



Chemical Cross-Linking and Covalent Labeling: from Proteins to Cellular Networks

Organized by

Lan Huang

University of California, Irvine

Andrea Sinz

Martin-Luther University Halle-Wittenberg, Germany

Richard Vachet

University of Massachusetts, Amherst

31st ASMS Sanibel Conference on Mass Spectrometry
January 24 – 27, 2019
St. Petersburg, FL

Thank you to our sponsors!

Advion

eSpectra

Speakers – please arrive ½ hour before your session begins to load your presentation

THURSDAY, JANUARY 24

4:00 - 7:00 pm **Setup all posters**, *Grand Bay Ballroom South*

6:00-7:00 pm **Registration**

7:00 – 7:05 pm
Opening Remarks, Lan Huang, Andrea Sinz & Richard Vachet
Grand Bay Ballroom North

7:05 - 8:05 pm
KEYNOTE LECTURE
Session Chair: Andrea Sinz

7:05-8:05 pm "Alternative Ways to Study Protein Interactions"; **Carol Robinson**, *University of Oxford*

8:05-10:00 pm
Reception
Grand Bay Ballroom South

**The following students received an ASMS Student Travel Award.
Congratulations!**

Jayanta Kishor Chakrabarty
University of Texas at Arlington

Andrew Norris
The Ohio State University

Hope Flaxman
Harvard University

Daniel Polasky
University of Michigan

Danté T. Johnson
*University of Maryland Baltimore School of
Pharmacy*

Esben Trabjerg
ETH Zurich

Jin Joo Kang
*Montreal Clinical research Institute/McGill
University*

Sabine Wittig
Universität Halle-Wittenberg, Halle (Saale)

Julia Kitaygorodsky
University of Toronto

Bingqing Zhao
Indiana University Bloomington

Oleg Klykov
Utrecht University

Daniel Ziemianowicz
University of Calgary

Speakers – please arrive ½ hour before your session begins to load your presentation

FRIDAY, JANUARY 25

7:00 - 8:30 am **Continental Breakfast**, *Grand Bay Ballroom South*

8:30-10:00 am

Developing Cross-linking Mass Spectrometry to Delineate Protein Structures

Session Chair: Philip Andrews

Grand Bay Ballroom North

- 8:30-9:00 am "Protein Structure Prediction by the Combined Approach of Short Distance Crosslinking and Discret Molecular Dynamics"; **Christoph Borchers**, *University of Victoria, Canada*
- 9:00-9:30 am "Improving Mass Spectrometry Analysis of Protein Structures with Arginine-Selective Chemical Cross-linkers"; **Meng-Qiu Dong**, *National Institute of Biological Sciences, China*
- 9:30-10:00 am "Cross-linking/Mass Spectrometry Workflows Based on MS-Cleavable Cross-Linkers and the MeroX Software for Studying Protein Structures and Protein-Protein Interactions"; **Andrea Sinz**, *Martin Luther University Halle-Wittenberg*

10:00-10:15 am **Coffee Break**, *Grand Bay Ballroom South*

10:15-11:45 am

Developing Cross-Linking Mass Spectrometry to Delineate Protein Structures

Session Chair: James Bruce

- 10:15-10:45 am "Cross-Linking Mass Spectrometry Strategies to Define Interaction and Structural Dynamics of Protein Complexes"; **Lan Huang**, *University of California, Irvine*
- 10:45-11:15 am "Kinetochore Assembly and Function: Insights by Chemical Crosslinking and Mass Spectrometry"; **Franz Herzog**, *Ludwig-Maximilians-Universität München*
- 11:15-11:45 am "Compositional Dynamics of Protein Complexes"; **Natalie Romanov**, *EMBL Heidelberg*

11:45-Noon **Group Photo**

Noon - 1:15 pm **Group Lunch**, provided by ASMS
St. Petersburg I & II

Speakers – please arrive ½ hour before your session begins to load your presentation

