiology, the Transgenic Laboratory, Cell Biology and Neuroscience, and Orthopaedics.

Director's Evaluation of the Laboratory

Overall activity was down approximately 40%, compared to last year, based on the dollar amount of invoices for services rendered. Faculty education and awareness are the keys to greater utilization of the Laboratory and toward this end we will increase our efforts to publicize its capabilities through Internet notices, mail-outs, and personal contact.

Future Directions

Funds from the Shared Instrumentation Grant will also make possible the purchase of a cooled CCD camera for acquisition of images from both the Leica confocal and Olympus standard fluorescence microscopes and a stage incubator for viable samples. In the near future, we hope to add UV-excitation capabilities to the confocal microscope (for visualization of DAPI-stained nuclei) and TurboSort to the FACSVantage (providing sort rates of up to 25,000 cells/sec).

Extramural Support

Active

NIH DRR/BRS Shared Instrumentation Grant
"Leica TCS SP Spectral Confocal Microscope"
1 S10 RR13732-01A1
R.B. Hester, P.I.
9/01/2000 to 11/31/2001
$336,843.

Publications

A.W. Pearsall, J.A. Tucker, and R.B. Hester. Osteochondral Tissue Transfer. Cell Viability and Electron Microscopy Analysis. Transactions of the 4th Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Europe, and Japan, Rhodes (Greece), p. 243 (2001).