

Draft Final Program

CARB

DIVISION OF CARBOHYDRATE CHEMISTRY

E. Rozners, *Program Chair*

SUNDAY MORNING

Section A

Omni Dallas Hotel
Trinity 4

Wolfrom Award Symposium

E. Rozners, T. Lowary, *Organizers*
N. L. Pohl, *Presiding*

9:30 1. Glycans at the stem cell surface. **L. L. Kiessling**

10:10 2. Glycan arrays for analysis of influenza virus specificity. **J. C. Paulson**, R. McBride, W. Peng, R. P. de Vries, C. M. Nycholat

10:50 3. Chemoenzymatic synthesis of glycoproteins for deciphering functions. **L. Wang**

SUNDAY AFTERNOON

Section A

Omni Dallas Hotel
Trinity 4

Isbell Award and Gin New Investigator Award Symposium

E. Rozners, T. Lowary, *Organizers*
N. L. Pohl, *Presiding*

1:00 4. Split personality of O-GlcNAc transferase. **S. Walker**

1:30 5. Developing an enzymatic approach to synthesize ultra-low and low molecular weight heparins. **J. Liu**

2:00 6. Quantifying the energetics of protein-carbohydrate interactions in the context of enhanced aromatic sequons. W. Chen, J. L. Price, E. K. Culyba, S. R. Hanson, A. Dhar, C. Wong, M. Gruebele, A. A. Fuller, Y. Fu, E. T. Powers, **J. W. Kelly**

2:30 7. Carbohydrate signaling in the brain. **L. C. Hsieh-Wilson**

3:00 Intermission.

3:20 8. One-pot strategies for carbohydrate synthesis. **S. Hung**

3:50 9. Hepatic delivery of drugs: A case of primaquine. **Y. Lee**

4:20 10. Carbohydrate-based vaccines: Challenges and opportunities. **C. Wu**

MONDAY MORNING

Section A

Omni Dallas Hotel
Deep Ellum B

Young Investigators in Glycoscience

T. Lowary, *Organizer, Presiding*

9:00 11. Imaging glycans using a chemoenzymatic approach. **P. Wu**

9:30 12. Directed evolution of glycopeptides and glycoDNA to design HIV vaccine candidates. **I. J. Krauss**

10:00 13. Chemical approaches to understanding O-GlcNAc modifications in human disease. **M. R. Pratt**

10:30 Intermission.

10:45 14. Endowing glycan labeling and visualization with specificity and versatility. **X. Chen**

11:15 15. Understanding and manipulating protein glycosylation: Application in biofuel production. **Z. Tan**, L. Chen, E. R. Greene, P. K. Chaffey, M. R. Drake

Section B

Omni Dallas Hotel
Greenville Ave.

New Directions in Carbohydrate Synthesis

H. Nguyen, *Organizer, Presiding*

9:00 Introductory Remarks.

9:05 16. Recent advances in the chemistry of the sialic acids. **D. Crich**

9:25 Discussion.

9:35 17. Stereoselective synthesis of S-linked 2-deoxy sugars for biological studies. **J. Zhu**

9:55 Discussion.

10:05 18. Approaches to 1,2-*cis*-2-amino glycosides via transition metal catalysis and application to the synthesis of heparin oligosaccharides. **H. M. Nguyen**

10:25 Discussion.

10:35 Intermission.

10:55 19. Organoboron catalysts and promoters for selective activation of glycosyl acceptors. **M. S. Taylor**

11:15 Discussion.

11:25 20. Reagent control in diastereoselective chemical glycosylation reactions. **C. S. Bennett**

11:45 Discussion.

MONDAY AFTERNOON

Section A

Omni Dallas Hotel
Deep Ellum B

Young Investigators in Glycoscience

T. Lowary, *Organizer, Presiding*

1:30 21. Genetically-encoded fragment-based discovery of glycomimetic ligands. **R. Derda**, S. Ng

2:00 22. Photoredox catalytic *o*-glycosylation with selenoglycoside donors. **J. R. Ragains**, M. Spell, X. Wang, A. E. Wahba, E. Conner, R. G. Fernando, G. G. Stanley

2:30 23. Towards a practical redox cascade system for template-directed stereoselective glycosylation. **X. Liu**

3:00 Intermission.

