

July 17-19, 2013 • Westin Boston Waterfront Hotel • Boston, Massachusetts, USA



**"The Separation and Characterization
of Biologically Important Molecules"**

ISPPP 2013

FINAL PROGRAM

- ▶ **CO-CHAIRS**
Dr. Barry Boyes
Advanced Materials Technology

Prof. Ron Orlando
University of Georgia
- ▶ **SYMPOSIUM/EXHIBIT MANAGER**
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**33rd International Symposium on
Proteins, Peptides & Polynucleotides**



ISPPP 2013

33rd International Symposium and Exhibit on the
**Separation and Characterization of Biologically
Important Molecules**

July 17-19, 2013 in Boston, MA, USA

www.ISPPP.org

Welcome to ISPPP 2013!

We would like to personally invite each of you to the 33rd International Symposium for the Separation of Proteins, Peptides and Polynucleotides. It's an exciting time for the separation science of biological molecules. The field continues to grow and adapt, enjoy better materials, instruments and methods, and a seeming never-ending list of interesting molecules to work on. We continue to confront analytical, productivity and financial challenges, with ever more asked. The world of biological molecule separations and analysis is an exciting area in which to work/study/play, and we intend to continue to meet and bring inspired people together in this forum, to ensure ISPPP remains relevant and timely for the science and technology discussions that we all enjoy.

Over the course of the conference, we encourage you to take advantage of our assembled experts, practitioners, and exhibitors, and to engage our presenters and attendees in the various presentation formats at the Symposium, whether this is during the Lectures, Posters Session, Exhibitor Meetings, or during breaks. We are of the mind that there are no bad questions, just bad answers!

This 33rd ISPPP Symposium is testing some changes in the way things have been done, with our joint assembly with the Prep2013 Symposium, and by shifting from Fall to Summer. Our feelings were that there was a great opportunity for synergy by meeting on a joint day (Wednesday), and placing ISPPP in series with this important Symposium on Preparative Methods. Our congratulations go to the Program Chair, Prof. Giorgio Carta, and his excellent Committees, on a great Program for that Symposium. It is a pleasure to return to the vibrant city of Boston, which we last visited as ISPPP in 1995. As always, the Organizing Committee is extremely interested in feedback on the ISPPP Symposium, so do not hesitate to be forward with suggestions for future meetings

We look forward to seeing you at this Symposium and to bringing your expertise to our gathering. Throughout this conference, we ask you to stay engaged, keep us proactive, and help us shape the future of ISPPP.

Barry Boyes, Ph.D
Ron Orlando, Ph.D.
Co-Chairmen, 33rd ISPPP



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ISPPP 2013 Final Scientific Program

ISPPP 2013 Program Co-Chairs

Dr. Barry Boyes, Advanced Materials Technology
Prof. Ron Orlando, Complex Carbohydrate Research Center, University of Georgia

ISPPP 2013 Organizing Committee

Barry Boyes, Ph.D., Advanced Materials Technology, Inc., Wilmington, DE (USA) Co-Chair
Joseph J. DeStefano, Ph.D., Advanced Materials Technology, Inc., Wilmington, DE (USA)
Roy Eksteen, Ph.D., Sigma/Aldrich, Supelco Division, State College, PA (USA)
Milton Hearn, Ph.D., Monash University, Melbourne, Victoria (Australia)
Robert S. Hodges, Ph.D., University of Colorado, Denver, CO (USA)
Alois Jungbauer, Ph.D., University of Natural Resources and Life Sciences, Vienna (Austria)
Ron Orlando, Ph.D., University of Georgia, Athens, GA (USA) Co-Chair
Mark R. Schure, Ph.D., Kroungold Analytical and Superon GmbH, Blue Bell, PA (USA)

ISPPP 2013 Symposium / Exhibit Manager

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*Opinions expressed by individuals presenting abstracts and seminars are not necessarily
the opinions of the ISPPP 2013 Symposium*



ISPPP 2013

33rd International Symposium and Exhibit on the
**Separation and Characterization of Biologically
Important Molecules**