FRIDAY, JANUARY 25

1:15-3:15 pm

Oxidative Labeling

Session Chair: Ian Webb

- 1:15-1:45 pm "Oxidative Footprinting and Crosslinking for Determining Protein/Protein and Protein/Peptide Interfaces"; **Michael Gross**, *Washington University*
- 1:45-2:15 pm "Structure and Dynamics of Macromolecules Using Footprinting"; **Mark Chance**, *Case Western Reserve University*
- 2:15-2:45 pm "Reproducibility and Robustness in FPOP: the Need for Community Standards for Radical Dosimetry"; **Josh Sharp**, *University of Mississippi*
- 2:45-3:15 pm "Functional Implications of Protein Oxidation: Turning Cytochrome C into an Apoptotic Peroxidase"; **Lars Konermann**, *Western University, Canada*
- 3:15-7:00 pm **Free Time**, we recommend the world-renowned Dali Museum, even if you do not like his art the venue is worth a visit, located two blocks south of the Hilton.

7:00-7:45 pm

KEYNOTE LECTURE

Session Chair: Richard Vachet

- 7:00-7:45 pm "Surveying and Mapping Macromolecular Cellular Terrains"; **Brian Chait**, *Rockefeller University*

7:45-8:00 pm

3-Minute Poster Flash Talks

Session Chair: Richard Vachet

- 7:45-7:48 pm **Heather O'Neill**; Poster #31: "Aptamer-Based Affinity Labeling Identifies a Surface Spliceosomal Complex that When Internalized Induces Aberrant Splicing and Cell Death in B-Cell-Lymphoma Cells"
- 7:48-7:51 pm **Esben Trabjerg**; Poster #35: "Feasibility of Succinimidyl-Based Crosslinking at Slightly Acidic Conditions"
- 7:51-7:54 pm **Sabine Wittig**; Poster #41: "Cross-Linking Intact Synaptic Vesicles Reveals Protein Interactions Networks that Mediate Membrane Fusion in the Neuronal Synapse"
- 7:54-7:57 pm **Jayanta Kishor Chakrabarty**; Poster #11: "High Confidence Identification of Protein Cross-Linking by Next Generation Dual Cleavable Cross-Linking Technology (DUCCT)"
- 7:57-8:00 pm **Bingqing Zhao**; Poster #45: "Multiple Dissociation Methods in Conjunction with an ETD Cleavable Cross-Linker Facilitate the Identification of Cross-Linked Peptides"

8:00-10:00 pm

Poster Session I & Reception Odd-Numbered Posters Present

Grand Bay Ballroom South

Speakers – please arrive ½ hour before your session begins to load your presentation

SATURDAY, JANUARY 26

7:00 - 8:30 am **Continental Breakfast**, *Grand Bay Ballroom South*

8:30-10:30 am

Software Development and Structural Modeling

Session Chair: Carla Schmidt

Grand Bay Ballroom North

8:30-9:00 am "Incorporating XlinkX into Integrative Structural Biology"; **Albert Heck**, *University of Utrecht*

9:00-9:30 am "The MaxQuant Software for Cross-Linking/Mass Spectrometry"; **Jürgen Cox**, *MPI Martinsried*

9:30-10:00 am "Reliable Identification of Cross-Links with Non-Cleavable Linkers", **Robert Chalkley**, *University of California, San Francisco*

10:00-10:30 am "Macromolecular Structure and Dynamics Based on Cross-Links"; **Dina Schneidman**, *Hebrew University*

10:30-10:45 am **Coffee Break**, *Grand Bay Ballroom South*

10:45-11:45 am

15-Minute Short Talks

Session Chair: Michael Sussman

10:45-11:00 am **Mark Larance**; Poster #28: "Global Liver Protein Crosslinking Reveals a Direct Interaction between the RISC Complex and the Ribosome"

11:00-11:15 am **Rosa Viner**; Poster #38: "Protein Complex Dynamics Using Quantitative Cross-Linking Mass Spectrometry"

11:15-11:30 am **Saiful Chowdhury**; No Poster "Toll-Like Receptor 2 Interactome by Mass Spectrometry-Based Co-Immunoprecipitation (Co-IP) Crosslinking Proteomics"

11:30-11:45 am **Julian Mintseris**; Poster #30: "High-Density Chemical Cross-Linking for Modeling Protein Interactions"

11:45-1:00 pm **Lunch on your own**

We recommend the eclectic Saturday Market, located one block north of the Hilton.