3:15 24. Direct and stereoselective synthesis of biologically significant 2-deoxy sugars. **J. Zhu**

3:45 25. Facile glycosylation reactions using air- and water-stable iodonium salt promoters. **C. S. Bennett**

Section B

Omni Dallas Hotel
Greenville Ave.

New Directions in Carbohydrate Synthesis

H. Nguyen, *Organizer, Presiding*

1:50 26. General approach for the synthesis of libraries of symmetrical and asymmetrical N-glycans. **G. Boons**

2:10 Discussion.

2:20 27. De novo approaches to oligosaccharides. **G. A. O'Doherty**

2:40 Discussion.

2:50 Intermission.

3:10 28. New glycosylation promoters for automated glycan synthesis with simplified building blocks. **N. L. Pohl**

3:30 Discussion.

3:40 29. Electrochemical assembly for oligosaccharide synthesis. **T. Nokami**

4:00 Discussion.

4:10 30. From chemical glycosylation to expeditious oligosaccharide synthesis. **A. V. Demchenko**

4:30 Discussion.

MONDAY EVENING

Section A

Dallas Convention Center
Hall F

Sci-Mix

E. Rozners, *Organizer*

8:00 - 10:00

44, 59, 60, 61, 62, 63, 64, 66, 67, 68, 69, 70, 71, 73, 75, 78, 79, 80. See subsequent listings.

Omni Dallas Hotel
Deep Ellum B

Carbohydrate Research at Predominantly Undergraduate Institutions

N. Snyder, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 31. Drug discovery in undergraduate research: Defining an appropriate target in the struggle against lipopolysaccharides. **R. Woodward**, A. Greenwell, E. Loosli, L. Gosser

8:35 32. Synthesis and anti-oxidant activity of phenylpropanoid glycosides. **J. Koviach-Côté**, J. Brown, J. Mangar, Z. Sabbath, R. Otley

9:05 33. Virus nanoparticles that perturb the heparin-coagulation mechanism. **A. K. Udit**, H. Cheong, G. Mead, M. Hiley, T. Ng, K. Hong, M. Groner, C. Fihn, B. Lynch, W. Hollingsworth

9:35 34. Preparation of C-glycosides as potential antihyperglycemic agents at Saginaw Valley State University, a primarily undergraduate institution. **J. L. Chaytor**, A. Paris, J. Spearman, C. Tucker

10:05 Intermission.

10:20 35. Chemical tools to discover and target *Helicobacter pylori*'s glycoproteins. **D. H. Dube**

10:50 36. Metal-mediated synthesis of carbohydrate porphyrin (CPCs) and carbohydrate bacteriochlorin conjugates (CBCs). **J. V. Ruppel**

11:20 37. Investigations into the mutagenic potential of the prominent DNA lesion, 8-oxo-2'-deoxyguanosine, using nucleotide analogs. **M. Hamm**

11:50 Concluding Remarks.

Section B

Omni Dallas Hotel
Greenville Ave.

New Directions in Carbohydrate Synthesis

H. Nguyen, *Organizer, Presiding*

9:00 38. New thio-click and domino approach to glycomimetics. **Z. J. Witzak**

9:20 Discussion.

9:30 39. Hydrolysis of carbohydrates into platform chemicals. **X. Wang**, Y. Song, **C. Huang**, **B. Chen**

9:50 Discussion.

10:00 40. Synthesis of degradable sugar poly(ortho esters). **W. Du**, L. Li, I. J. Milligan, J. Wang, E. A. Franckowiak, L. Fu, Y. Xu

10:20 Discussion.

10:30 Intermission.

10:50 41. 2D oligosaccharide syntheses: A comprehensive approach. **X. LIU**

11:10 Discussion.

