

# 19<sup>th</sup> Annual Conference of the German Society for Cytometry



October 14-16, 2009  
Helmholtz-Centre for Environmental Research, Leipzig

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## Conference Agenda

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### Session Overview

**Date: Wednesday, 14/Oct/2009**

1:30pm - 3:00pm	<b>Advanced Imaging</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Annette G. Beck-Sickinger</b> The investigation of biological systems highly depends on the possibilities to visualize and quantify biomolecules and their related activities in real-time and non-invasively. Modern imaging techniques significantly contributed to this topic and advanced cell biology enormously. Next generation techniques will be presented in this session that includes 3D-tissue based imaging to study biochemical reactions under physiological conditions.	
3:00pm - 3:30pm	<b>Coffe Break</b>	
3:30pm - 4:30pm	<b>Application in Neurobiology</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Dieter Weiss</b> Single cell techniques are of special importance in neuroscience because - more than for other organs - for the understanding of the nervous system function one has to take into account the individuality and the special contribution of the single neuron to the network activity. Cell morphology, gene expression, and electrical activities can be studied and even manipulated by single cell imaging techniques, but also flow cytometry deserves the attention of neurobiologists, e.g. in studies on neural progenitor cell differentiation.	
4:30pm - 5:00pm	<b>Coffee Break</b>	
5:00pm - 7:00pm	<b>New Developments in Instrumentation</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Wolfgang Beisker</b> Session Overview: New technologies and instrumentation in microscopy and cytometry have always driven scientific progress and open new horizons. Three-dimensional imaging, low level fluorescence detection of molecules to high speed cell sorting and high efficient data analysis on the more technical side is complemented by methods in biology and biochemistry to gain new insights in some of the most important questions in life sciences. This session will present concepts, ideas, applications and scientific results of high priority for the scientific community.	
7:00pm - 7:05pm	<b>Meet the Editorial Board of Cytometry Part A</b> Attila Tarnok	
7:05pm - 9:30pm	<b>Core Facility Manager Workshop</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Elmar Endl</b> The aim of the workshop is to share knowledge and experience among people that run or work within a flow or image core facility. Talks and discussion should be of interest for anyone managing daily life in a core facility or especially for people thinking about setting up a core facility. Refreshments will be there during the workshop.  The Workshop will be accompanied by short commercial presentations given by ACCURI "R(E)volution of flowcytometry" BD Biosciences BeckmanCoulter Millipor "Small is beautiful, Guava Benchtop Flowcytometers" Miltenyi "The MACSQuant Analyzer - A New Milestone In Cell Analysis" Partec	<b>Get Together and Poster Setup/Session</b> Location: <b>Kubus Foyer</b>

