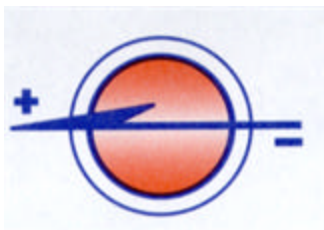


CONTACT: JOAN STEVENSON (SEE P4)



August, 2004

Volume 9, Issue 3

# AES Newsletter



Inside this issue:

|                  |   |
|------------------|---|
| Sessions TD001-5 | 2 |
| Sessions TD006-9 | 3 |
| Elections        | 4 |
| Technical Tips   | 4 |

Many thanks to our Sponsors for contributions funding the 2004 meeting.

**Genencor International**

**Amersham Biosciences**

**Bio-Rad Laboratories**

**CombiSep**

**CBS Scientific**

**Owl Scientific**

**Proteome Systems**

**Nonlinear Dynamics**

**Syngene**

Our traditionally strong meetings, with sessions chaired by invited plenary speakers discussing state-of-the-art topics, would simply not be possible without funding from sponsors. These donations are greatly appreciated.

## Saddle up, everyone. Our next meeting in Austin, TX is coming up fast!

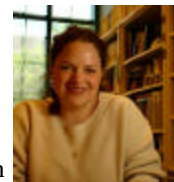
*Report from Annelise Barron, Northwestern University, our meeting organizer:*

The meeting has come together nicely. The first day, Monday November 8, will feature three sessions on proteomics, beginning with a morning session on small molecule microarrays followed by afternoon sessions on 2-D electrophoresis (one on methods and one on biomedical applications). Tuesday morning we will be treated to talks by two distinguished plenary speakers from Great Britain: Dr. Ronald Pethig, from the University of Wales, speaking on Micro-Dielectrophoresis and Dr. Walter Blackstone, from the University of Sheffield, speaking on Cell Maps. Tuesday afternoon two Bioinformatics sessions co-sponsored by AIChE will be held. Wednesday, day 3, will focus on microfluidic chips, with a morning session on biomedical

applications and afternoon sessions on proteome and genomic analysis. Thursday will include a morning session on microfluidic platforms and a grand finale on electrokinetics. Posters will be up for 3 days of the meeting (Mon-Wed) in a room close to the meeting room. The poster room will contain a sitting area for members to get together informally. Many thanks to all the session chairs and co-chairs for their hard work.

I very much look forward to seeing you all at the meeting!

Annelise Barron



Session titles and times are given on the next two pages. Go to the AIChE website for authors and talk abstracts.

**AES Program, November 8-11, 2004 Austin, Texas****TD001 [128] - Frontiers in Proteomics, Monday November 8, 2004**

- 8:00 AM Protein Profiling Using Small Molecule Microarrays  
8:30 AM Spatially Addressable Peptoid Microarray — Construction and Application in Proteomics  
8:45 AM Development of new two hybrid system suitable for proteomic study in periplasm of *Escherichia coli* based on anchored periplasmic expression (APEX) system  
9:00 AM Accelerating Affinity Reagent Development with Bacterial Display Peptide Libraries  
9:20 AM Proteome-scale Polyclonal Antibody Production  
9:40 AM Identification of Nuclear Protein Complexes Using Open Tube Capillary Chromatography  
10:00 AM Aptamer Chip Arrays.

**Chair:** Thomas Kodadek, UT Southwestern Medical Center

**Vice-Chair:** George Georgiou, UT at Austin

**TD002 [130] - The State of the Art in Proteome Analysis, Monday**

- 12:30 PM Developing a Quantitative Understanding of Two-Dimensional Electrophoresis  
12:50 PM Computer analysis of 2D gels  
1:05 PM Dynamic analysis of silver staining spots in 2-DE gels for detection of singular proteins of cancer cells  
1:25 PM Specific Immunoprecipitation-based Depletion of Albumin to Improve Serum Protein Resolution by 2D Electrophoresis  
1:45 PM Break  
1:55 PM Approachable automated electrophoresis – Bio-Rad brings new separations technology to life science researchers  
2:10 PM Cyanobacterial proteome comparison and characterization using 2D gel electrophoresis and gel-free shotgun proteomics  
2:30 PM Isobaric tags for relative and absolute quantitation of protein expression from prokaryotic samples  
2:45 PM The success of peptide mass fingerprinting is related to the animal species from which the protein was obtained.

