

2008 Northwest Regional Cytometry Meeting



Aerial tram, Peter O. Kohler Pavilion, OHSU

New tools for cytometry and cytomics, including new reagents, techniques for better integration between platforms, and automated, high throughput acquisition, are extending the successes of flow cytometry. Time-related and quantitative marker interaction, adding a dimension of dynamics, localization, and context to cell measurements, is reshaping the science. Characterization of single cells and cell signaling, with less ensemble averaging, is transforming cytometric research, informing clinical practice, and opening new commercial opportunities, promising to provide real dividends for health in individualized medicine and drug discovery. Taking advantage of these tools, however, still presents a challenge, as much work remains to be done in data management, and in integrating cytometric and -omic platforms. Together with developments in single molecule detection, these new tools may well be instrumental in securing the "holy grail" of cell biology, which is, in addition to acquiring a parts list, obtaining a systems understanding of cell mechanisms. Please join us for some topical and likely spirited discussions.

J. Paul Robinson, "Cytometry and cytomics: More integrated platforms and functional assays are in the offing"
Peter Krutzik, "High-content screening and drug discovery with phospho-specific flow cytometry"
Dorothy Lewis, "Human CD4 T cell response to mitogenic CD28: combining flow with microarrays"
Ger van den Engh, "The practical aspects of sorting for single cell genomics and proteomics"
Ed Walker, "Sub-phenotype signatures of tumor Ag-specific T cells: heat map and cluster analysis"
Chris D. Geddes, "Metal-enhanced fluorescence: A paradigm shift in the way we both use and think about fluorescence spectroscopy"
Alan Waggoner, "Molecular biosensors for studying regulatory systems in living cells"
Bob Murphy, "Can machine learning methods that work in image cytometry help us do better flow?"
Bob Zucker, "QA in flow cytometry and confocal microscopy: How much is translatable?"
James Jacobberger, "Time, biochemistry, and cell states: Role of cytometry in systems biology"
Larry Sklar, "HTS multiplexed flow cytometry for NIH Discovery: Lessons learned from an integrin cell adhesion target"
David Basiji, "Multiplexing and statistical validity in image-based assays"
Mike Samuels, "Biology in droplets: Cell-based and molecular assays using droplet-based microfluidics"
Iain Johnson, "What, where, and how much: fluorescent labeling technologies old and new for assessment of protein identity, cellular location, and abundance"
Rick Monsma, "High content analysis: Applications in drug discovery"
Doug Auld, "Applications of quantitative high-throughput screening (qHTS) in chemical genomics"
Ghislain Bonamy, "Pattern recognition in high-content and high-resolution imaging"
Michael A. Mancini, "Multiplex analysis of nuclear receptor function at the single cell level by high throughput imaging"

Flow and Imaging for an -omics era

March 13 – 15, 2008, at OHSU in Portland

ISAC is the premier society for development and application of hardware and software for flow and image cytometry (<http://isac-net.org>).



All talks are in the OHSU Old Library. The International Society for Analytical Cytology (ISAC) and the Flow Informatics and Computational Cytometry Society (FICCS) are co-hosting a meeting, 'Data standards and software tools for high throughput cytometry', Thursday, March 13, from 9:00am – 4:30pm. For information on this special, open to the public meeting, contact Ryan Brinkman at info@FICCS.org. An early evening session of the regional meeting, a panel discussion on Minimum Information Standards, begins at 4:30pm on Thursday. Also on Thursday is an Intracellular Cytometry course, taught by Dr. Dorothy Lewis. For registration for the FloCyte course, contact Sue DeMaggio at www.FloCyte.com. The Friday program begins at 8:00am (registration opens at 7:30am), and continues to 6:15pm, followed by a buffet reception in Kohler Pavilion. The Saturday program begins at 8:30am, and continues to 5pm. All talks are free and open to the public - the \$25 registration fee helps with the cost of lunches and the Friday buffet. For registration, or for further information, contact the program coordinator, Allan Kachelmeier, at kachelme@ohsu.edu or 503-494-2373.