ISPPP 2013 Scientific Program

Wednesday, July 17, 2013

7:30 AM **Symposium Registration Open**

Location: Harbor Ballroom

10:00 AM **Exhibition Opens in Harbor Ballroom II & III**

8:10 AM **Welcome and Opening Remarks in Burroughs Room**

Wednesday Oral Session 1. Analytical Separations

Session Chair: Milton Hearn, Monash University

Location: Burroughs Room

8:20 AM L-101 **Orthogonal Bioseparations.** Mark Schure, Kroungold Analytical,
Blue Bell, PA, USA

8:40 AM L-102 **New Advances in Hydrophilic Interaction Chromatography of Peptides:
Comparison of HILIC/SALT to HILIC and RPC.** Colin Mant, Robert Hodges, Department of
Biochemistry and Molecular Genetics, University of Colorado Denver, Aurora, CO, USA

9:00 AM L-103 **Highly Efficient LC-MS of Intact Proteins using Sub-0.5 μ m Particles with
Slip Flow.** Zhen Wu¹, Bingchuan Wei², Ximo Zhang¹, Mary Wirth¹, ¹Purdue University, West
Lafayette, IN, USA; ²University of Washington, Seattle, WA, USA

9:20 AM L-104 **Capillary-channeled Polymer (C-CP) Fibers for High Throughput Analytical
Separations and Desalting of Proteins Prior to MALDI and ESI-MS.**
R. Kenneth Marcus¹, Abby Schadock-Hewitt¹, Benjamin T. Manard¹, Carolyn Q. Burdette²,
Marissa Pierson¹, ¹Clemson University, Clemson, SC, USA; ²National Institute of Standards and
Technology, Gaithersburg, MD, USA

9:40 AM L-105 **Increasing the Peak Capacity of Peptide Separations using Long
Microcapillary Columns and Sub 2 μ m Particles at 30,000+ psi.** Kaitlin Fague, Justin
Godhino, Edward Franklin, Jordan Stobaugh, University of North Carolina, Chapel Hill, NC, USA

10:00 AM **Break, Exhibits and Posters**
(Location: Harbor Ballroom II & III)

Wednesday Oral Session 2. Proteomics and Protein Measurements

Session Chair: Joshua Sharp, University of Georgia

Location: Burroughs Room

- 10:40 AM L-106 **Application of a Robust and Modular Cartridge based NanoLC System for Proteomics.** Michael Bereman¹, Tom Corso², Colleen Van Pelt², Michael MacCoss¹, ¹University of Washington, Seattle, WA, USA; ²CorSolutions, Ithaca, NY, USA
- 11:00 AM L-107 **Protein Markers for Cancer Stem Cells in Pancreatic Cancer.** David Lubman, Jianhui Zhu, University of Michigan, Ann Arbor, MI, USA
- 11:20 AM L-108 **Target-based Multiplex MRM Assays.** Christopher M. Colangelo, Lisa Chung, Shifman Mark, Abbott Thomas, Fumika Sakaue, Angus Nairn, Willaims Kenneth, Yale University, New Haven, CT, USA
- 11:40 AM L-109 **Pretreatment of Human Fluid Samples for Trace Protein Analysis.** Frank Jahnke, Sonata Biosciences, Inc., Auburn, CA, USA
- 12:00 PM Lunch on own
- 12:00-1:30 PM **Free Vendor Seminar Sponsored by Waters Corporation**
"Looking at Innovator and Biosimilar Biotherapeutics through a Kaleidoscope"
Location: Carlton Room
Must register at the Waters exhibit by Wednesday @10:30 AM
- 1:30 - 3:00 PM **Poster Session - I and Exhibits**
(Location: Harbor Ballroom II & III)