**Chair:** Kenneth Reardon, Colorado State University

**Vice-Chair:** Phillip Wright, University of Sheffield

**TD003 [131] - Biomedical Applications of Proteomic Technologies, Monday**

- 3:15 PM Protein Profiles in Skeletal Muscle Atrophy Induced by Burn and Sepsis  
3:35 PM Proteomics of Familial Adenomatous Polyposis APC gene mutation  
3:55 PM Glycan chips to the discovery of auto-immunogenic activity of SARS-CoV  
4:15 PM Cerebrospinal fluid proteome analysis for the differential diagnosis of Alzheimer's disease  
4:35 PM 2D Gel-based Proteomics in Studying Alcoholism and Alcohol Abuse

**Chair:** Alex Kurosky, UT Medical Branch

**Vice-Chair:** Larry Denner, UT Medical Branch

**TD004 [133] - AES ★★ Double Star★★ Plenary Session, Tuesday, November 9**

- 9:00 AM Micro-Physiometry Systems based on Micro-Dielectrophoresis, Dr. Ronald Pethig, Univ of Wales, UK  
9:50 AM Break  
10:00 AM Towards a Cell Map, Dr. Walter Blackstock, University of Sheffield, UK

**TD005 [134] - Microfluidic Chips for Biomedical Applications, Wednesday November 10**

- 8:00 AM Dielectrophoretic Capture of Viral Particles from Media of Physiological Ionic Strength  
8:18 AM Long-range Electrokinetic Bioparticle Trap  
8:36 AM Microfluidic Chip for the Determination of C-Reactive Protein using a 2-Dimensional Separation  
8:54 AM The Geometry of the Micro-Channel: Does it Really Matter?  
9:12 AM Break  
9:18 AM A Hele Shaw microfluidic device for evaluation of targeted microspheres to physiological ligands.  
9:36 AM Hydrogel Technology for Microfluidic Analysis in the Avian Cancer Model  
9:54 AM Rapid and Sensitive p53 Mutation Detection by Microchip Electrophoresis Tandem SSCP/Heteroduplex Analysis  
10:12 AM An Integrated Microfluidic Device for the Detection of Influenza Virus Variants

**Chair:** Adrienne Minerick, Mississippi State Univ.

**Vice-Chair:** Rebecca Zangmeister, Nat'l. Inst. Standards & Technology

Go to: [www.aiche.org/conferences/techprogram/groupdetail.asp?GroupCode=TD&DSN=annual04](http://www.aiche.org/conferences/techprogram/groupdetail.asp?GroupCode=TD&DSN=annual04)  
to see AES talk abstracts and authors.

### **TD006 [136] - Microfluidic Chips for Proteome Analysis, Wednesday**

12:30 PM Introduction

12:35 PM Microchip Protein Sizing with Silver Stain Sensitivity

1:04 PM Multi-Dimensional Microchip Electrophoresis of Proteins

1:33 PM Picoliter-scale Proteomics Using an Integrated Microchip HPLC-MS/MS System

2:02 PM On-chip Solid Phase Extraction and Preconcentration Coupled to Mass Spec Using an Integrated Electrospray Tip

2:31 PM Microfluidic Separation of Protein in Semi-dilute Polymer Solutions: Experiments and Migration Mechanism

**Chair:** Andrea Chow, Caliper Technologies Corp.

**Vice-Chair:** Steve Jacobson, University of Indiana

### **TD007 [137] - Genomic Assays in Microchannel Electrophoresis Systems, Wednesday**

3:15 PM Polymer-based Microchips for High Res. Electrophoretic Separation of Nucleic Acids: Applications in DNA Diagnostics

3:45 PM DNA Sequencing in Microfluidic Devices: The Matrix Reloaded

4:05 PM Selective DNA Screening in Microfluidic Channels by Electrophoresis through Hydrogel Matrices

4:25 PM Selective extraction of DNA from microelectrophoresis channels using shaped electric fields

4:45 PM Free Solution Mobility of Single-Stranded DNA Oligomers

5:05 PM Conformation Study of DNA Molecules Manipulated by Electrokinetics in Nanofluidic Geometries

5:25 PM DNA Electrophoretic Separation in Microchannels using Polyacrylamide and Continuous Buffer Delivery

**Chair:** Victor Ugaz, Texas A&M University

**Vice-Chair:** Annelise Barron, Northwestern University

### **TD008 [138] - Electrophoretic Biomolecule Analysis on Microfluidic Platforms, Thursday November 11**

8:00 AM Rapid Determination of Metabolic Markers by Microchip CE-ECD

8:25 AM On-Chip CGE Protein Separations with Off-Line MALDI-MS Analysis

8:50 AM A materials design approach to on-chip DNA sample purification: N-alkyl acrylamide copolymer matrices

9:15 AM Highly Multiplexed DNA Sequencing from Multi-channel PMMA Micro-devices Using Near-IR Fluorescence Scanner

9:40 AM Electrophoresis of Single-stranded DNA in Photopolymerized Crosslinked Polyacrylamide Gels

10:05 AM A New Transistor-Driven Microchannel Electrophoresis Device for Protein Analysis

**Chair:** Steven Soper, Louisiana State University

**Vice-Chair:** Don Devoe, University of Maryland

### **TD009 [139] - Electrokinetics and Microfluidics, Thursday**

12:30 PM AC Electric Field Induced Forces on a Colloidal Particle near an Electrode from 10 to 10 kHz

12:55 PM Electrokinetics of Colloidal Systems of Low Ion Diffusivity

1:20 PM Dielectrophoretic characterization of *Vibrio parahaemolyticus* within a microfluidic device.