Flow and Imaging for an ~omics era



View of Portland from the Kohler aerial tram station

Schedule of events

Thursday, March 13

FloCyt course, "Intracellular cytometry", taught by Dr. Dorothy Lewis. A 10% discount is offered to those also registered for the 2008 NWRM. For FloCyt course registration, go to www.FloCyt.com. FICCS is hosting a meeting, 'Data standards and software for flow cytometry', from 9am to 4:30pm. Contact Ryan Brinkman at info@FICCS.org for more details. The meeting targets vendors, but is open to all. Early evening panel on **Minimum Information Standards**, discussion across platform and from a user's perspective, including Ryan Brinkman, PhD, BC Cancer Research Center, (MIFlowCyt); Shannon McWeeney, PhD, OHSU, (MIAME); Bob Murphy, incoming ISAC president, panel chair (PSLID and OME); Mark Collins, PhD, Cellomics (MIAHA); Janko Nikolich-Zugich, PhD, OHSU Vaccine and Gene Therapy Institute; Janet Siebert, Pres., CytoAnalytics. MIS are relevant to data-mining and publication.

Friday, March 14

J. Paul Robinson, SVM Professor of Cytomics, Veterinary Medicine, Purdue, "**Cytometry and cytomics: More integrated platforms and functional assays are in the offing**"
Peter Krutzik, PhD, Senior Scientist, Immunology, Stanford, "**High-content screening and drug discovery with phospho-specific flow cytometry**"
Dorothy Lewis, PhD, Professor, Baylor College of Medicine, "**Human CD4 T cell response to mitogenic CD28: an example of combining flow with microarrays**"
Technology forum, including Mark Munson (Verity Software) 'GemStone™: A new analysis paradigm for multiparameter flow cytometry'; Mike Olszowy, PhD (Invitrogen/Probes) 'New proliferation assays and Qdot conjugates'

Ger van den Engh, PhD, Research Professor, Oceanography, University of Washington, "**The practical aspects of sorting for single cell genomics and proteomics**"

Ed Walker, Director, Laboratory of Immunological Monitoring, Earl A. Chiles Research Institute, Franz Cancer Research Center, Providence Portland Medical Center, "**Sub-phenotype signatures of tumor Ag-specific T cells: heat map and cluster analysis**"

Flow cytometry forum, including Fred Seibert (Dako) 'What's Dako up to?'; Matt Alexander, PhD (Beckman Coulter) 'Database, fluorescence normalization, and liquid handling features of the Cell Lab Quanta'; Jack T. Ball (Accuri Cytometers) 'The how-to of low cost cytometry'; Fred Molnar (iCyt) 'GMP cell sorting on the iCyt Reflection platform'; Rock Pulak (Union Biometrica), 'Analysis of two-dimensional fluorescent spatial localization using COPAS™ flow cytometry'; Larry Duckett (BD), 'Special order research products'

James Jacobberger, Professor of Oncology, Case Western, "**Time, biochemistry, and cell states: Role of cytometry in systems biology**"

Alan Waggoner, Director, Molecular Biosensor and Imaging Center, Carnegie Mellon, "**Molecular biosensors for studying regulatory systems in living cells**"

Technology forum on cell signaling, including Helen Cha-Roberts, PhD (Cell Signaling Technology) 'Analyzing cellular signaling using phosphorylation, acetylation, methylation, and ubiquitination specific antibodies'; Robert Balderas (VP for R&D, BD Biosciences) 'Novel flow cytometric techniques for analysis of protein phosphorylation and signaling networks'

Bob Murphy, Professor, Biological Sciences, Biomedical Engineering, and Machine Learning, Carnegie Mellon, "**Can machine learning methods that work in image cytometry help us do better flow?**"

Bob Zucker, PhD, Research Biologist, Reproductive Toxicology, US EPA, "**QA in flow cytometry and confocal microscopy: How much is translatable?**"

Instrumentation on demo at the meeting include an Accuri C6 flow cytometer, BD Pathway 435 confocal HCA system, Beckman Coulter Cell Lab Quanta, CompuCyt iCys imaging cytometer, Cytex AMS 96-well autosampler and 5-color FACScan with FlowJo Collector's edition software, Dako MoFlo XPD cell sorter, Guava EasyCyt Plus cytometer, HyperCyt by IntelliCyt, Miltenyi autoMACS pro separator and MACSQuant analyzer, Partec volumetric flow cytometer, Thermo Fisher Scientific Cellomics ArrayScan VTI HCA system, and TTPLabtech Acumen eX3 microplate reader.