Wednesday Poster Session - I Presentations

- P-W-110 **Epitope Mapping and the Selection of MAbs used in the Diagnostic Immunoassays.** Cheng Zhao, Bryan Tieman, Bailin Tu, Robert Ziemann, Jeffrey Fishpough, Carol Ramsay, Abbott Laboratories, Abbott Park, IL, USA
- P-W-111 **Aggregate Removal with Cation Exchange Chromatography (Nuvia™ HR-S).** Paul K. Ng, Mark A. Snyder, Bio-Rad Laboratories, Hercules, CA, USA
- P-W-112 **Optimized One-day Assay for Quantitation of Monosaccharide Content in Proteins by 2-Picoline-Borane Reductive Amination.** Nicholas Woon, Genentech, South San Francisco, CA, USA
- P-W-113 withdrawn **Methodology of Monoclonal Antibody Charge-variant Analysis by Ion-exchange Chromatography.** Hillel Brandes, Roy Eksteen, Sigma Aldrich / Supelco, Bellefonte, PA, USA
- P-W-114 **2D Separation and Immunoreactive Coverage of CHO and E.coli Host Cell Proteins (HCP) by Polyclonal Antibodies – Use of Fluorescent Labeling (Cyanine Dyes) in 2D Western Blotting.** Harbhajan Dhillon, Mark Abbott, Jonathan Basch, Mark Panek, Bristol-Myers Squibb, East Syracuse, NY, USA

- P-W-115 **N-linked Glycan Profile Comparison Between the Innovator and a Biosimilar Etanercept.** Ying Qing Yu, Weibin Chen, Waters Corporation, Milford, MA, USA
- P-W-116 **Charge Surface Modified C18 Columns for Increasing Peak Capacity in LC-MS Peptide Separations with Formic Acid Mobile Phases.** Matthew Lauber, Stephan Koza, Kenneth Fountain, Waters Corporation, Milford, MA, USA
- P-W-117 **A Quality by Design Approach: Systematic Optimization of Malaria Vaccine Purification with IMAC.** Jessica Paul, Arthur Dukart, Jasmin Zuehlke, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY
- P-W-118 **Automating Workflows for Developing Separation and Reporting Methods for Size Exclusion Chromatography.** Thomas E. Wheat, Aparna Chavali, Patricia McConville, Waters Corporation, Milford, MA, USA
- P-W-119 **Enthalpic and Entropic Contributions in Lysozyme Adsorption onto a Cation-exchange Support.** Francisco Marques¹, Goncalo Silva¹, Marvin Thrash, Jr.², Cristina Dias-Cabral¹, ¹CICS-UBI- Health Sciences Research Centre, University of Beira Interior, Covilha, PORTUGAL; ²Department of Water Resources and Environmental Engineering, College of Science and Engineering, Central State University, Wilberforce, OH, USA
- P-W-120 **Malaria Vaccine Purification via Expanded Bed Adsorption Chromatography Combined with an Ultrafiltration.** Sarah Schreiber, Sven Oliver Borchert, Jessica Paul, Gesine Cornelissen, University of Applied Sciences, Hamburg, GERMANY
- P-W-121 **Continuous-batch Protein Chromatography – Continuous Capture Coupled with Two-step Automated Batch Polish.** Peter Tiainen, Jais Rose Bjelke, Ditte Skibstrup, Haleh Ahmadian, Novo Nordisk A/S, Malov, DENMARK
- P-W-122 **Bioseparations with 3.5- and 5-Micron Wide-Pore Superficially Porous Particles.** Joseph DeStefano, Joseph Kirkland, Stephanie Schuster, Bill Johnson, Advanced Materials Technology, Inc., Wilmington, DE, USA
- P-W-123 **A Novel Automated Enrichment Process for the Isolation of Product-related Impurities from Active Pharmaceutical Ingredients.** Thomas Muller-Spath, Nicole Ulmer, Lars Aumann, Guido Strohle, Michael Bavand, ChromaCon AG, Zurich, SWITZERLAND
- P-W-124 **Peptide Mapping of a Therapeutic Monoclonal Antibody (mAb): Optimizations for Increasing Speed and Peptide Identifications.** James Martosella¹, Ning Tang², Alex Zhu¹, ¹Agilent Technologies, Wilmington, DE, USA; ²Agilent Technologies, Santa Clara, CA, USA
- P-W-125 **Countercurrent Tangential Chromatography for Purification of Monoclonal Antibodies.** Oleg Shinkazh, Chromatan, State College, PA, USA
- P-W-126 **Amphoteric Ion-Exchange Separation of Biomolecules with Porous or Non-Porous Polymer-Based Resins.** Ken Tseng¹, Toshi Ono¹, Tsunehisa Hirose², Kazuhiro Kimata², ¹Nacalai USA Inc., San Diego, CA, USA; ²Nacalai Tesque, Kyoto, JAPAN
- P-W-127 **Isomeric Separation of Procainamide Labeled N-glycans by Using Novel Superficially Porous Particle HILIC Column.** Shujuan Tao¹, Yining Huang¹, Barry Boyes², Ron Orlando¹, ¹CCRC, University of Georgia, Athens, GA, USA; ²AMT, Wilmington, DE, USA

