



Newsletter Spring 2013

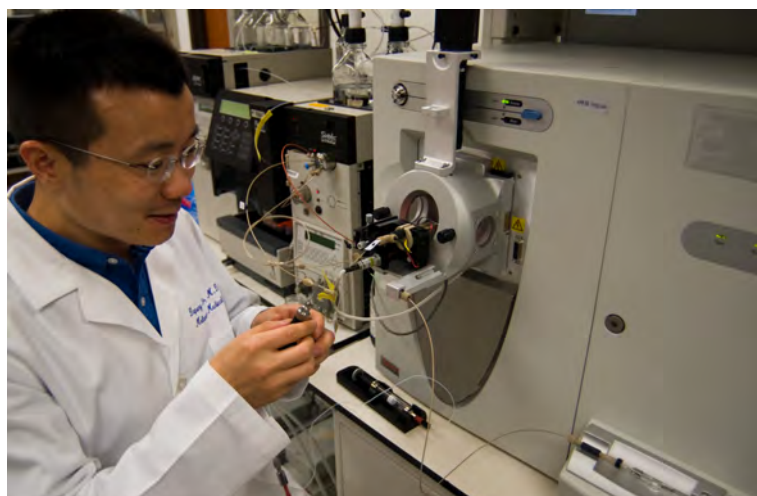
AMERICAN CHEMICAL SOCIETY DIVISION OF CARBOHYDRATE CHEMISTRY

FUNCTIONAL GLYCOMICS IN IMMUNOPATHOLOGY AND IMMUNOTHERAPY

By Dapeng Zhou, MD, PhD, Assistant Professor
University of Texas MD Anderson Cancer Center

The interaction of glycoconjugates with their receptors are involved in critical biological processes, such as embryonic development, signal transduction and leukocyte adhesion. Glycoconjugates serve as unique epitopes that are recognized by immune receptors. Zhou's group study the biochemistry, genetics, and immunobiology of glyco-epitopes recognized by immune cells, such as the glycolipid ligands for Natural Killer T cells, and the glyco-proteins recognized by B

cells. Benefiting from the Ion Trap Mass Spectrometry (IT-MS), they have been able to discover new glyco-epitopes which are structurally difficult to characterize by conventional methods such as HPLC and antibody staining. In collaboration with synthetic chemists, they have been able to produce these epitopes with defined structural characteristics for biological studies. As a multidisciplinary team with experts on mass spectrometry, synthetic chemistry, drug



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formulation and diagnostic imaging, Zhou's group are devoted to explore the mechanisms of immune recognition of glycoconjugates during pathogenesis, and to invent effective methods for diagnosis and therapy. Funded by several extramural grants, Zhou laboratory contributed to the publishing of first ion-trap mass spectrometry based glycosphingolipidomics analysis on mouse and human immune organs and cells and the first computer-predicted

glycopeptide epitope library for cancer vaccines. These studies have led to licensing of a cancer-specific monoclonal antibody to BioLegend, San Diego, which is among few monoclonal antibodies showing preferred binding to a known glycosylated sequence, as well as start up of a biotechnology company, Nanocruise pharmaceuticals. For more information, visit <http://faculty.mdanderson.org/dapeng%5Fzhou/>

KUDOS

Congratulations to 2013 ACS Carbohydrate Division Award Winners!

Claude S. Hudson Award
Professor **Laura L. Kiessling** (University of Wisconsin)
<http://www.chem.wisc.edu/users/kiesslin>

Melville L. Wolfrom Award
Professor **Todd L. Lowary** (University of Alberta)
<http://www.chemistry.ualberta.ca/en/FacultyandStaff/Faculty/ToddLowary.aspx>

Horace S. Isbell Award
Professor **David Vocadlo** (Simon Fraser University)
<http://www.chemistry.sfu.ca/people/profiles/dvocadlo>

David Y. Gin New Investigator Award
Professor **Peng Wu** (Albert Einstein College of Medicine)
<http://www.einstein.yu.edu/faculty/11502/peng-wu/>

Congratulations to Todd Lowary and Mario Pinto!