Schedule of events continued

Larry Sklar, Regents Prof. of Pathology, Distinguished Prof. of Pharmacy, University of New Mexico, “**HTS multiplexed flow cytometry for NIH Discovery: Lessons learned from an integrin cell adhesion target**”

Friday evening, buffet reception at Kohler Pavilion

Saturday, March 15

Parallel tutorials in imaging cytometry, microarrays, confocal microscopy, and mass spectroscopy (Mark Verado, PhD, CompuCyte Corp., ‘Imaging cytometry: applications and technology advances for plate-based systems’; Dorothy Lewis, Chris Harrington, PhD, Dir., OHSU Gene Microarray Core, ‘Beginning microarrays for flow jocks’; John Jordan, Olympus, Bob Zucker, ‘How quantitative is confocal microscopy?’; Rick Monsma, Larry David, PhD (OHSU Proteomics Core) ‘Mass spec: Introduction and relevance to drug discovery’)

Chris D. Geddes, Director, Institute of Fluorescence, University of Maryland, “**Metal-enhanced fluorescence: A paradigm shift in the way we both use and think about fluorescence spectroscopy**”

David Basiji, PhD, Pres., Amnis, “**Multiplexing and statistical validity in image-based assays**”

Mike Samuels, PhD, RainDance Technologies, “**Biology in droplets: Cell-based and molecular assays using droplet-based microfluidics**”

Iain Johnson, PhD, Molecular Probes, “**What, where, and how much: fluorescent labeling old and new for assessment of protein identity, cellular location, and abundance**”

Michael A. Mancini, PhD, Baylor College of Medicine, “**Multiplex analysis of nuclear receptor function at the single cell level by high throughput imaging**”

Technology forum, including Adam Treister (FlowJo), David Novo, PhD (De Novo Software), Chiseng Huang, PhD (Chi-Square Works) ‘What software providers can do to alleviate analysis bottlenecks’; Doug Keene (Shriners Hospital) ‘Co-location of cell features in different imaging platforms’; Tania Vu (OHSU Biomedical Engineering), ‘Probing protein dynamics and protein-protein interactions at the single particle scale using Qdots’

Lunch roundtable sessions, including Helen Cha-Roberts, Alan Waggoner, James Jacobberger, Peter Krutzik ‘How to analyze cell signaling’; Chris D. Geddes, Iain Johnson ‘Making FRET work’ (Specific topics for this and other slots will depend in part on ‘votes’ of interest as tallied from the registration sheet. See the listing on the last page.)

Rick Monsma, PhD, Director of New Lead Discovery, Schering-Plough Research Institute, “**High content analysis: Applications in drug discovery**”

HCA technology forum, including Jim Borree, PhD (PerkinElmer/Evotec) ‘Confocal microscopy in high content/throughput screening: the Evotec Opera system’, Mark Collins, PhD (Thermo Fisher/Cellomics) ‘Innovative approaches to difficult drug targets using HCA’, Lori Krueger (BD) ‘Development of bioimaging certified reagents for high content cellular applications’.