P-W-128 **Two Dimensional Separations: Which Dimension Plays the Most Important Role in Protein Identification Efficiency?** Darryl Johnson¹, Barry Boyes², Ron Orlando¹, ¹CCRC, University of Georgia, Athens, GA, USA; ²AMT, Wilmington, DE, USA

P-W-129 **Microfluidic CE-MS Applied to Protein, Peptide, and Small Molecule Characterization.** Gregory Roman¹, Scott Mellors², Martin Gilar¹, James Murphy¹, J. Michael Ramsey², ¹Waters Corporation, Milford, MA, USA; ²University of North Carolina, Chapel Hill, NC, USA

3:00 - 3:45 PM **Break/Social, Exhibits and Posters**
(Location: Harbor Ballroom II & III)

Wednesday Oral Session 3. Protein Therapeutics

Session Chair: David Lubman, University of Michigan

Location: Burroughs Room

3:45 PM L-130 **IgG Asparagine-linked Oligosaccharide Profiling by High-performance Anion-exchange Chromatography with Pulsed Amperometric Detection.** Jeffrey Rohrer¹, Deanna Hurum², Lipika Basumallick¹, ¹Thermo Fisher Scientific, Sunnyvale, CA, USA; ²Palo Alto, CA, USA

4:05 PM L-131 **Size-exclusion Chromatography using Multi-angle Light Scattering (SEC-MALS) for the Characterization of Polypeptide Mixtures.** Joseph Glajch, Ying Li, Momenta Pharmaceuticals, Cambridge, MA, USA

4:25 PM L-132 **Developing an Automated Workflow for Disulfide Linkages Analysis of Biotherapeutics by High-Resolution LCMS.** Asish Chakraborty¹, Stephane Houel¹, Henry Shion¹, Scott Berger¹, Weibin Chen¹, Anurag Rathore², ¹Waters Corporation, Milford, MA, USA; ²Indian Institute of Technology, New Delhi, Delhi, INDIA

4:45 PM L-133 **Analytical HIC for mAb Aggregate Analysis; How Does the Salt Ion Type Influence the Selectivity?** Hannah Brueck, Judith Vajda, Werner Conze, Egbert Mueller, Tosoh Bioscience GmbH, Stuttgart, GERMANY

5:05 - 7:00 PM **WELCOME MIXER in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Thursday, July 18, 2013

7:45 AM **Symposium Registration Open**
Location: Harbor Ballroom

10:00 AM **Exhibition Open in Harbor Ballroom II & III**

Thursday Oral Session 4. Affinity and Ion Exchange Methods

Session Chair: Mark Schure, Kroungold Analytical

Location: Harbor Ballroom I

8:20 AM L-134 **Discovery and Development of Universal Fc Binders for Antibody Purification.** Marc Arnold, Holger Bittermann, Thomas Neumann, Graffinity Pharmaceuticals GmbH, Heidelberg, GERMANY

8:40 AM L-135 **Development of a Sialic Acid-specific Affinity Chromatography for the Purification and Separation of Glycoprotein Isoforms.** Matthias Meininger¹, Francisco Vito Santos da Silva¹, Samanta Cajic¹, René Hennig¹, Erdmann Rapp¹, Frank Zwanziger², Stefan Laufer², Karl-Heinz Wiesmueller³, Heinz Rotering⁴, Udo Reichl¹, Michael Wolff¹, ¹Max Planck Institut for Dynamics of Complex Technical Systems, Magdeburg, GERMANY; ²Eberhard-Karls-University, Tuebingen, GERMANY; ³EMC Microcollections GmbH, Tuebingen, GERMANY; ⁴Merckle Biotec GmbH, Ulm, GERMANY