11:20 42. Complementary one-pot multi-enzyme systems for heparosan oligosaccharide synthesis. **M. M. Muthana**, J. Qu, T. Klyuchnik, A. Siu, M. Xue, Y. Li, L. Zhang, X. Chen*

11:40 Discussion.

11:50 43. Synthesis of biologically active *N*- and *O*-linked glycans with multi-sialylated poly-*N*-acetylglucosamine extensions using *P. damsela* α 2-6 sialyltransferase. **W. Peng**, C. M. Nycholat, R. McBride, R. P. de Vries, A. Antonopoulos, A. Dell, S. M. Haslam, J. C. Paulson

12:10 Discussion.

TUESDAY AFTERNOON

Section A

Omni Dallas Hotel
Deep Ellum B

Carbohydrate Research at Predominantly Undergraduate Institutions

N. Snyder, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 44. Synthesis of C-vinyl sugars via a Pd(0)-catalyzed cyclization of Octenitols. **V. C. Ezeh**, M. J. Feeney, E. G. Nolen

2:05 45. Examining furanoside conformational preference and reactivity: Computation, synthesis, and NMR. **J. S. Rhoad**, D. Freeman, B. Cagg, B. Dow, C. Ruark, A. Hunt, M. Quaney, T. McKinley, M. Edlin, N. Harms

2:35 46. Structure affects the interactions of cell-penetrating compounds with cell-surface glycosaminoglycans and lipid vesicle model membranes. K. J. Braden, A. R. Schoenecker, N. C. Benish, **L. E. Prevette**

3:05 Intermission.

3:20 47. Towards a better understanding of sialylations: Effects of substituents, solvent, and isotopic labeling. **C. De Meo**

3:50 48. Carbohydrate-conjugated cinnamates via Huisgen cycloaddition reaction. **M. Hunsen**

4:20 49. Lessons learned from the total synthesis of the repeating pentasaccharide unit of pneumococcal serotype 31. **N. L. Snyder**

4:50 Concluding Remarks.

Section B

Omni Dallas Hotel
Greenville Ave.

Frontiers of Nucleic Acid Chemistry

Cosponsored by BIOL
E. Rozners, D. Arya, *Organizers*
R. Pandey, *Organizer, Presiding*

1:00 50. Controlling gene expression with nucleic acids. **D. Corey**

1:30 51. Targeting microRNAs with small molecules: A novel therapeutic approach for cancer treatment. **G. A. Calin**, P. d. Monroig, M. Shah, N. Nouraei

2:00 52. Oligonucleotide conjugates. **M. M. Lemaitre**, M. M. Alam

2:30 Intermission.

2:50 53. Short interfering RNA guide strand modifiers from computational screening. **P. Beal**

3:20 54. Synthesis and properties of amide-modified RNA for applications in RNA interference. **E. Rozners**, C. Selvam, P. Tanui, S. D. Kennedy, D. Mutisya, B. D. Lunstad, P. Pallan, A. Haas, D. Leake, M. Egli

3:50 55. Effect of co-administration of a nonsense oligonucleotide on the potency of cEt BNA containing Gapmer antisense oligonucleotide in mouse liver. **T. P. Prakash**, E. Wancewicz, A. E. Chappell, H. Gaus, E. E. Swayze

TUESDAY EVENING

Section A

Dallas Convention Center
Hall E

General Posters

E. Rozners, *Organizer*

6:00 - 9:00

56. Structural characterization of unknown di-phosphorylated bovine submaxillary mucin O-linked disaccharide. **M. A. Madson**, J. Christus

57. Glycosidic linkage and the solution conformational entropy of gluco- and mannobioses. **A. M. Striegel**, M. J. Morris

58. Sequence selective recognition of double-stranded RNA using nucleobase-modified peptide nucleic acids. **E. Rozners**, T. Zengeya, M. Li, P. Gupta

59. Discovery of novel glycan-mediated binding partners for cholera toxin. **A. Wands**, A. Fujita, J. McCombs, A. Rodriguez, J. Kohler