**Date: Thursday, 15/Oct/2009**

9:00am - 10:30am	<b>Stem Cells and Cancer</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Leoni Kunz-Schughart</b> This first session of a two session series in the field of stem cells and oncology will try to interdigitate our knowledge in stem cell and progenitor cell phenotype with cancer research and treatment. Today, stem and progenitor cells are an important source to replace diseased tissues. An overview of how stem cell research has affected and may further impact cancer therapy will be given. One of the plenary talks will particularly focus on brain development and tumors. However, all abstracts dealing with new insights into bone marrow or organ-specific stem and progenitor cell phenotype and function including those on the identification and use of causal or non-causal surrogate markers for stem/progenitor cells are welcome and will be considered for oral presentation. The lectures are expected to lead to some discussion to introduce the term "cancer stem cell" which will be further emphasized in the second session.
10:30am - 11:00am	<b>Coffee Break</b>
11:00am - 12:30pm	<b>Cancer Stem Cells</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Leoni Kunz-Schughart</b> Over the past decade, research in the field of oncology has led to the hypothesis of a so-called* cancer stem cell (CSC) *population. According to the consensus definition of the AACR "Cancer stem cell" Workshop in 2006, CSC are a small subset of cancer cells within the tumor mass that (i) constitute a reservoir of self-sustaining cells with the exclusive ability for self-renewal and tumor maintenance and (ii) have the capacity to both divide and expand the CSC pool and to differentiate into the heterogeneous (non-tumorigenic) cancer cell lineages. Experimental evidence supports the hypothesis of CSC in various solid tumor entities such as brain tumors, melanomas and carcinomas of the breast, prostate, pancreas or intestinal tract. However, it is still unclear whether such CSC originate from organ stem cells that retain self-renewal properties but acquire epigenetic and genetic changes required for tumorigenicity or from proliferative progenitors that acquire self-renewal capacity. Either mechanism would be different from the widely held notion that most cells in a solid tumor are competent for tumor formation. However, because of lack of clarity, many researchers prefer an alternative nomenclature for the cell population(s) of interest, e.g. tumor-initiating or tumorigenic cells, to avoid over-interpretation of their data. Many theoretical and practical approaches to identify and study potential CSC are driven by lessons that were learned from hematologic malignancies. Accordingly, the role and origin of CSC in leucemia will be discussed in the session. In addition, the challenge to identify and characterize the behavior of CSC in solid tumors shall be highlighted with respect to anti-tumor therapy and recurrence of disease.
12:30pm - 1:30pm	<b>Lunch</b>
1:30pm - 3:00pm	<b>Plants/ Biotechnology</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Christian Wilhelm</b> Interest has been strongly growing in the application of flow cytometry in plant sciences. The session will be open to single cell analysis with regard to investigations of ecosystems stability, use of plants in white biotechnology and as renewable resources for energy and food production. A number of important aspects might be considered like plant genomes analysis, e.g. size, ploidy, endopolyploidy, and aneuploidy changes. The session presents also investigations to functions of distinct compartments within plant cells. Since fluorescent reporter proteins are informative tools in higher plant protoplast studies which are used to monitor signal transduction, co-transfection, transformation, protein trafficking and localization, and protein-protein interactions the session invites talks within these fields and will start with a key scientist in this area: David Galbraith.
3:00pm - 3:30pm	<b>Coffe Break</b>
3:30pm - 5:00pm	<b>Microbiology</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Susann Müller</b> In microbiological and biotechnological research areas cells are often considered to be uniform populations which can be adequately described by average values. Consequently, measurement of the physiology and biochemistry of these cells often relies upon analysing either the culture supernatant or a lysate of all the cells in the population. New methods for single cell analysis have improved possibilities for the in depth analysis of what is happening in cells and why. Although flow cytometry has been widely shown to successfully investigate and describe the dynamics of eukaryotic populations, the technique is now increasingly applied to prokaryotic organisms. Additional techniques now extend structural and functional information (by involving phylogenetic, genomic, transcriptomic and proteomic approaches) on microorganisms. The development of biotechnological applications where microbial cells interact within an artificially engineered environment (e.g. fermentation, bio-remediation, bio-transformation etc) is important for both human health and industry.
5:00pm - 7:00pm	<b>Poster Session</b> Location: <b>Kubus Foyer</b> Chair: <b>Torsten Vieregutz</b> Chair: <b>Elmar Endl</b> During the poster session you have the chance to describe your work in a short presentation and to explain the significance of your results during a discussion with the chairs. The time limit is 5 min. The best poster presenter will get a poster price (certificate and 200 Euro).
7:00pm - 8:00pm	<b>Open Special Lecture</b> Location: <b>Kubus, Saal 1</b> Birte Forstmann, "Decision Making under Time Pressure"
8:00pm - 11:30pm	<b>Conference Dinner</b>
<b>Date: Friday, 16/Oct/2009</b>	
8:15am - 8:45am	<b>Klaus-Goerttler-Preisträger</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Susann Müller</b>
8:45am - 8:50am	<b>Poster- und DGfZ Logo-Preisträger</b>

8:50am - 10:00am	<b>Mitglieder Versammlung</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Susann Müller</b>
10:00am - 10:30am	<b>Coffee Break</b>
10:30am - 12:00pm	<b>New Concepts in Therapy Controlling and Prediction</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Ulrich Sack</b> Flow cytometry allows high throughput single-cell based multiparametrical analysis based on multiple morphological, immunological, and functional parameters of cells in suspension. Novel technical developments in multicolor flow cytometry require adequate design of staining protocols, quality control, and data analysis that allow generation of reproducible results. Interpretation of acquired data depends on reliable diagnostic and prognostic values. Further information can be found by combining flow cytometric data with additional genetic, immunological, and metabolic parameters as well as imaging procedures. In this session, novel developments and concepts for improved and individualized diagnostic procedures are presented. This includes aspects of flow cytometry but also study design and standardization.
12:00pm - 1:00pm	<b>Lunch</b>
1:00pm - 2:30pm	<b>Immunology</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Dirk H. Busch</b> "Improved flow cytometry and cell purification strategies are main driving forces to modern immunological research. In this session, the speakers will provide examples for advanced flow cytometry applications. These comprise in-depths analyses of immunological memory and developmental programs of T cell lineage commitment (e.g. regulatory T cells), as well visualization of 'extremely rare' events within complex cell mixtures. In addition, flow cytometry-based sorting and novel cell depletion strategies will be presented, which are currently evaluated in preclinical mouse models."
2:30pm - 3:00pm	<b>Coffee Break</b>
3:00pm - 5:00pm	<b>European Networks</b> Location: <b>Kubus, Saal 1</b> Chair: <b>Andy Riddell</b> In Europe there is a disconnect of information ranging from workshops to meetings involving cytometry, and the users of cytometry techniques. Although at a country base level we are well supported, however, coordination and information exchange is often poor between countries and different nationalities. In response to this situation we created a network of cytometrists whose remit encompasses all of Europe. A meeting of established cytometrists was held on the 28-29th of February at EMBL Heidelberg Germany to discuss the creation of such a Network. It was decided to host the network through web 2.0 tools, in particular social networking infrastructure. The meeting ascertained the purpose of the network and the issues that made communication difficult. The meeting also established the goals of the network and armed with this information we created the European Cytometry Network (ECN). From the launch in September 2008, the ECN has undergone rapid growth in membership with nearly 600 members and 30 interest groups (at the time of writing). In this session I will summarise the creation and current activities of the network to date.

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