9:00 AM L-136 **Reversible Cyclic and Polycyclic Peptides for the Discovery of Affinity Ligands.** Stefano Menegatti, Robert Blackburn, Kevin Ward, Ruben Carbonell, North Carolina State University, Raleigh, NC, USA

9:20 AM L-137 **Understanding Ion Exchange Adsorption Mechanism.** Francisco Marques¹, Patricia Aguilar¹, Marvin Thrash Jr.², Cristina Dias-Cabral¹, ¹University of Beira Interior, Covilhã, PORTUGAL; ²Central State University, Wilberforce, OH, USA

9:40 AM L-138 **Purification of a Potential Malaria Vaccine by Multimodal Ion Exchange Chromatography.** Sonja Jensen, Jessica Paul, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY

10:00 AM **Break, Exhibits and Posters**
(Location: Harbor Ballroom II & III)

Thursday Oral Session 5. Monoclonal Antibody Separations

Session Chair: Robert Hodges, University of Colorado Denver

Location: Harbor Ballroom I

10:40 AM L-139 **New Tools to Achieve Enhanced Process Productivity in the Purification of Monoclonal Antibodies and Other Recombinant Proteins.** Milton Hearn, Monash University, Clayton, Victoria, AUSTRALIA

11:00 AM L-140 **Investigation of Monoclonal Antibody Purification by Aqueous Two-phase Extraction.** Jan Mündges, Shuai Shi, Tim Zeiner, TU Dortmund University, Dortmund, GERMANY

11:20 AM L-141 **Fujifilm Diosynth's and Chromatan's Investigation of Countercurrent Tangential Chromatography for Purification of Monoclonal Antibodies.** Oleg Shinkazh, Chromatan, State College, PA, USA

11:40 AM L-142 **2D-DIGE for Host Cell Protein Analysis and Antibody Process Development.** Alois Jungbauer, BOKU, Vienna, AUSTRIA

12:00 PM Lunch on own

12:00-1:30 PM **Free Vendor Seminar Sponsored by Shimadzu**
"Turning Mountains into Molehills: The New Landscape of Protein Analysis"
Location: Griffin Room
Must register at the Shimadzu exhibit by Wednesday @ 3:45 PM

12:00-1:30 PM **Free Vendor Seminar Sponsored by Knauer**
"Contichrom®: A Versatile Purification Platform for Batch/CaptureSMB/MCSGP Biochromatography"
Location: Carlton Room
Must register at the Knauer exhibit by Wednesday @ 3:45 PM

1:30 - 3:00 PM **Poster Session - II and Exhibits**
(Location: Harbor Ballroom II & III)

Thursday Poster Session II Presentations

P-Th-143 **An Alternative Capture Step for Monoclonal Antibodies: Phenyl Boronate as a New Multi-modal Ligand.** Ana M. Azevedo, Raquel dos Santos, Sara A.S.L. Rosa, M. Raquel Aires-Barros, Instituto Superior Tecnico, Lisbon, PORTUGAL

P-Th-144 **Phenyl Boronic Acid as Ligand for a Multimodal Chromatography: Adsorption Behavior Comparison between Control Pore Glass and Agarose Matrixes.** Rimenys Jr. Carvalho¹, James Woo², Karim A. Nakamura², Maria Raquel Aires-Barros¹, Ana M. Azevedo¹, Steven M. Cramer², ¹Instituto Superior Tecnico, Lisbon, PORTUGAL; ²Rensselaer Polytechnic Institute, Troy, NY, USA

P-Th-145 **Chiral Separation of D,L-Phenylglycine using an Enantioselective Membrane Formed by Polycondensation of Bovine Serum Albumin with 1,6-Diisocyanatohexane on a Polysulfone Membrane.** Li-Ming Yuan, Guang-Yong Zeng, Department of Chemistry, Yunnan Normal University, Kunming, Yunnan, P.R. CHINA

P-Th-146 **Analysis of Associated Forms of Insulins.** Sara Fexby Garmer, Martin Mårtensson, Dorte Bjerre Steensgaard, Aage Hvass, Svend Havelund, Novo Nordisk A/S, Måløv, DENMARK