60. Physicochemical and sensory characteristics of novel sweetener turanose biosynthesized using amylosucrase from *Neisseria polysaccharea*. **Y. Kim**, S. Yoon, C. Jung, S. Yoo

61. Water/air-stable iodonium salt as a powerful thiophilic promoter. **A. Chu**, A. Minciunescu, C. S. Bennett

62. Chemoenzymatic synthesis of a high-mannose type N-glycan library for functional studies. **C. Toonstra**, J. V. Lomino, L. Wang

63. Metabolic production of photocrosslinking O-GlcNAc: Method improvement and application. **A. C. Rodriguez**, S. Yu, B. Li, J. J. Kohler

64. Synthesis of homogeneous HIV-1 V3 glycopeptides for characterizing the glycan specificity of glycan-dependent HIV-neutralizing antibodies. **J. Orwenyo**, M. Amin, J. V. Lomino, L. Wang

65. Synthesis of high molecular weight sugar poly(ortho esters) through DMAP-promoted polycondensation. **L. Li**

66. In(III)-catalyzed amino glycosidation of 1,2-anhydrosugar with 3-amino azitedinone: A novel method for optical resolution. R. N. Yadav, **A. Paniagua**, S. Chandra, B. K. Banik

67. Structural characterization and cell proliferation effect on HepG2 of a novel acid polysaccharide from the viscera of *Halotis discus hannai*. **G. Li**, Y. Wang, X. Liu, F. Wu, L. Li, C. Xue, R. J. Linhardt

68. Catalytic effects of indium salt on O- and S-glycosylation of bromo sugar: A one pot approach for the synthesis of a chiral acid. R. N. Yadav, **S. Chandra**, A. Paniagua, B. K. Banik

69. Effect of O-substituents in sialylation reactions. **S. Geringer**, S. Aalaei, C. De Meo

70. Synthesis of 2,3-dehydro derivatives of neuraminic acid from the isotopically labeled precursors. **C. Wallace**, R. Starner, C. De Meo

- 71.** Purification and characterization of chemoenzymatically synthesized heparin oligosaccharides. **C. Cai**, D. Dickinson, V. Schultz, K. Linkens, J. Liu, R. J. Linhardt
- 72.** New ester protecting group and its application in oligosaccharide synthesis. **F. Cai**, Z. Guo
- 73.** Effects of sialic acid biosynthesis on the hexosamine biosynthetic pathway and N-linked glycans. **N. D. Pham**, J. J. Kohler
- 74.** Fast determination of lactose and lactulose in dairy products using a 4 μ m particle column and high-performance anion-exchange chromatography with pulsed amperometric detection. **C. A. Fisher**, T. Christison, M. Verma, H. Yang, L. Lopez
- 75.** Synthesis of cyclic compounds from D-glucal using ionic liquids. **S. ElTayeb**, C. H. Marzabadi
- 76.** Withdrawn.
- 77.** Synthesis of the disaccharide α Gal-1,3- α Gal and its conjugation to a carrier protein. **M. S. Anderson**, K. Michael, N. S. Schocker
- 78.** Extraction of carbohydrates from hydrolysis reaction solutions. **T. H. Goodie**, W. M. Reichert
- 79.** Facile, selective one-pot synthesis of 4-O-benzylated glycals. **I. Fokt**, M. Krawczyk, M. Cybulski, S. Kosinski, S. Skora, W. Priebe
- 80.** Synthesis and study of covalent inhibitors of *Mycobacterium tuberculosis* GlgE. **S. Thanna**, V. Gaitonde, J. J. Lindenberger, D. R. Ronning, S. J. Sucheck
- 81.** Structural effect of phosphorous-nitrogen containing flame retardant derivatives on thermal behaviors of treated cotton. **S. Chang**, T. Nguyen, B. Condon
- 82.** Chemo-enzymatic synthesis of inner core oligosaccharides of *E. coli*. **P. G. Wang**

WEDNESDAY MORNING

Section A

Omni Dallas Hotel
Deep Ellum B

Frontiers of Nucleic Acid Chemistry

Cosponsored by BIOL
E. Rozners, R. Pandey, *Organizers*
D. Arya, *Organizer, Presiding*

9:00 83. On the mechanism of tumor cell killing by bleomycin. B. Roy, C. Tang, R. Nanjunda, T. C. Bozeman, W. D. Wilson, **S. M. Hecht**

9:30 84. RNA targeting antibiotics. **Y. Tor**

10:00 Intermission.