Speakers – please arrive ½ hour before your session begins to load your presentation

SATURDAY, JANUARY 26

1:00-2:30 pm

***in vivo* Labeling and Analysis of Cellular Networks**

Session Chair: Henning Urlaub

Grand Bay Ballroom North

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|--------------|---|
| 1:00-1:30 pm | "Quantitative Interactome Dynamics: A Look under the Hood"; Jim Bruce ,
<i>University of Washington, Seattle</i> |
| 1:30-2:00 pm | "In-Cell Footprinting for Proteome-Wide Structural Biology"; Lisa Jones , <i>University of Maryland</i> |
| 2:00-2:30 pm | "Proximity Proteomics: from Organelles to Complexes"; Anne-Claude Gingras ,
<i>Lunenfeld-Tanenbaum Research Institute, Canada</i> |

2:30-3:00 pm

15-Minute Short Talks

Session Chair: Meng-Qiu Dong

- | | |
|--------------|---|
| 2:30-2:45 pm | Casimir Bamberger ; Poster #4: "Covalent Protein Painting Reveals Aberrant Protein Folding in Cells and Tissues <i>in vivo</i> " |
| 2:45-3:00 pm | Haiyuan Yu ; Poster #46: "MaXLinker: an Innovative "MS3-Centric" Proteome-Wide Cross-Link Search Engine with High Specificity and Sensitivity" |
| 3:00-7:00 pm | Free Time |

Speakers – please arrive ½ hour before your session begins to load your presentation

SATURDAY, JANUARY 26

7:00-7:30 pm

15-Minute Short Talks

Session Chair: Huilin Li

- 7:00-7:15 pm **Ryan Bomgarden**; Poster #8: “Right Tools for the Job: New compounds and Sample Preparation Reagents for Studying Chemically Cross-Linked Proteins”
- 7:15-7:30 pm **Gianluca Degliesposti**; Poster #16: “Cross-Linking and Mass Spectrometry for the Structural and Functional Investigation of the 3’-End mRNA Cleavage and Polyadenylation Factor (CPF)”

7:30-7:51 pm

3-Minute Poster Flash Talks

Session Chair: Huilin Li

- 7:30-7:33 pm **Therese Dau**; Poster #14: “Sequential Digestion with Trypsin and Elastase Improves Sequence Coverage in Cross-Linking/Mass Spectrometry”
- 7:33-7:36 pm **Christian Tüting**; Poster #36: “Structural Insight into the Polyadenylation Complex”
- 7:36-7:39 pm **Laurence Angel**; Poster #2: “Weak Acid-Base Interactions of Histidine and Cysteine Affect the Charge States, Tertiary Structure, and Zn(II) Labeling of HeptaPeptides”
- 7:39-7:42 pm **Mowei Zhou**; Poster #48: “Pseudo-Enzyme PDX1.2 and Its Interaction with Active Analogs Explored with Native Mass Spectrometry”
- 7:42-7:45 pm **Marshall W. Bern**; Poster #6: “How the Flu Takes Off Its Coat: Cross-Linking Study of pH-Induced Changes of the Influenza A Virus Matrix Layer”
- 7:45-7:48 pm **Ann English**; Poster #18: “Profiling Oxidative Proteoforms to Discover New Redox Functions of Proteins in Cells: the Case of Cytochrome C Peroxidase”.
- 7:48-7:51 pm **Oleg Klykov**; Poster #26: “*in-situ* Crosslinking Mass Spectrometry Provides a High-Resolution Structural Model of Fibrin Clots”

8:00-10:00 pm

Poster Session II & Reception

Even-Numbered Posters Present

Grand Bay Ballroom South

Speakers – please arrive ½ hour before your session begins to load your presentation