Doug Auld, PhD, NIH Chemical Genomics Center, “**Applications of quantitative high-throughput screening (qHTS) in chemical genomics**”

Ghislain Bonamy, PhD, Genomics Institute, Novartis Research Foundation, “**Pattern recognition in high-content and high-resolution imaging**”

HCA panel discussion, ‘What are the obstacles to wider use of HCA, and how can they be overcome?’ – Doug Auld, Rick Monsma, Peter Krutzik, Mark Collins, Bob Murphy

Closing comments by J. Paul Robinson

The 2008 NW Regional Cytometry Meeting is an umbrella for a number of events. On Thursday, the International Society for Analytical Cytology (ISAC) and the Flow Informatics and Computational Cytometry Society (FICCS) will co-host a special meeting, ‘Data standards and software tools for high throughput cytometry’. FICCS is a group of bioinformaticists, software and hardware developers, and researchers sharing an interest in developing new software tools, methods, and standards for flow cytometry. The discussion will continue with an early evening session of the regional meeting, a panel discussion on Minimum Information Standards. The early Thursday evening session will also be opportunity to network, view posters, and talk with vendors. Also on Thursday is a FloCyt course, ‘Intracellular Cytometry’, taught by Dr. Dorothy Lewis (10% discount for NWRMC registrants). The Regional Cytometry Meeting per se begins on Friday morning, with a presentation by J. Paul Robinson setting the stage for the next two days. A buffet reception will be held Friday evening. The program has been explicitly designed to be of interest to both the flow and imaging community, with its focus on integration between platforms, new probes, and more automated methods. The program has also been shaped by an opportunity in Oregon for a new drug discovery pre-screening facility. Discussions over the course of the two days will evolve from a focus on tools and probes for a more dynamic view of cell processes, standards facilitating better cooperation, and machine learning methods, to more specific discussion on Saturday, largely high content analysis. Discussion of HCA includes an overview and exchange on challenges, e.g. storage of chemical libraries and data management. Topics will be of wide interest given the thrust of automation and the importance of systems cell biology.

Flow and Imaging for an omics era

The roster



J. Paul Robinson, SVM Professor of Cytomics in the School of Veterinary Medicine and professor in the Weldon School of Biomedical Engineering at Purdue University, is the director of the Purdue University Cytometry Laboratories, Deputy Director for Cytomics & Imaging in the Bindley Biosciences Center, and current President of ISAC. He is Editor-in-Chief of Current Protocols in Cytometry. Dr. Robinson's recent research focuses primarily on pathways of apoptosis related to ROS in mitochondria. He has an active interest in hardware and software tools such as multi-spectral cytometry, quantitative fluorescence measurement, and advanced classification approaches.



Peter O. Krutzik, PhD, is a Senior Scientist in the Garry Nolan lab at Stanford. He got his PhD in Molecular Pharmacology from Stanford where he was funded by a Howard Hughes Medical Institute Fellowship. A pioneer in phospho-specific flow cytometry, he has optimized the assay platform for high-content drug screening, and applied the methodology to profiling human and murine models in oncology, autoimmunity, and clinical immunology.



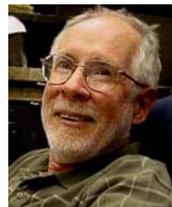
Dorothy Lewis, PhD, Professor in the Department of Immunology and Director of the Flow Cytometry Core Facility, Baylor College of Medicine. Dorothy did her postdoctoral work on autoimmunity in NZB mice with Dr. Noel Warner, and has continued this autoimmunity work at Baylor. At Houston she has primarily focused on HIV immune response. She is chair of the California AIDS Study section and Chair of the Los Alamos National Laboratory Flow Cytometry advisory committee. Her AIDS research is funded in part by a merit award from NIAID.



Ger van den Engh, PhD, Research Professor, School of Oceanography, University of Washington, and founder of Cytopenia, Inc. Ger is widely known for having developed the first commercial high speed sorter, the MoFlo. While at the Erasmus University in Holland in the 70's, he was among the first investigators to isolate stem cells by cell sorting. At LLNL he developed sorting techniques for chromosome isolation. As a founding member of the Institute for System Biology he pursued methods for single-cell genome analysis. Ger's dominant interest of late is isolation of microorganisms from ocean samples, work that has led to a simple, alignment-free cytometer for ocean monitoring.



