The University of Georgia

Complex Carbohydrate Research Center
Department of Biochemistry and Molecular Biology

Kelley W. Moremen, Ph.D.

CURRICULUM VITAE

ADDRESS: Complex Carbohydrate Research Center
315 Riverbend Road
University of Georgia
Athens, GA. 30602
Voice: 706/542-1705 E-mail: moremen@uga.edu
FAX: 706/548-1759

CURRENT EMPLOYMENT: Distinguished Research Professor of Biochemistry and Molecular Biology
Member, Complex Carbohydrate Research Center
University of Georgia
Athens, GA 30602

EDUCATION:

1984	Ph.D. Department of Molecular Biology Vanderbilt University, Nashville, TN 37235 (advisor: Dr. Oscar Touster)
1978	B.S. Dickinson College, Cum Laude, with Honors (Major: Chemistry/Biology)

RESEARCH AND PROFESSIONAL EXPERIENCE:

2014-present	Distinguished Research Professor, Department of Biochemistry & Molecular Biology and Complex Carbohydrate Research Center, University of Georgia
2003-2014	Professor, Department of Biochemistry & Molecular Biology and Complex Carbohydrate Research Center, University of Georgia
1997-2003	Associate Professor, Department of Biochemistry & Molecular Biology and Complex Carbohydrate Research Center, University of Georgia
1991-1997	Assistant Professor, Department of Biochemistry & Molecular Biology and Complex Carbohydrate Research Center, University of Georgia
1989-1991	Juvenile Diabetes Foundation Postdoctoral Fellow, Center for Cancer Research, Massachusetts Institute of Technology, Cambridge, MA 02139 (advisor: Dr. Phillips W. Robbins)
1986-1989	National Institutes of Health Postdoctoral Fellow, Center for Cancer Research, Massachusetts Institute of Technology, Cambridge, MA 02139 (advisor: Dr. Phillips W. Robbins)
1984-1986	National Institutes of Health Postdoctoral Fellow, Department of Molecular Biology, Vanderbilt University, Nashville, TN 37235 (advisor: Dr. Oscar Touster)
1978-1984	Graduate Student in the Department of Molecular Biology, Vanderbilt University, Nashville, TN 37235 (advisor: Dr. Oscar Touster)

INSTRUCTION:

Teaching Activities:

1. **Advanced Genetics, Cell, Biochem. and Molecular Biology I and II, BCMB/CBIO/GENE8113-8114**
   Course Organizer and Lecturer: 2015 - Present
   This course was initiated and organized by Dr. Moremen in collaboration with BCMB, CBIO and GENE faculty and is his primary teaching responsibility (11 lectures in the course). It is a unified course for graduate students in the life sciences (biochemistry, cellular biology, genetics, as well as students in other university departments and colleges) emphasizing the analysis of primary literature, didactic lecture content, contemporary experimental approaches, presentations, and projects to provide a common set of core skills necessary for contemporary graduate studies in the Life Sciences. Dr. Moremen is responsible for organization of lecture topics and the general structure of the course.
2. ***Advanced Biochemistry and Molecular Biology***, BCMB8010, 1991-2014
   Lecturer, 1991
   Co-organizer and Lecturer: 1992-1997.
   Course Organizer and Lecturer, 1998-2014.
   This course was the main teaching responsibility for Dr. Moremen, contributing 40 lecture hours (two-thirds of the course content in this 4 semester hour course). The course emphasized protein structure, function, enzyme kinetics, mechanism, and regulation from the molecular scale to organismal control of metabolism. The course content was revised over the last five years, incorporating web-based presentations, animations, and resource material for the lecture content, and web-based assignments and oral presentations for the students. The course provides hands-on experience with all aspects of protein structure and function. Dr. Moremen was responsible for lectures, help-sessions, and preparation and grading of tests.
3. ***Advanced Biochemistry and Molecular Biology,*** BCMB8020, 1992-1998, 2005.
   Co-organizer and Lecturer: 1992-1999.
   This course was co-organized with Dr. Pierce and emphasized membrane structure and function, transport, membrane trafficking, carbohydrate structure and function. Dr. Moremen contributed ~15 lecture hours in this course and contributed to lectures, help-sessions, and preparation and grading of tests. In 2005 presented a 2 hr lecture on “Overview of glycoprotein structures, biosynthesis, and function”.
4. ***Glycobiology*** BCMB8130, 1993, 1994, 1998, 2005, 2007, 2009, 2011, 2013, 2015, 2017
   Lecturer:
   Dr. Moremen contributed 2 lectures (1.5 h each) hours on “Glycosyltransferases and Glycoside Hydrolases” and “*Glycans and cellular functions: glycoprotein folding, processing, quality control*”
5. **CCRC summer course on Separation and Characterization of Glycoprotein and Glycolipid Oligosaccharides**. Lecture title: “Overview of glycoprotein structures, biosynthesis, and function”, 1998-present.
6. **Chemical Glycoscience** CHEM 8390 Lecturer: “Glycoprotein biosynthesis, enzymology, and function” 2013, 2015
7. **Advanced Cell Biology** CB840, 1994, 1996, 1998.
   Lecturer:
   Dr. Moremen contributed 5 lecture hours on membrane traffic in the secretory pathway.
8. ***Intermediate Biochemistry***, BMB402, 1994, 1995, 1996, 1997.
   Lecturer:
   Dr. Moremen presented a one hour lecture on oncogenes, signal transduction and cancer.
9. ***Introduction to Biochemical Research***, BMB814, 1991-2000.
   Lecturer:
   Dr. Moremen contributed 2 lecture hours to incoming graduate students on research in the Moremen lab.
10. ***Elected Member of the Graduate Faculty***, University of Georgia, 1993-present.
11. ***Biochemistry, Cell, and Molecular Biology Journal Club***, 1991-1995. Participant
12. ***Students supervised in undergraduate research*** (BMB 399, BMB 496, and BCMB4960, 1991-present): 34