P-Th-147 **Lipidomics using Ion Mobility Mass Spectrometry with Transomics Informatics.** Giuseppe Astarita¹, Roy Martin¹, Giorgis Isaac¹, James Langridge², Weibin Chen¹, ¹Waters Corporation, Milford, MA, USA; ²Waters Corporation, Manchester, UK

P-Th-148 **Characterization of Two Novel Analytical Chromatographic Columns for Orthogonal Analysis of Monoclonal Antibody and Protein Aggregates and their Isoforms.** Justin Steve, Atis Chakrabarti, Tosoh Bioscience LLC, King of Prussia, PA, USA

P-Th-149 **Purification of a Potential Malaria Vaccine by Multimodal Ion Exchange Chromatography.** Sonja Jensen, Jessica Paul, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY

P-Th-150 **Characterization of Two Novel High Capacity Strong Ion Exchange Resins.** Chinlun Huang, J. Kevin O'Donnell, Tosoh Bioscience, King of Prussia, PA, USA

- P-Th-151 **Aggregates and Particle Characterization to Support Biomanufacturing Process Development.** Yogesh Mudaliar, Rong-Rong Zhu, Tim Hanley, EMD Millipore, Bedford, MA, USA
- P-Th-152 **Superficially Porous Particles for Peptide and Protein Analysis.** Barry Boyes, Joseph Kirkland, Stephanie Schuster, Brian Wagner, Joseph DeStefano, Advanced Materials Technology, Inc., Wilmington, DE, USA
- P-Th-153 **Microcalorimetric Study of Linear Plasmid DNA Adsorption onto an Ion Exchange Support.** Patricia Aguilar¹, Filipa Pires¹, Marvin Thrash, Jr.², Cristina Dias-Cabral¹, ¹CICS-UBI-Health Sciences Research Centre, University of Beira Interior, Covilha, PORTUGAL; ²Department of Water Resources and Environmental Engineering, College of Science and Engineering, Central State University, Wilberforce, OH, USA
- P-Th-154 **Separation of DMB-Labeled Sialic Acids for the Comparison of Biosimilars to Reference Materials with an Improved Chromatographic Method.** Xiaoning Lu, Hillel Brandes, Dave Bell, Roy Eksteen, Sigma-Aldrich, Bellefonte, PA, USA
- P-Th-155 **Twin Column CaptureSMB: A Novel Cyclic Process to Increase the Capacity Utilization in Protein A Chromatography.** Monica Angarita¹, Baur Daniel¹, Thomas Muller-Spath², Roel Lievrouw³, Geert Lissens³, Guido Strohle², Massimo Morbidelli¹, ¹ETH Zurich, Zurich, SWITZERLAND; ²ChromaCon AG, Zurich, SWITZERLAND; ³JSR Life Sciences, Leuven, BELGIUM
- P-Th-156 **Effects of Mobile Phase Optimization on Analyte Behaviour in Size Exclusion Chromatography of Biomolecules.** James Martosella¹, Andrew Coffey², ¹Agilent Technologies, Wilmington, DE, USA; ²Agilent Technologies, Church Stretton, UK
- P-Th-157 **Fast and Efficient Reversed-phase Liquid Chromatography/Mass Spectrometry Characterization of Glycosylation in the Fc Region of a Recombinant IgG(1) Therapeutic Monoclonal Antibody (mAb).** James Martosella, Phu Duong, Alex Zhu, Agilent Technologies, Wilmington, DE, USA
- P-Th-158 **Combining Small-scale Purification and Analysis of Monoclonal Antibodies on One Instrument.** Sonja Schneider, Agilent Technologies, Waldbronn, GERMANY
- P- Th-159 **Greater Loading Capacity and Resolution for Improved Process-scale Peptide Purification.** Jochen Saar¹, Reno Nguyen², Chitra Sundarajan³, Scott Anderson⁴, Dennis McCreary⁵, Janine Sinck⁶, ¹Worms, GERMANY; ²Hesperia, CA, USA; ³Hyderabad, Andrapradesh, INDIA; ⁴Deerfield, IL, USA; ⁵Columbia, MD, USA; ⁶Allentown, PA, USA
- P-Th-160 **New Wide Pore Media Improves Loading Capacity and Productivity of Peptide and Protein Purification by Flash Chromatography.** Bopanna NK, Chitra Sundararajan, Melissa Wilcox, Janine Sinck, Reno Nguyen, Grace Discovery Sciences, Deerfield, IL, USA
- P-Th-161 **Comparing HILIC and RP for LC/MS Analysis of O-HexNAc Modified Peptides.** Barry Boyes¹, Stephanie Schuster¹, Alex Harvey², Ronald Orlando³, ¹Advanced Materials Technology, Inc., Wilmington, DE, USA; ²Glycoscientific, Inc., Athens, GA, USA; ³University of Georgia, Athens, GA, USA