SUNDAY, JANUARY 27

7:00 - 8:30 am **Continental Breakfast, Grand Bay Ballroom South**

8:30-10:00 am
Defining Protein Aggregates/Complexes
Session Chair: Anne-Claude Gingras
Grand Bay Ballroom North

8:30-9:00 am "Insight into beta-2-Microglobulin Amyloid Formation and Inhibition Using Covalent Labeling Mass Spectrometry"; **Richard Vachet**, *University of Massachusetts*

9:00-9:30 am "Diazirine-Based Reagents for Structural Mass Spectrometry of Complex Systems"; **David Schriemer**, *University of Calgary, Canada*

9:30-10:00 am "Methods and Applications for the Thermodynamic Analysis of Protein-Ligand Complexes on the Proteomic Scale"; **Michael Fitzgerald**, *Duke University*

10:00-10:15 am **Coffee Break, Grand Bay Ballroom South**

10:15-11:15 am
Defining Protein Aggregates/Complexes (Continued)
Session Chair: Anne-Claude Gingras

10:15-10:45 am "Structural Basis of Cullin-RING E3 Ligase Regulation by the COP9 Signalosome Using Integrative Mass Spectrometry"; **Argyris Politis**, *King's College London*

10:45-11:15 am "Integrating Surface-Induced Dissociation into a Native MS Workflow"; **Vicki Wysocki**, *Ohio State University*

11:15-12:15 pm
KEYNOTE LECTURE
Session Chair: Lan Huang

11:15-12:15 pm "Towards the Modular Proteotype", **Ruedi Aebersold**, *ETH*

12:15-12:30 pm **Closing Remarks**, Lan Huang, Andrea Sinz & Richard Vachet

12:30 pm **Remove all posters**

POSTERS

Grand Bay Ballroom South

Setup up all posters by 7:00 pm on Thursday

ODD-numbered posters present during the Friday Poster Session

EVEN-numbered posters present during the Saturday Poster Session

- 1 **Utility of Covalent Labeling Mass Spectrometry Data in Protein Structure Prediction with Rosetta;** Melanie Aprahamian¹; Emily Chea²; Lisa Jones²; Steffen Lindert¹; ¹*Ohio State University, Columbus, OH*; ²*University of Maryland, Baltimore, MD*
- 2 **Weak Acid-Base Interactions of Histidine and Cysteine Affect the Charge States, Tertiary Structure, and Zn(II) Labeling of HeptaPeptides;** Laurence Angel¹; Yu-Fu Lin¹; Enas N Yousef¹; ¹*Texas A&M University - Commerce, Commerce, TX*
- 3 **Energy Barriers to the Pre-amyloid Structural Change of β -2-microglobulin under Amyloid Forming Conditions Studied by Covalent Labeling and Mass Spectrometry;** Robert Vaughan¹, Akshada Abhyankar¹, Jamie Canderan¹, Eric Graban², John Hale³; ¹*Indiana University, Bloomington, IN*, ²*QuarryBio, LLC, Tallahassee, FL*, ³*QuarryBio, LLC, Klamath Falls, OR*
- 4 **Covalent Protein Painting Reveals Aberrant Protein Folding in Cells and Tissues *in vivo*;** Casimir Bamberger¹; Sandra Pankow¹; Salvadore Martínez-Bartolomé¹; John R Yates III¹; ¹*Scripps Research Institute, La Jolla, CA*
- 5 **Chemical Labelling of Proteins for Structure Elucidation and Determination of the Protein Orientation within Membranes;** Marie Barth¹; Julian Bender¹; Andy Lau²; Argyris Politis²; Carla Schmidt¹; ¹*Interdisciplinary Research Center HALOmem, Charles Tanford Protein Center, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany*; ²*Department of Chemistry, Kings College London, London, United Kingdom*
- 6 **How the Flu Takes Off Its Coat: Cross-Linking Study of pH-Induced Changes of the Influenza A Virus Matrix Layer;** Lisa Selzer¹; Jasmine Moshiri¹; Ryan Leib¹; Allis Chien¹; Fang Liu¹; Kratika Singhal¹; Rowan Matney¹; Wilfred Tang²; Marshall W. Bern²; Karla Kirkegaard¹; ¹*Stanford University, Stanford, CA*; ²*Protein Metrics, Cupertino, CA*
- 7 **Protein Interactions in Bacterial Biofilm Matrix Studied by Cross-Linking Mass Spectrometry;** Chengzhi Cai¹; Guoting Qin¹; Pengzhi Zhang¹; ¹*University of Houston, Houston, TX*
- 8 **Right Tools for the Job: New Compounds and Sample Preparation Reagents for Studying Chemically Cross-Linked Proteins;** Ryan Bomgarden¹; Leigh Foster¹; Erum Raja¹; Chris Etienne¹; Rosa Viner²; John Rogers¹; ¹*ThermoFisher Scientific, Rockford, IL*; ²*ThermoFisher Scientific, San Jose, CA*
- 9 **Quantitative, Comprehensive, and Ultra-Sensitive Protein Footprinting in Living Cells;** Jenna G. Caldwell; Joshua E. Elias; Pehr A. B. Harbury; *Stanford University, Stanford, CA*
- 10 **Electrochemistry-Assisted Mass Spectrometric Absolute Quantification without the Use of Standards;** Hao Chen; *New Jersey Institute of Technology, Newark, NJ*
- 11 **High Confidence Identification of Protein Cross-Linking by Next Generation Dual Cleavable Cross-Linking Technology (DUCCT);** Jayanta Kishor Chakrabarty¹; Abu Hena M Kamal¹; Saiful M. Chowdhury¹; ¹*University of Texas, Arlington, Arlington, TX*