Edwin Walker, PhD, Director, Laboratory of Immunological Monitoring, Earle A. Childs Research Institute, Franz Cancer Research Center, Providence Portland Medical Center. Dr. Walker's research studies are focused on the use of polychromatic flow cytometry analysis of the phenotype and functional properties of long-term self-tumor antigen-specific memory T cells in cancer patients receiving different immunotherapy regimens. His laboratory is greatly interested in understanding the tolerogenic mechanisms which regulate the differentiation and maintenance of tumor-specific memory T cells.



Alan Waggoner, Director, Molecular Biosensor and Imaging Center and NSF Science and Technology Center, Professor, Department of Biological Sciences, Carnegie Mellon University, has focused on development of fluorescence-based detection systems. The cyanine dyes his lab developed are widely used. He is currently leading development of micro-biosensors for studying regulatory processes in living cells. The new sensor units are generated by combining genetically engineered, target-binding proteins with environmentally sensitive fluorescent dyes that report target binding.



Chris D. Geddes, Professor and Director of the Institute of Fluorescence, University of Maryland Biotechnology Institute, has an international reputation in fluorescence spectroscopy, particularly in fluorescence sensing and metal-fluorophore interactions. He is editor-in-chief of the "Journal of Fluorescence" and of a recently launched journal "Plasmonics", as well as being the chair of one NIH study section and a permanent member of NIH's EBT. The Geddes group developed a technique for intensifying any fluorescence signature and, when combined with low-power focused microwave heating, provides for ultra fast and sensitive assays. Dr. Geddes has also postulated a unified plasmon-fluorophore theory to account for metal-fluorophore interactions.



Robert F. Murphy, Ray and Stephanie Lane Professor of Computational Biology and Professor of Biological Sciences, Biomedical Engineering, and Machine Learning, Carnegie Mellon University, has focused his career on combining fluorescence-based cell measurements with quantitative and computational methods. With earlier work analyzing endocytic membrane traffic by flow cytometry, his group later pioneered the application of machine learning methods to high-resolution fluorescence microscope images of subcellular location patterns, with this work leading to the first automated recognition of organelle patterns in 2D and 3D. He is currently leading a major effort to create a multi-institution, NSF-funded program in bioimage informatics, and is, as well, providing image informatic tools for the NIH-funded Center for Networks and Pathways at Carnegie and University of Pittsburg. Bob is President-elect of ISAC.



Robert Zucker, PhD, Research Biologist, Reproductive Toxicology Division, US EPA. Bob trained in biophysics at UCLA, doing his postdoctoral fellowship at the Max Planck Institute in Munich. He has been at the Environmental Protection Agency in North Carolina since 1985 where he has been doing reproductive toxicology using flow cytometry and confocal microscopy. Perhaps he is best known, however, for the series of articles he has written on quality assurance in confocal microscopy and flow cytometry. Bob has been a councilor for ISAC and is the current secretary of the society.



Iain Johnson, PhD, Biochemistry, University of Salford, UK, with postdoctoral work at the University of Oregon on time-resolved fluorescence of proteins. His work at Molecular Probes/Invitrogen is in product development, R & D, and technical communications. Iain has expertise in fluorescence spectroscopy, fluorescence microscopy, and high-throughput assays. He has been a longstanding faculty member of the UBC 3D Microscopy of Living Cells Course, 1997 – 2007, and is the author of the chapter on selection and application of fluorescence probes in Jim Pawley's [Handbook of Biological Confocal Microscopy](#), 3rd edition.



Larry A. Sklar (PhD, Physical Chemistry, Stanford) is Regents Professor of Pathology and Distinguished Professor of Pharmacy, Director of Basic Research in the NCI Designated Cancer Research and Treatment Center, and Director of Biotechnology Integration at the University of New Mexico Health Sciences Center. He has more than 275 publications and patents in leukocyte biology, molecular assembly in signal transduction and cell adhesion, and high throughput flow cytometry for drug discovery. He is PI and Director of the New Mexico Molecular Libraries Screening Center for the NIH Roadmap Molecular Libraries Initiative.