3:00 - 3:30 PM **Break/Social, Exhibits and Posters**
(Location: Harbor Ballroom II & III)

Thursday Oral Session 6. Protein Targets

Session Chair: Alois Jungbauer, BOKU, Vienna

Location: Harbor Ballroom I

- 3:30 PM L-162 **Integration and Intensification of Downstream Bioprocessing based in Aqueous Two-phase Systems.** Ana Azevedo, Raquel Aires-Barros, Instituto Superior Tecnico, Lisbon, PORTUGAL
- 3:50 PM L-163 **Multi-stage Enzyme Extraction using Aqueous Two-phase Systems – Experiment and Modeling.** Axel Prinz, Katharina Koch, Tim Zeiner, TU Dortmund University, Dortmund, GERMANY
- 4:10 PM L-164 **Purifying and Concentrating Recovery Process Samples for Recombinant Protein Quantification.** Tanja Buch, Ian Marison, DCU, Dublin, IRELAND
- 4:30 PM L-165 **Predicting Protein Solubility and Crystallization Behavior based on the Second Osmotic Virial Coefficient.** Marcel Herhut, Christoph Brandenbusch, Gabriele Sadowski, Department of Biochemical and Chemical Engineering, Dortmund, GERMANY
- 4:50 PM **Historical Retrospective of ISPPP Conferences.** Milton Hearn, Monash University, Clayton, Victoria, AUSTRALIA
- 5:10 PM Pause
- 6:30 - 8:30 PM **Symposium Banquet (ticket required)**
Location: Burroughs room

Friday, July 19, 2013

- 8:15 AM **Symposium Registration Open**
Location: Harbor Ballroom

Friday Oral Session 7. Bio-Therapeutics

Session Chair: Stephanie Schuster, Advanced Materials Technology

Location: Harbor Ballroom I

- 8:45 AM L-166 **Improved Identification and Quantitation of Host Cell Proteins in Protein Therapeutics using 2D-LC and Ion Mobility.** Weibin Chen, Catalin Doneanu, Keith Fadgen, Martha Stapels, Waters, Milford, MA, USA
- 9:05 AM L-167 **Additional Structural Insights on Therapeutic Glucocerebroside Variants and Impurities by Size Exclusion Chromatography.** John Thomas, Shire, Lexington, MA, USA
- 9:25 AM L-168 **Impact of Plasmid Size on the Purification of Model pDNA Vaccines by HIC on Phenyl Membrane Adsorbers.** Luis Raiado-Pereira, Jonathan de la Vega, D. Miguel F. Prazeres, Marilia Mateus, Instituto Superior Tecnico, Lisbon, PORTUGAL
- 9:45 AM L-169 **Protein Biomarker Assays for Drug Safety Assessments.** Jennifer Colangelo, Pfizer, Groton, CT, USA
- 10:05 AM **Break**