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EVEN-numbered posters present during the Saturday Poster Session

- 13 **Implementation of Single Residue Resolution HDX-MS Data for Protein Modeling in SURPASS and CABS Algorithms;** Dominik Cysewski¹; Aleksandra Badaczewska-Dawid²; Michal Burdukiewicz³; Michal Kistowski¹; Katarzyna Dabrowska¹; Michal Dadlez¹; ¹*Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Warsaw, Poland*; ²*Faculty of Chemistry, University of Warsaw, Wroclaw, Poland*; ³*Warsaw University of Technology, Warsaw, Poland*
- 14 **Sequential Digestion with Trypsin and Elastase Improves Sequence Coverage in Cross-Linking/Mass Spectrometry;** Therese Dau¹; Kapil Gupta²; Imre Berger²; Juri Rappsilber^{1,3}; ¹*University of Edinburgh, Edinburgh, United Kingdom*; ²*University of Bristol, Bristol, United Kingdom*; ³*Technische Universität Berlin, Berlin, Germany*
- 15 **Protein Visualization Using Trihalo Compounds;** Rabab ElMergawy¹; Gianluca Triolo¹; Michael Myers¹; ¹*Protein Networks Group, International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, 34149, Italy*
- 16 **Cross-Linking and Mass Spectrometry for the Structural Investigation of the 3'-end mRNA Cleavage and Polyadenylation Factor (CPF);** Gianluca Degliesposti¹; Sarah L Maslen¹; Chris H Hill²; Lory A Passmore¹; Mark J Skehel¹; ¹*MRC Laboratory of Molecular Biology, Cambridge, United Kingdom*; ²*Department of Pathology, University of Cambridge, Cambridge, United Kingdom*
- 17 **Structural Proteomics through Photo-Affinity Labeling Mass Spectrometry: Studies with the FKBP12-rapamycin-FRB Ternary Complex;** Hope A Flaxman¹; Chia-Fu Chang¹; Hung-Yi Wu¹; Carter Nakamoto¹; Christina M Woo¹; ¹*Harvard University, Cambridge, MA*
- 18 **Profiling Oxidative Proteoforms to Discover New Redox Functions of Proteins in Cells: the Case of Cytochrome c Peroxidase;** Ann M English; *Concordia University, Montreal, QC*
- 19 **Developing Quantitative Chemical Labeling Strategies to Characterize Biopharmaceutical Protein Aggregation Using Mass Spectrometry Analysis;** M. Cyndell Gracieux; Sarah Ballance; Jack Thomas, Michael B. Goshe; *North Carolina State University, Raleigh, NC*
- 20 **An Integrated One-Week Protocol for Proteome-Wide Cross-Linking/Mass Spectrometry Studies Based on the MS-Cleavable Cross-linker DSBU and the MeroX 2.0 Software;** Claudio Iacobucci¹; Michael Götze¹; Christine Piotrowski¹; Christian Ihling¹; Andrea Sinz¹; ¹*Martin Luther University Halle-Wittenberg, Halle (Saale), Germany*
- 21 **Evaluation of an Isotope-Labeled MS/MS-Cleavable Cross-Linker for Protein Structure Analysis;** Patrizia Springorum¹; Michael Götze²; Christoph Hage¹; Christian Ihling¹; Mathias Schäfer³; Andrea Sinz¹; ¹*Martin Luther University Halle Wittenberg, Halle (Saale), Germany*; ²*ETH Zurich, Zürich, Switzerland*; ³*University of Cologne, Cologne, Germany*
- 22 **The Role of Aliphatic Side Chains in Sculpting the Folding Free Energy Landscape of TIM Barrel Proteins across Evolutionary Time;** Rohit Jain¹; Khaja Muneeruddin^{1,2}; Scott A Shaffer^{1,2}; C. Robert Matthews¹; ¹*Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA*; ²*Proteomics and Mass Spectrometry Facility, University of Massachusetts Medical School, Shrewsbury, MA*