The Chemical Institute of Canada (CIC) and the Canadian Society for Chemistry (CSC) honored several scientists in their 2012 award programs. Congratulations to **Todd L. Lowary** (University of Alberta) on the Bernard Belleau Award for work in the field of medicinal chemistry and **B. Mario Pinto** (Simon Fraser University) on the R. U. Lemieux Award for his contribution to the field of organic chemistry! For more information, see <http://onlinelibrary.wiley.com/doi/10.1002/anie.201209647/pdf>

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FUTURE NEWSLETTERS

The Carbohydrate Division Newsletter is published twice a year, just before the two annual National ACS meetings. If you have items for inclusion in future please send the information to:

Secretary/Newsletter Editor

Eriks Rozners
erozners@binghamton.edu

BOOK NEWS

Advances in Carbohydrate Chemistry and Biochemistry, Volume 67 and 68

Volumes 67 and 68 of Advances in Carbohydrate Chemistry and Biochemistry both appeared during 2012. The series was founded in 1946 by Wolfrom, Haworth, and Hudson. Derek Horton has been its editor now for many years. The full texts of all 68 volumes of *Advances* is available on line through Science Direct.

ANNOUNCEMENTS

Research Collaboration Opportunity

Aminolysis of carbohydrates: Seeking researcher with lab facilities to collaborate on aminolysis of carbohydrates using contemporary techniques and substrates. Research to be based on work of I. Jezo (Jezo, I. Chem. Zvesti 1963, 17, 126–139; Jezo, I.; Luzak, I. Chem. Zvesti 1963, 17, 255–264; Jezo, I.; Luzak, I. Chem. Zvesti 1966, 20, 586–594) and Agyei-Aye et al., Carb. Res. 337 (2002) 2273–2277. This is noncommercial project with all research to be publicly presented/published. For more information, please contact: John H. Lauterbach, Ph.D., DABT, Sole Member & Principal, Chemistry & Toxicology, Lauterbach & Associates, LLC, Tel. 478-474-8818, Fax 478-474-0117, e-mail john@lauterbachandassociates.net.

Report of Carbohydrate Division's Nomenclature Committee

By Dr. Derek Horton

An IUPAC-funded panel developing new recommendations for the nomenclature of flavonoids, set up by Dr Amelia Rauter (Lisbon), together with panel members Ennis (mennis@ebi.ac.uk), Hellwich (hellwich.iupac), Herold (herold@ist.utl.pt), Horton (carbchm@american.edu), Moss (g.p.moss@qmul.ac.uk), and Schomburg (I.Schomburg@tu-bs.de), has now completed its work, and the final document is awaiting approval from IUPAC for public review and release. The naming of these complex plant glycosides is frequently a source of confusion, especially as regards the sugar components.

The previously reported plan for a revised section of the 1996 IUPAC-IUBMB carbohydrate recommendations (2-Carb), to be focused particularly on the needs of biochemists and glycobiologists, has now received IUPAC funding to support the work of a panel to expedite the project. The first meeting of this group will be in Dublin, Ireland, in the second week in May, 2013, at the same time as the annual meeting of JCBN. Although some of the items are straightforward updates and extensions of examples in the 1996 document, the rapidly advancing area of glycobiology presents important challenges in codifying rational ways to name and depict many complex saccharides and glycoconjugates, including proteoglycans, glycolipids, and such conjugates as glycodendrimers, glycoclusters, and glyconanoparticles..