1:45 PM A Continuous Size-Based Particle Separator Using Dielectrophoresis and Soft-Lithography Techniques

2:10 PM Nonlinear Effects in Field Amplified Sample Stacking

2:35 PM The Combination of Capillary Electrophoresis and Protein Charge Ladders is a Tool for Studying Protein Stability

**Chair:** James Baygents, University of Arizona

**Vice Chair:** Darell Velegol, Penn State University

### **TD010 [129] - Poster Session: Posters will be up for the entire meeting, Monday through Thursday**

## **Sessions Co-sponsored with AIChE:**

**T2003 - Bioinformatics III: Focus on Transcriptomics**

**T2004 - Bioinformatics IV: Focus on Proteomics**



Contact: Joan

Joan Stevenson  
Executive Director  
The Electrophoresis Society  
3338 Carlyle Terrace  
Lafayette, CA 94549 USA

Phone: 925-284-7186

Fax: 925-283-5621

[joanstevenson@comcast.net](mailto:joanstevenson@comcast.net)

Web: [www.aesociety.org](http://www.aesociety.org)



**Electrophoresis**  
past, present  
and future

## Announcement: Councilors needed!

**One and possibly two councilors will be elected at the November meeting based on results of October email balloting.** The 3-year term of our councilor (and web master) Erich Gombocz from I/O Informatics will expire this year. In addition, to ensure continuity, the board has nominated our councilor Scott Rodkey (11/03-11/06) from the University of Texas, Houston Medical School, for the position of Vice President, and Scott has agreed to run. If he is elected, his council seat will be open as well.

Erich Gombocz



Scott Rodkey



Many thanks to Erich and Scott. They've done fine jobs as councilors.

The 3-year position of AES Councilor doesn't take a lot of time but never-the-less is quite important to the Society. The Council, which includes the President, Past President, Secretary and Treasurer, as well as six Councilors, meets formally in person at the annual meeting, and throughout the year by email and telephone conference. Important issues are discussed by the Council as they arise. After full consideration a vote is taken and a course of action implemented. It's also an opportunity to interact with a dynamic and intellectual group. Please notify David Garfin ([degarfin@sonic.net](mailto:degarfin@sonic.net)) or Nancy Kendrick ([nancy@kendricklabs.com](mailto:nancy@kendricklabs.com)) by email if you wish to nominate a member or run yourself for AES Council. Please attach a biographical sketch to the message suitable for an email ballot. Photos are welcome.

See You in November!  
Nancy Kendrick, President



## Technical Tip

Dear Sir,

*I am interested in determining pI of common peptides like poly-lysine and poly-glutamic acid using slab gel or capillary electrophoresis. I am having difficulty in finding an appropriate way to detect either of these peptides. If you know a particular stain or dye that can help in the detection, please let me know. The help would be really appreciated.*

*Thanks in advance,*

*Ritesh Jain, University of Missouri-Rolla*

Dear Ritesh,

I wasn't sure, so I called in the big guns on this one: Tim Wehr for CE and Wayne Patton for stains. The consensus is that you have a problem. Firstly, detection of poly-lys and poly-glu in CIEF is difficult because the aliphatics are transparent at 280 nm and the background from carrier ampholytes at 230 nm or below (peptide bond) will probably be too high for good signal-to-noise ratios. Precolumn tagging is out because accurate pIs are sought. Post column tagging is probably out, too, because the ampholytes carry the same reactive groups as the poly-amino acids. Slab gels might be a problem as well, especially if the homopolymers are too small to fix in the gels and wash out in the staining steps. Coomassie Blue and SYPRO Ruby will allow detection of poly-lys in slab gels. Poly-glu is another matter. We can't think of an appropriate stain for poly-glu. Wayne P. recalls seeing a chapter by Carl Merrill on detecting homopolymers of amino acids fairly readily on membranes with silver stain. He believes the information is in volume one of *Advances in Electrophoresis*. There is a very small mention of staining homopolymers (probably in gels) on Page 484 of Carl's chapter on Gel-Staining Techniques in *Methods in Enzymology*, Volume 182, Guide to Protein Purification, Academic Press, 1990. Carl's article is on pp. 477-488.

Dave Garfin  
AES Vice President