POSTERS

Grand Bay Ballroom South

Setup up all posters by 7:00 pm on Thursday

ODD-numbered posters present during the Friday Poster Session

EVEN-numbered posters present during the Saturday Poster Session

- 23 **Innovation of a Novel Pulse-Chase in Cell Footprinting Method for the Study of Protein Folding Phenomena;** Dante T Johnson¹; Lisa M Jones¹; Benjamin Punshon-Smith²; Anne Gershenson³; ¹*University of Maryland Baltimore School of Pharmacy, Baltimore, MD*; ²*University of Maryland Baltimore County, Baltimore, MD*; ³*University of Massachusetts Amherst, Amherst, MA*
- 24 **Functional and Structural Mechanism of Drosophila PRC1 with Chromatin Assembly across the Cell Cycle;** Jin Joo Kang; IRCM, Montreal, QC
- 25 **Mapping of Protein Interactions through Protein Crosslinking Coupled to *in vivo* Protein Tagging.;** Julia Kitaygorodsky^{1, 2}; Brett Larsen¹; Cassandra Wong¹; Payman Samavarchi Tehrani¹; Amber Couzens¹; Anne-Claude Gingras^{1, 2}; ¹*Lunenfeld-Tanenbaum Research Institute, Toronto, ON*; ²*Department of Molecular Genetics, University of Toronto, Toronto, ON*
- 26 ***in-situ* Crosslinking Mass Spectrometry Provides a High-Resolution Structural Model of Fibrin Clots;** Oleg Klykov^{1, 2}; Sander A. B. Meijer^{1, 3}; Albert J.R. Heck^{1, 2}; Ricahrd A. Scheltema^{1, 2}; ¹*Biomolecular Mass Spectrometry and Proteomics, Bijvoet Center for Biomolecular Research and Utrecht Institute for Pharmaceutical Sciences, Utrecht, Netherlands*; ²*Netherlands Proteomics Center, Utrecht, Netherlands*; ³*Depar*
- 27 **Hydroxyl Radical Footprinting with PLIMB (Plasma-Induced Modification of Biomolecules) Identifies Structural Changes upon EGFR Dimerization;** Benjamin Minkoff¹; Joshua M. Blatz¹; Daniel Benjamin¹; Faraz A. Choudhury¹; J. Leon Shoheit¹; Michael R. Sussman¹; ¹*University of Wisconsin, Madison, WI*
- 28 **Global Liver Protein Crosslinking Reveals a Direct Interaction between the RISC complex and the Ribosome;** Isobel Tenison-Collins¹; Dylan J Harney¹; Andrew Giltrap¹; Richard Payne¹; Mark Larance¹; ¹*The University of Sydney, Sydney, Australia*
- 29 **Enrichment of Crosslinked Peptides Post-Digestion Using Desthiobiotin Tagged Symmetrical Crosslinker;** Victoria Sanchez¹; Stephan Uebel¹; Nagarjuna Nagaraj¹; ¹*MaxPlanck Institute for Biochemistry, Munich, Germany*
- 30 **High-Density Chemical Cross-Linking for Modeling Protein Interactions;** Julian Mintseris¹; Steven P Gygi¹; ¹*Harvard Medical School, Boston, MA*
- 31 **Aptamer-Based Affinity Labeling Identifies a Surface Spliceosomal Complex that When Internalized Induces Aberrant Splicing and Cell Death in B-Cell-Lymphoma Cells;** Heather O'Neill¹; Vaishali Pannu¹; Sonal Tonapi¹; Janet Duncan¹; Mathew Rosenow¹; Anthony Helmstetter¹; Daniel Magee¹; Qing Zhang¹; Teresa Tinder¹; Melissa Richards¹; Michael Famulok^{2, 3}; David Spetzler¹; Mark Miglarese¹; Günter Mayer^{2, 4}; ¹*Caris Life Sciences, Phoenix, AZ*; ²*LIMES Program Unit Chemical Biology & Medicinal Chemistry, University of Bonn, Bonn, Germany*; ³*Chemical Biology Max-Planck-Fellowship Group, Center of Advanced European Studies and Resea*
- 32 **Use of Chemical Modification and Native Mass Spectrometry to Investigate the Assembly of Archaeal RNase P, a Catalytic Ribonucleoprotein Complex;** Andrew Norris¹; Hong-Duc Phan¹; Stella Lai¹; Venkat Gopalan¹; Vicki Wysocki¹; ¹*The Ohio State University, Columbus, OH*
- 33 **Global Profiling of Protein-Protein Interactions in *E. coli* Biofilms Using Crosslinking-based Mass Spectrometry;** Lolita Piersimoni¹; Janet Price¹; Matthew Chapman¹; Peter Freddolino¹; Philip C Andrews¹; ¹*University of Michigan, Ann Arbor, MI*