10:20 85. DNA G-quadruplexes as potential anticancer drug targets. **D. Yang**

10:50 86. Small molecule nucleic acid hybrids (SMNH) as antiviral agent. **R. K. Pandey**, R. P. Iyer

WEDNESDAY AFTERNOON

Section A

Omni Dallas Hotel
Deep Ellum B

Frontiers of Nucleic Acid Chemistry

Cosponsored by BIOL
D. Arya, R. Pandey, *Organizers*

E. Rozners, *Organizer, Presiding*

1:30 87. Strand exchange reactions at the frontier: Modular reaction networks. **A. D. Ellington**

2:00 88. Expansion of the genetic alphabet. **F. Romesberg**

2:30 Intermission.

2:50 89. Selenium nucleic acid chemistry and biology. **Z. Huang**, W. Zhang, H. Sun, J. Sheng, J. Salon

3:20 90. Invaders: Recognition of double-stranded DNA using oligonucleotide duplexes with interstrand zippers of intercalator-functionalized nucleotides. S. Andersen, B. A. Anderson, B. Denn, D. C. Guenther, S. Karmakar, R. L. Rathje, S. P. Sau, **P. J. Hrdlicka**

THURSDAY MORNING

Section A

Omni Dallas Hotel

Deep Ellum B

Current Topics in Glycoscience

E. Rozners, *Organizer*

J. Kohler, *Organizer, Presiding*

8:30 91. Glycoside-based inhibitors of *Mycobacterium tuberculosis* GlgE. S. K. Veleti, J. J. Lindenburger, D. R. Ronning, **S. J. Sucheck**

8:50 92. Synthesis and biological evaluation of the tumor associative alpha-aminooxy disaccharide of the TF antigen conjugated to a polysaccharide immune stimulant. **P. R. Andreana**

9:10 93. Development of neutralizable homogeneous biotinylated heparin as a novel anticoagulant. **P. G. Wang**

9:30 94. Structure of an unusual oxidation product of cellulose. **A. D. French**, K. Mereiter, T. Rosenau

9:50 Intermission.

10:05 95. Comprehensive comparison between woody and tunicate celluloses. **Y. Zhao, J. Li**

10:25 96. Generation and characterization of the pyranosyl and furanosyl oxocarbenium ions from 2-deoxyaldoses. **G. R. Akien**, B. Subramaniam

10:45 97. Glycan microarrays prepared via a beam pen lithography induced thiol-acrylate photopolymerization. **A. B. Braunschweig**, S. Bian

THURSDAY AFTERNOON

Section A

Omni Dallas Hotel

Deep Ellum B

Current Topics in Glycoscience

E. Rozners, *Organizer*

J. Kohler, *Organizer, Presiding*

1:30 98. New reactivity of carbohydrates in ionic liquids and application for biomass conversion to 5-HMF. **V. P. Ananikov**

1:50 99. New oversulfated polysaccharide impurity in heparin and determination by radical depolymerization and liquid

chromatography-mass spectrometry. **G. Li**, C. Cai, L. Li, L. Fu, Y. Chang, C. Xue, F. Zhang, R. J. Linhardt

2:10 100. Withdrawn.

2:30 101. Modeling inhibition of ribonucleotide reductase by 2-substituted hexofuranoses. **M. M. Mudgal**, S. F. Wnuk, M. J. Robins

2:50 102. Preparation and application of functional biomaterials based on xylan-chitosan. **S. Wu, Y. Du, L. Zhang**

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