

CARB

DIVISION OF CARBOHYDRATE CHEMISTRY

Eriks Rozners, *Program Chair*

OTHER SYMPOSIA OF INTEREST:

Frontiers in Glycoscience (see *CELL*, Mon, Tue)

Ronald Breslow Award for Achievement in Biomimetic Chemistry (see *ORGN*, Sun)

Cellulose in Solid State and Solution - Structure, Chemistry and Reaction Mechanisms (see *CELL*, Sun, Mon, Tue, Wed)

ACS Chemical Biology Award Symposium (see *BIOL*, Tue)

Application of Computational Chemistry to Biomass Chemistry and Utilization (see *CELL*, Sun, Mon)

The Chemistry & Biology of Non-Natural Nucleic Acids (see *BIOL*, Mon)

BUSINESS MEETINGS:

Business Meeting, 5 PM: Sun

SUNDAY MORNING

Section A

Colorado Convention Center
Mile High Ballroom 1C

Wolfrom Award Symposium

N. L. Pohl, E. Rozners, *Organizers*
J. C. Paulson, *Presiding*

9:30 1. Building on Wolfrom's legacy: From the Chemurgy of yesterday to the renewables of today. **K.B. Hicks**, A.A. Boateng, C.A. Mullen, Y. Elkasabi, A.T. Hotchkiss, M.P. Yadav

10:10 2. Cranberries: From polyphenols to polysaccharides. **C. Khoo**

10:50 3. Bioactive pectic oligosaccharides. **A.T. Hotchkiss**

SUNDAY AFTERNOON

Section A

Colorado Convention Center
Mile High Ballroom 1C

Isbell Award and Gin New Investigator Award Symposium

N. L. Pohl, E. Rozners, *Organizers*
J. C. Paulson, *Presiding*

1:00 4. Recent studies on the synthesis of glycans from mycobacteria and campylobacters. **T.L. Lowary**

1:30 5. Synthesis of heparan sulfate oligosaccharides and glycopeptide. **X. Huang**, S.B. Dulaney, Y. Xu, K. Yoshida, B. Yang, W. Yang, J. Liu

2:00 6. Therapeutic in vivo synthesis by glyco carriers. **K. Tanaka**

2:30 Intermission.

2:50 7. Split personality of human O-GlcNAc transferase. **S. Walker**

3:20 8. Photocrosslinking approach to discover O-GlcNAc-interacting proteins. A. Rodriguez, S. Yu, B. Li, **J.J. Kohler**

3:50 9. Chemical probes for the functional analysis of O-GlcNAc modifications. **M. Pratt**

MONDAY MORNING

Section A

Colorado Convention Center
Mile High Ballroom 1C

Glycomimetic Compounds: An Untapped Source of Novel Therapeutics

J. Magnani, *Organizer, Presiding*

9:00 10. Hexosamine mimetics designed to reverse the Warburg Effect. **K.J. Yarema**

9:30 11. Selectin antagonists: Acyclic tethers with a defined conformational bias. **Y. Guindon**, C. Mickael, G. Tambutet, M. Prévost

10:00 12. Toward the development of selective DC-SIGN antagonists. **A. Bernardi**

10:30 Intermission.

11:00 13. Design and discovery of GMI 1070 (Rivipansel), a novel pan-selectin antagonist for the treatment of vaso-occlusive crisis in sickle cell disease. **J.M. Peterson**, A. Sarkar, J.T. Patton, M. Rahman, N. Karasanyi, B. Ernst, J.L. Magnani

11:30 14. New NMR tools for unraveling the conformation, dynamics, and recognition properties of glycomimetics. **J. Jimenez-Barbero**

MONDAY AFTERNOON

Section A

Colorado Convention Center
Mile High Ballroom 1C

Glycomimetic Compounds: An Untapped Source of Novel Therapeutics

J. Magnani, *Organizer, Presiding*

1:30 15. Galectin-ligand analogs and mimetics in intracellular vesicle damage and in angiogenesis. **U.J. Nilsson**, H. Leffler, N. Panjwani

2:00 16. Druggability of lectins, using the example of a bacterial adhesin. **B. Ernst**, P. Frei, J. Bezencon, D. Eris, S. Rabbani, P. Zihlmann, R. Preston, B. Fiege

2:30 17. Well-defined antibody-drug conjugates (ADCs) through site-specific conjugation. **G. Boons**

3:00 Intermission.

3:30 18. Isoform selective inhibition of tumor-associated carbonic anhydrase IX using carbohydrate-based sulfamates for the treatment of several cancers. **B. P. Mahon**, J. Ladwig, L. Bornaghi, D. Vullo, S. Poulsen, C.T. Supuran, R. McKenna

4:00 19. Synthesis and properties of polyfluorinated carbohydrates. **B. J. Linclau**

4:30 20. Computational design of glycomimetic inhibitors - prospects and limitations. **M. Frank**, P. Nyholm

MONDAY EVENING

Section A

Colorado Convention Center
Halls C/D

Sci-Mix

E. Rozners, *Organizer*

8:00 - 10:00

32-33, 35-38, 43, 45-49, 51-52, 57- 60, 62. See subsequent listings.