POSTERS

Grand Bay Ballroom South

Setup up all posters by 7:00 pm on Thursday

ODD-numbered posters present during the Friday Poster Session

EVEN-numbered posters present during the Saturday Poster Session

- 34 **Broadening the Repertoire of CID-Cleavable Crosslinkers: MC4 Characterization and Structural Analysis of GPCR Complexes;** Manolo David Plasencia¹; Qiuyan Chen²; Lolita Piersimoni¹; John JG Tesmer²; Philip C Andrews¹; ¹*University of Michigan, Ann Arbor, MI*; ²*Purdue University, West Lafayette, IN*
- 35 **Feasibility of Succinimidyl-Based Crosslinking at Slightly Acidic Conditions;** Esben Trabjerg¹; Alexander Leitner¹; ¹*Institute of Molecular Systems Biology, Department of Biology, ETH Zurich, Zurich, Switzerland*
- 36 **Structural Insight into the Polyadenylation Complex;** Christian Tüting; *Martin Luther University Halle Wittenberg, Halle (Saale), Germany*
- 37 **Covalent Labeling Modulates Intact Protein Fragmentation: Towards a Combined Analysis of Intact Protein Sequence and Structure;** Daniel A Polasky¹; Michael Keating^{1,2}; Sugyan M Dixit¹; Philip C Andrews¹; Brandon T Ruotolo¹; ¹*University of Michigan, Ann Arbor, MI*; ²*University of Texas, Austin, Austin, TX*
- 38 **Protein Complex Dynamics Using Quantitative Cross-linking Mass Spectrometry;** Rosa Viner¹; Terry Zhang¹; Leigh A Foster²; Ryan Bomgarden²; Kai Fritze³; Frank Berg³; ¹*ThermoFisher Scientific, San Jose, CA*; ²*ThermoFisher Scientific, Rockford, IL*; ³*Thermo Fisher Scientific, Bremen, Germany*
- 39 **Flash Oxidation (FOX): A New and Improved Platform for Biopharmaceutical Hydroxyl Radical Protein Foot-printing Higher Order Structural Analysis;** Scot R Weinberger¹; Ron C Orlando^{1,2}; Joshua S Sharp^{1,3}; ¹*GenNext Technologies, Inc., Montara, CA*; ²*University of Georgia, Athens, GA*; ³*University of Mississippi, Oxford, MS*
- 40 **Developing Cross-linking Mass Spectrometry (XL-MS) to Delineate Protein Interaction Landscapes in Living Cells;** Andrew Wheat¹; Clinton Yu²; Xiaorong Wang²; Lan Huang²; ¹*University of California, Irvine, Irvine, CA*; ²*Department of Physiology and Biophysics, Irvine, CA*
- 41 **Cross-Linking Intact Synaptic Vesicles Reveals Protein Interactions Networks that Mediate Membrane Fusion in the Neuronal Synapse;** Sabine Wittig¹; Marcelo Ganzella²; Susann Kostmann¹; Ángel Pérez-Lara²; Reinhard Jahn²; Carla Schmidt¹; ¹*Universität Halle-Wittenberg, Halle (saale), Germany*; ²*Department of Neurobiology, Max-Planck-Institute for Biophysical Chemistry, Göttingen, Germany*