Flow and Imaging for an ~omics era

The roster continued

Reflections off cable car, Mt. Hood in the distance



James Jacobberger is Professor of Oncology, Associate Director for Shared Resources, and Director of the Cell Analysis Core at the Case Comprehensive Cancer Center, Case Western Reserve University. His research interests are in the organization and dynamics of fundamental cellular processes important in cancer, including cell signaling, the replication cycle, cell death, and maturation. Dr. Jacobberger has maintained a long-standing commitment to cytometry, serving on the Editorial Board of 'Cytometry', Associate Editor, and Reviews Editor for Cytometry (1999 - 2007), as well as on numerous study sections and review panels.



Mike Samuels, PhD, Project leader, Protein and cell applications, RainDance Technologies, got his PhD in Biochemistry from the University College of London working on signal transduction in *S. pombe*, and later did postdoctoral work at the UMass Medical Center on identifying chromatin modifying enzymes. Previous industrial work has included functional protein microarrays at Protometrix/Invitrogen, chemical proteomic technologies for kinase drug discovery at Cellular Genomics, and oncogenic kinase research at DNAX Research/Schering-Plough.



Michael A. Mancini, PhD, Associate Professor, Department of Molecular and Cellular Biology, Baylor College of Medicine. The Mancini lab investigates functional relationships between nuclear organization and transcription. Recent advances in ability to visualize transcription factor dynamics are providing new insights into molecular and cellular regulatory mechanisms. The lab focuses on the nuclear receptor superfamily and their co-regulators as a model system. Intranuclear organization and regulated dynamics correlate with transcription. They find that spatial and mobility characteristics are defined within minutes of adding ligand, long before transcription is detectable.



Doug Auld, PhD, received his Ph.D. in Chemistry from University of North Carolina at Chapel Hill followed by a post-doc in the Department of Biology at MIT. Prior to joining the NIH Chemical Genomics Center he worked as Assistant Director of Drug Discovery at Pharmacoepia, Princeton, NJ. Dr. Auld joined the NCGC at its inception and has worked on establishing a center of scientific excellence to serve the research community for assay optimization, HTS, and chemical probe distribution. NCGC has developed a concentration-response-based screening approach, quantitative HTS (qHTS), where compounds are screened at 7 concentrations and applied to both biochemical and cell-based assays on libraries >150K in size.



Rick Monsma obtained his Ph.D. in Neuroscience in 1987 from the Center for Brain Research at the University of Rochester. From 1987 through 1992 he was a post-doctoral fellow at the NIH. In 1993, Dr. Monsma joined Hoffman-La Roche in Basel, Switzerland. At Roche, he worked on several drug and target discovery projects. In 1997, Dr. Monsma returned to the U.S. to join the Schering-Plough Research Institute (SPRI) to lead a target validation and functional genomics group focused on GPCR targets. In January of 2005 Dr. Monsma assumed the role of Director of the high throughput screening group at SPRI.



David Basiji is the President and CEO of Amnis Corporation. He is a co-inventor of the company's ImageStream imaging flow cytometry technology and is working on the development of its clinical applications. David received his Ph.D. in Bioengineering from the University of Washington, where he developed a DNA and protein gel imaging platform employing frequency domain fluorescence detection. David currently holds 26 patents.

Posters will be hung on easels in the foyer of the auditorium. 32" by 40" poster boards are available – larger posters may be unstable on the easels. Priority will be given to young researchers. If there is space available, vendors may also hang posters. Two \$50 prizes provided by Cell Signaling Technology will be awarded during Saturday's closing comments to the best two posters by researchers. Contact Allan Kachelmeier at kachelme@ohsu.edu by March 1 if you intend to bring a poster.