TUESDAY MORNING

Section A

Colorado Convention Center
Mile High Ballroom 1C

Protein Glycosylation: Simulation, Synthesis, Characterization & Application

G. Beckham, *Organizer*

Z. Tan, *Organizer, Presiding*

9:15 21. Sugars and proteins: Building glycoproteins. **B.G. Davis**

9:40 Discussion.

9:45 22. New tools in glycoprotein chemical synthesis. **X. Li**

10:10 Discussion.

10:15 23. Synthesis of homogeneous glycoproteins and application to biochemical studies and biosimilar comparability analysis. **T.J. Tolbert**

10:40 Discussion.

10:45 Intermission.

11:05 24. Site-specific investigation of O-GlcNAc modifications using synthetic proteins. **M. Pratt**

11:30 Discussion.

11:35 25. Chemical synthesis as a tool to study protein glycosylation. Z. Tan, **X. Guan**

12:00 Discussion.

TUESDAY AFTERNOON

Section A

Colorado Convention Center
Mile High Ballroom 1C

Protein Glycosylation: Simulation, Synthesis, Characterization & Application

Z. Tan, *Organizer*

G. Beckham, *Organizer, Presiding*

1:45 26. Intracellular traffic of cell surface mimetic quantum dots-anchored glycopeptides. **S. Nishimura**, R. S. Tan, K. Naruchi, M. Amano, H. Hinou

2:10 Discussion.

2:15 27. Protein glycosylation in the baculovirus-insect cell system. **D. L. Jarvis**

2:40 Discussion.

2:45 **28.** Manipulating protein stability by glycosylation. **Y. Levy**

3:10 Discussion.

3:15 Intermission.

3:35 **29.** Impact of glycosylation upon protein conformational tendencies. **W. G. Noid**

4:00 Discussion.

4:05 **30.** Computational study of glycosylphosphatidyl-Inositol (GPI) anchor fragments embedded in phospholipid membranes. M. Wehle, R. Lipowsky, P.H. Seeberger, G. Brezesinski, C. Stefaniu, D. Varon-Silva, **M. Santer**

4:30 Discussion.

TUESDAY EVENING

Section A

Colorado Convention Center
Hall C

General Posters

E. Rozners, *Organizer*

7:00 - 9:00

31. Polysaccharides from lactic bacteria: interactions and complexation with proteins and nanoparticles. **L. Deschenes**, N. Guertin, F. Saint-Germain, T. Savard, D. Chabot

32. Synthesis and antibacterial activity of antibiotic-functionalized graphite nanofibers. **R. M. Giuliano**, M. Rotella, A. Briegel, J. Hull, A.F. Lagalante

33. Encapsulation and release of an active enzyme utilizing cobalt crosslinked chitosan nanoparticles. **J.B. Lampe**, G. Castillo, C.S. Morrison, D. Nguyen, R.J. Cavazos, R.A. Petros

34. Reduction of flammability of cotton fabrics treated with phosphoryl piperazine derivatives. **T. Nguyen**, S. Chang, B. Condon, R. Slopek, E. Graves

35. Synthesis of hyaluronic acid-based phototherapeutics. **R. A. Guerrieri**, **E. Xu**, R. D. Dolewski, R.G. Barkley, J.V. Ruppel, N.L. Snyder

36. Synthesis of meso-substituted carbohydrate porphyrin and carbohydrate bacteriochlorin conjugates. **G.T. Mukosera**, R.D. Dolewski, J.V. Ruppel, N.L. Snyder

37. Progress on the total synthesis of *Aspergillus fumigatus* galactosylaminoglycans for diagnostic and therapeutic applications. **E.J. Baker**, N.L. Snyder