- 42 **Universal Extraction of Crosslinked Peptides from Linear Peptide Backgrounds via Orthosift;** Bjorn-Erik Wulff; *Stanford University, Stanford, CA*
- 43 **Optimized Fragmentation Strategies for Maximizing Identification of Cross-Linked Peptides Using Sulfoxide-Based MS-Cleavable Reagents;** Clinton Yu¹; Lan Huang¹; ¹*University of California, Irvine, Irvine, CA*
- 44 **High-Throughput Quantitative Top-Down Proteomics in Complex Samples using Protein-Level Tandem Mass Tag (TMT) Labeling;** Dahang Yu¹; Zhe Wang¹; Qiang Kou²; Kenneth Smith³; Xiaowen Liu²; Si Wu¹; ¹*University of Oklahoma, Norman, OK*; ²*Indiana University-Purdue University Indianapolis, Indianapolis, IN*; ³*Oklahoma Medical Research Foundation, Oklahoma City, OK*

POSTERS

Grand Bay Ballroom South

Setup up all posters by 7:00 pm on Thursday

ODD-numbered posters present during the Friday Poster Session

EVEN-numbered posters present during the Saturday Poster Session

- 45 **Multiple Dissociation Methods in Conjunction with an ETD cleavable Cross-Linker Facilitate the Identification of Cross-Linked Peptides;** Bingqing Zhao¹; Colin P. Reilly¹; James P. Reilly¹; ¹*Indiana University, Bloomington, IN*
- 46 **MaXLinker: an Innovative “MS3-Centric” Proteome-Wide Cross-Link Search Engine with High Specificity and Sensitivity;** Haiyuan Yu; *Cornell University, Ithaca, NY*
- 47 **A Comprehensive Analytical Routine for Enhanced Mapping of Protein Surfaces Using Carbene-Based Labeling Methods;** Daniel S Ziemianowicz¹; David C Schriemer¹; ¹*University of Calgary, Calgary*
- 48 **Pseudo-Enzyme PDX1.2 and its Interaction with Active Analogs Explored with Native Mass Spectrometry;** Irina V Novikova¹; Mowei Zhou¹; Jared B Shaw¹; Hanjo Hellmann²; James E Evans¹; ¹*Pacific Northwest National Laboratory, Richland, WA*; ²*Washington State University, Pullman, WA*
- 49 **Covalent Labeling and Mass Spectrometry for Epitope Mapping of Monoclonal Antibodies Against TNF;** Robert Vaughan¹, Akshada Abhyankar¹, Jamie Canderan¹, Eric Graban², John Hale³; ¹*Indiana University, Bloomington, IN*, ²*QuarryBio, LLC, Tallahassee, FL USA*, ³*QuarryBio, LLC, Klamath Falls. OR*