Friday Oral Session 8. Glycans and Complex Carbohydrates

Session Chair: Jennifer Colangelo, Pfizer

Location: Harbor Ballroom I

- 10:30 AM L-170 **High Temperature LC-MS of Permethylated N-Glycans Derived from Breast Cancer Cells and Human Blood Serum.** Shiyue Zhou¹, Yunli Hu¹, Tarek Shihab¹, Ahmed Hussein², Yehia Mechref¹, ¹Texas Tech University, Lubbock, TX, USA; ²University of Alexandria, Alexandria, EGYPT
- 10:50 AM L-171 **Separations of Intact Glycoproteins by HILIC.** Barry Boyes¹, Ron Orlando², Joseph DeStefano¹, ¹Advanced Materials Technology, Inc., Wilmington, DE, USA; ²University of Georgia, Athens, GA, USA
- 11:10 AM L-172 **Progress Towards Automated Sequencing of Heparin/Heparan Sulfate.** Joshua S. Sharp, Complex Carbohydrate Research Center, University of Georgia, Athens, GA, USA
- 11:30 AM L-173 **HILIC-MS of Glycans and Glycopeptides.** Joseph Zaia, Center for Biomedical Mass Spectrometry, Boston University, Boston, MA, USA
- 11:50 PM L-174 **Hypothesis Driven Glycomics.** Shujuan Tao¹, Yining Huang¹, Barry Boyes², Ron Orlando¹, ¹Complex Carbohydrate Research Center, University of Georgia, Athens, GA, USA; ²Advanced Materials Technology, Inc., Wilmington, DE, USA
- 12:10 PM **Closing Remarks**
- 12:20 PM **Adjourn**

FREE VENDOR SEMINARS

Free Vendor Seminar sponsored by WATERS - Wednesday, July 17 @ 12:00-1:30PM

Must register at the Waters exhibit by Wednesday @ 10:30 AM

Looking at Innovator and Biosimilar Biotherapeutics through a Kaleidoscope

Characterization of biotherapeutic proteins requires the overlapping information derived from a large number of physicochemical analyses. Comprehensive physicochemical and structural characterization of these candidate biopharmaceuticals includes assessment of sequence integrity, charge variation, aggregation, glycan heterogeneity and post-translation modifications. The additional challenge of establishing comparability between an innovator and biosimilar product first requires an understanding of the variation inherent in the innovator product, and subsequent demonstration of analytical similarity with the candidate biosimilar. This seminar will illustrate how the Waters Biopharmaceutical Platform Solution with UNIFI can be applied to assess and monitor typical quality attributes of innovator and biosimilar biopharmaceuticals.

Free Vendor Seminar sponsored by SHIMADZU - Thursday, July 18 @ 12:00-1:30PM

Must register at the Shimadzu exhibit by Wednesday @ 3:45 PM

Turning Mountains into Molehills: The New Landscape of Protein Analysis

Turn your 24 hour tryptic digests into 1 minute digests. Turn your web browser into a world class bioinformatics platform. Turn your MegaDalton sized protein complexes into measurable ions. This workshop will provide your organization with the facts and critical lessons you need to know for the successful adoption and integration of ultra-fast protein digestions, ultra-fast mass spectrometry, powerful new cloud-based informatics in your laboratory and ultra-high mass detection. Please join us for this interactive workshop where you will discover new Perfinity integrated Digestion Platform (iDP) technologies that enable automated, reproducible protein digests on a sub-minute timescale, greatly improving the applicability of peptide based SRM assays. Cloud-based informatics solutions that provide a unique opportunity to improve not only laboratory data storage, but also enable on-cloud workflow execution and project sharing will also be presented. Finally, the additional challenge of analyzing high molecular weight protein complexes and aggregates with the AXIMA MegaTOF will be discussed. These tools will save your laboratory time, money and resources and will greatly improve data sharing with collaborators.

Free Vendor Seminar sponsored by KNAUER - Thursday, July 18 @ 12:00-1:30PM

Must register at the KNAUER exhibit by Wednesday @ 3:45 PM

Contichrom®: A Versatile Purification Platform for Batch/CaptureSMB/MCSGP Biochromatography

A liquid chromatographic process platform consisting of novel capture and polish processes will be presented. The novel process principles (CaptureSMB, MCSGP) offer significant benefits in discovery, process development and production and will be discussed in conjunction with the Contichrom® equipment platform being capable of performing all LC processes. Contichrom® lab is a preparative twin-column liquid chromatography platform, offering great flexibility for all process choices (batch, SMB, CaptureSMB, MCSGP, sequential flow-through) confined in a single equipment and control software. Contichrom® lab allows fast development of superior process resulting in substantial increase in processivity, yield and product purity whilst omitting large screening and process optimization efforts. Starting from a simple non-optimized batch process, the user-friendly Contichrom® lab equipment and control software allows to transform a batch process into an optimized MCSGP in a simple three step procedure.

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