- 38.** Progress on the synthesis of *N*-acetyllactosamine (LacNAc) probes for studying binding differences carbohydrate recognition domains of galectins-1, -3 and -9. **C. Tao**, N.L. Snyder
- 39.** Carbohydrate-based small molecules with immunostimulatory properties. **C.E. Marzabadi**, V. Basava, C. Bitsaktsis, E. Hanawa
- 40.** Synthesis of wooden based resource derived furanic diol and polymerization of PU via various isocyanate. **B. Kim**, S. Kim, J. Cho
- 41.** Selective hydrogenation of biomass-derived sugars using supported Ru nanoparticles based catalysts. **J. Hwang**, A.A. Dabbawala
- 42.** Hydrothermal treatment of eucalyptus using acidic ionic liquid as catalysis toward a biorefinery concept. **J. Xu**, R. Sun
- 43.** Carbohydrate polymer-coating chemistry for cellulose based bioassays. **R. Cao**, L. Guan, M. Li, W. Shen
- 44.** Synthesis of fluorogenic probes for selective biomass degradation by fungi. **Q. Zhang**, X. Peng, M. Grilley, J. Takemoto, C.T. Chang
- 45.** Synthesis and stability study of DNA duplexes with 1'-carboxamide residues. **W. Dong**, S.A. Woski
- 46.** Semisynthetic approach to cancer vaccines utilizing mimetics of natural and unnatural Tn antigens. **S. Nishat**, A.A. Shaik, P.R. Andreana
- 47.** Chemical synthesis and *O*-glycosidic linkage conformation in a ¹³C-labeled βMan(1→4)βXyl(1→4)βMan(1→4)βXylOCH₃ tetrasaccharide: Effects of linkage structure and context. **W. Zhang**, A.S. Serianni
- 48.** Quantitative evaluation of D-galactose–lectin binding properties via development of diversely presented carbohydrate surfaces. **B. Meng**, K. Tscherch, M.D. Best, D.C. Baker
- 49.** Lipase-mediated modification of peracylated macrolactonic sophorolipids. **A. Sembayeva**, J.A. Carr
- 50.** Optimization of autohydrolysis of bamboo for the production of low-DP xylo-oligosaccharides using response surface methodology. **X. Xiao**, J. Bian
- 51.** Facile synthesis of nested fragments of high-mannose *N*-glycans with lightly protected glycosyl acceptors. **Q. Pan**, S. Zhao, W. Zhang, Z. Zhang, A.S. Serianni
- 52.** Synthesis of 2-amino sugar building blocks and application for glycodiversification studies. C.M. Rojas, **A. Brown**, **G. Ezeude**, M. Miller, A. Scharnow, A. Oviatt
- 53.** Novel catalytic approach for the regioselective oxidation of carbohydrates under mild conditions. **W. Muramatsu**
- 54.** Using potatoes as a carbohydrate based additive in road salt. **R. Byrnes**, D. Szlosek, G. Smith, J. Walters, R. Tanous, D.A. Arris
- 55.** Amide-linked RNA: Synthesis, structure, and RNA interference activity. **E. Rozners**, D. Mutisya, C. Selvam, P. Tanui, B.D. Lunstad, S.D. Kennedy, P.S. Pallan, A. Haas, D. Leake, M. Egli
- 56.** Modification of glucose for targeted cellular delivery. H. Jacobs, **Z.J. Witczak**

- 57.** Targeted study of bacterial glycoproteins using metabolic oligosaccharide engineering. D.H. Dube, **E. Clark**
- 58.** Development of a cyclooctyne-based photodynamic antibiotic for targeting *Helicobacter pylori's* surface sugars. D.H. Dube, **I. Kline**
- 59.** Analysis of *Helicobacter pylori* strains deficient in protein glycosylation. D.H. Dube, **S. Mikami**, H. Carol
- 60.** Synthesis of chitosan beads enclosed magnetic Fe₃O₄ nanoparticles endorsed several applications from environmental remediation to bio-nanocomposite integration in biomedicine interdisciplinary fields. **V. Fernandez-Alos**, A. Padilla, **C. Castro-Alvarado**, F.R. Roman
- 61.** Hybrid ceramide–gypsogenin triterpene saponin as a vaccine adjuvant. **V. Pathak**, A.K. Pathak
- 62.** Cell-surface engineering with biomimetic materials: Mucins and the cancer glycocalyx. **J. Kramer**, C.R. Bertozzi
- 63.** Structural characterization of a newly discovered trisaccharide in banana fruit ethanol extract. **M.A. Madson**
- 64.** Effect of conjugation and microwave treatment on structure and functional characteristics of gum karaya (*Sterculia urens*). **H. Mirhosseini**, E. Shekarforoush
- 65.** Synthesis, characterization, and application of soy protein flour-based additive to increase the dry strength of recycled and virgin paper furnish
. **A. Salam**, L. Lucia, H. Jameel
- 66.** Structural insight into glycosylated human Notch1 EGF12 analogs. **S. Hayakawa**, H. Hinou, S. Nishimura
- 67.** Metabolism of four metabolic chemical reporters and their relative selectivity for different glycoproteins. **A. Batt**, M. Pratt
- 68.** Changes in metabolic chemical reporter structure yield a selective probe of O-GlcNAc modification. **K.N. Chuh**
- 69.** Efficient method for the incorporation of molecular probes at multiple/specific sites in RNA: Levulinyl protection for 2'-ACE[®], 5'-silyl oligoribonucleotide synthesis. **M.O. Delaney**
- 70.** Aldehyde bearing triterpene saponins as vaccine adjuvants. V. Pathak, **A. K. Pathak**
- 71.** Xanthan: Conformation, degradation, and hydrophobic modification. I. Jenssen, A. Ulset, H. Schols, A. Roy, F. Renou, **B. Christensen**
- 72.** Alkali pretreatment of cellulose I to cellulose II with thiourea as an additive. **V. Uniyal**, P. Gupta, S. Naithani
- 73.** Immunomodulation of the linear b-(1,3)-glucan fr*Saccharomyces cerevisiae* through activation of mitogen-activated protein kinases and nuclear factor-kB in murine RAW264.7 macrophages. **X. Xu**
- 74.** O-mannosylated glycan induced conformational alteration of α-dystroglycan fragment. **H. Hinou**, S. Nishimura

75. Efficient and α -selective glycosylation using 3-iodo Kdo (3-deoxy-D-*manno*-oct-2-ulosonic acid) fluoride donors. **B. Pokorny**, P. Kosma