Task group to revise the IUPAC/IUBMB document on carbohydrate nomenclature

By Dr. Hans Vliegenthart

The nomenclature of carbohydrates as described in the IUPAC/IUBMB document of 1996 has served as an immense help for authors and editors to name the compounds unambiguously. Since 1996, the number of compounds that have been discovered and/or synthesized has grown enormously. The number of constituting monomers and substituents has increased, i.a. due to study of carbohydrates and glycoconjugates in a larger range of organisms in the animal and plant kingdoms and to the progress in analytical and synthetic methods. The current document requires a profound up-date to be applicable to the newly identified compounds and to the recent developments in the area of chemical and systems biology of carbohydrates and glycoconjugates. Abbreviations and trivial names need to be extended. Furthermore, the explosion of data stemming from glycomics and glycoproteomics, necessitates the connection with databases for presenting adequately carbohydrate structure and sequence information. There exist a number of databases, each covering different collections of data. Developing guidelines for harmonizing these data are within the goals to be achieved. Another aspect deals with the correction of some names.

Chairman of the task group is Dr. Hans Vliegenthart and further members are: Dr. Derek Horton; Dr. Stefan Oscarson; Dr. Amelia Rauter; Dr. Gerry Moss; Dr. Karl-Heinz Hellwig; Dr. Thomas Lütteke; Dr. Martin Frank; Dr. Sandro Sonnino; Dr. Nuno Xavier. Comments and suggestions for improvement and/or extension of the carbohydrate nomenclature are most welcome at the address of Dr. Hans Vliegenthart, e-mail j.f.g.vliegenthart@uu.nl.

UPCOMING MEETINGS

For more information, visit <http://carb.sites.acs.org/meetings.htm>

20th New Orleans Carbohydrate Symposium (NOCS)

April 5-6, 2013, Maison Dupuy French Quarter Hotel, New Orleans, Louisiana, USA

This stimulating information exchange on all aspects of carbohydrate chemistry is sponsored by the Sugar Processing Research Institute, Incorporated, in New Orleans, and the American Chemical Society CARB-Divison. Participants are able to present recent research and advancements in carbohydrates with insights to share with fellow carbohydrate chemists in a Gordon style conference atmosphere. This next assembly of the New Orleans Carbohydrate Symposium will convene on Friday, April 5, 2013 and half day on Saturday, April 6, 2013 before the weekend of the 245th Spring National American Chemical Society meeting in New Orleans, Louisiana, on April 7-11, 2013. Carbohydrate chemists attending that meeting are invited to arrive in New Orleans a few days before their route to the ACS National meeting. Presentations will be given on a range of topics from glycobiology, synthetic organic methods, fiber chemistry advances, industrial processing, pharmaceutical chemistry of carbohydrates, and carbohydrates in biofuels. The New Orleans Carbohydrate Symposium was founded by the late Dr. Margaret Clarke, then Managing Director of the Sugar Processing Research Institute. Her spirit of innovation in carbohydrate chemistry is preserved in this continuation of her vision.

The New Orleans Carbohydrate Symposium is an ideal venue for meaningful discussions with colleagues in a variety of areas of carbohydrate science. The atmosphere of New Orleans in the springtime is always refreshing. The hosts at the Sugar Processing Research Institute, Inc. have a long experience in welcoming scientists to this city.

visit <http://www.spriinc.org/NOCS0405.html> or e-mail spri@ars.usda.gov for information

9th Annual National Carbohydrate Symposium



**9TH ANNUAL
NATIONAL
CARBOHYDRATE
SYMPOSIUM**

MAY 8th - 10th 2013
Banff Park Lodge – Banff, Alberta

Visit www.glycomicscentre.ca for more information

2013 Carbohydrates Gordon Research Conference

(Joe Barchi, *National Cancer Institute* and George O'Doherty, *Northeastern University*)

June 16-21, 2013 Mt Snow Resort, West Dover, Vermont

visit www.grc.org for information

Confirmed Speakers:

Rodrigo Andrade, Temple U
Peter Andreana, U Toledo
Dev Arya, Clemson
Xi Chen, UC Davis
Chang Chun Ling, U Calgary
Anne Dell, Imperial College
Jackie Gervay Hague, UC Davis
Linda Hsieh-Wilson, Cal Tech
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Yvette van Kooyk, Amsterdam
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David Smith, Emory
Jon Thorson, U Kentucky
David Vocadlo, U British Columbia
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Rob Woods, U Georgia

For additional information, see the website or send an email to Joe or George

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