Photography by Allan Kachelmeier

Support for this program was obtained from Oregon Hearing Research Center, BD Biosciences (including sponsorship of Rick Monsma), Dako (incl. drinks and refreshments at the Friday evening buffet), Invitrogen (incl. sp. of Alan Waggoner and Iain Johnson), PerkinElmer/Invotek (incl. sp. of Ghislain Bonamy), Amnis Corp. (incl. sp. of David Basiji), Cytopeia (incl. sp. of Ger van den Engh), Beckman Coulter, CompuCyt (incl. sp. of Jake Jacobberger), TTP Labtech (incl. sp. of Doug Auld), Thermo Fisher Scientific, Accelrys (incl. sp. of Michael A. Mancini), Accuri Cytometers (incl. Friday coffee), Applied Cytometry Systems, BioLegend, Chi-Square Works, Cell Signaling Technology (incl. poster awards), Cytek Development, De Novo Software, FloCyt Associates (sp. of Dorothy Lewis), Guava Technologies, iCyt Mission Technology, Intellicyt (sp. of Larry Sklar), Miltenyi Biotec, MDS Analytical Technologies, Partec, StemCell Technologies, Tree Star (incl. sp. of student registrations), Union Biometrika, and Verity Software House.

The **2008 NWRCM steering committee** includes Ryan Brinkman, BC Cancer Research Center; Gayle Buller, Invitrogen/Probes; Dan Haley, EACRI Flow Core, Providence Hospital; Chris Harrington, OHSU Gene Microarray Core; Julie Hill, ZGI; Jeff King, Virogenomics; Peter Rabinovitch, University of Washington; Scott Reed, Chemistry, PSU; Erik Sanchez, Physics, PSU; and Randy Smith. Also to be mentioned in providing 'shape' for the program are OTRADI (Oregon Translational Research and Drug Discovery Institute) and its acting director, Bob Monaghan.

Registration: Flow and imaging for an -omics era

Registration is \$25. The talks themselves are free and open to the public, with walk-ins encouraged - space is not limiting. The advantage of registration is you get a name tag, which is also your lunch ticket. Number of lunches will be determined by number of registrations. Vendors get two courtesy registrations. Early registration is advised, as it helps in shaping the program. Registration will close on March 7th. You can register by faxing the form below to 503-494-5656, and complete it by sending a check made out to '2008 NWRCM at OHSU' (the 'OHSU' must be on it) for \$25 to: 2008 NW Regional Cytometry Meeting, Mailstop NRC04, OHSU, Portland, Oregon 97239, Attn: Allan Kachelmeier .

Note: Tree Star has made a number of student registrations available. Contact office@treestar.com.

2008 Northwest Regional Cytometry Meeting

Registration form

Name _____ Affiliation _____

Address _____ Phone _____

Email address _____ Presenting a poster? _____ Need hotel info? _____

Information below is surveyed only for planning purposes.

Which sessions will you be attending? Thursday (FICCS meeting) _____ Thursday 4:30pm _____ Friday _____ Saturday _____

Will you be joining us for lunch? Friday _____ Friday evening buffet _____ Saturday _____ Do you prefer vegetarian? _____

Will you be taking the FloCyte intracellular cytometry course on Thursday? _____

If you had to pick 3 from the following list of possible concurrent sessions to attend, which would they be? Please note that these are possible topics for roundtables and tutorials, and your show of interest will in part determine the final selection.

- | | | | | | |
|----------------------------------|-------|--|-------|-----------------------------|-------|
| Scattering in biological tissues | _____ | QA in flow cytometry | _____ | Introduction to data mining | _____ |
| Cell signaling cytometry | _____ | QA in confocal microscopy | _____ | Single molecule detection | _____ |
| Tutorial on mass spectrometry | _____ | University-based drug discovery programs | _____ | Protein co-location | _____ |
| Making FRET work | _____ | HCA: flow and imaging | _____ | New probes | _____ |
| Molecular biosensors | _____ | Metal-enhanced fluorescence | _____ | | |

Do you have other suggestions for concurrent session topics? _____

Fax this completed form to 503-494-5656, send in your \$25, and you are registered. Thanks for your time.



Special thanks to our sponsors who have literally made this meeting possible.

Oregon Hearing Research Center