13. ***Students supervised in graduate research*** (1991-present): 14

Directed research of the following students for doctoral degrees:

Carlos Rivera-Marrero, 1993, "Studies on the structure and function of the α-1,3- and β1,4-galactosyltransferases within the Golgi apparatus of animal cells" (presently research faculty at Emory University)

Anita Lal, 1997, "Mammalian Class I mannosidases involved in glycoprotein maturation" (presently Assistant Research Molecular Biologist, Principal Investigator, Meningioma Research Laboratory, University of California, San Francisco)

Yung-Feng Liao, 1998, "Biochemical studies on mammalian glycoprotein processing and catabolic mannosidases and characterization of the genetic defects in patients with a human lysosomal storage disease, alpha-mannosidosis" (presently Assistant Research Fellow, Institute of Zoology, Academia Sinica, Taipei, Taiwan)

Alison Vandersall-Nairn, 2001, "Cloning and characterization of the acid alpha-mannosidase from *Trypanosoma cruzi* and studies if the heterologously expressed protein in yeast and mammalian cells" (presently a postdoctoral fellow in the Moremen lab, University of Georgia)

Steven Mast, 2004, "Discovery of the EDEM subfamily in the family 47 glycosylhydrolases", (presently a Staff Scientist at Prozyme, Hayward, CA)

Khanita Karaveg, 2004, "Structure and function of ER Class 1 alpha-mannosidases", (presently a staff scientist, Glycofi/Merck, Lebanon, NH)

Chaeho Park, 2006, "Characterization of a Human Core-specific Lysosomal alpha1,6-Mannosidase Involved in *N*-Glycan Catabolism" (presently post-doc at Washington University at St. Louis).

Narendra Tejwani, 2008, "Heterologous expression of rat ST6GalI in Pichia pastoris for structural and functioinal studies." (presently a pharmacist in South Carolina)

Harminder Singh, 2009, "Biological Role of Golgi Mannosidase IIx" (presently a postdoc at University of Georgia).

Yong Xiang, 2015, "Structure and substrate specificity of GH47 alpha-mannosidases".

Directed research of the following students for masters degrees:

Heather Harrison Stang, 1997, "Expression, Purification, Isotope enrichment, and mutagenesis of Galectin-1" (presently research technician at Emory University)

Sergio Tonon, 1993, "Functional study of protein domains of mammalian Golgi resident enzymes: their involvement in activity" (presently a member of the faculty, Universidad de Misiones, Argentina)

Tim Kunkle, 1994, "Localization of the MNT1-encoded α1,2-mannosyltransferase involved in *Saccharomyces cerevisiae* O-linked glycosylation in African green monkey (COS-7) cells and Chinese hamster ovary (CHO) cells." (presently in Pharmacy School, Duquesne Univesity)

Heather Strachan, 2009, "Expression, Purification and Characterization of a Drosophila melanogaster Mannosidase orthologous to Drosophila melanogaster Golgi Mannosidase II (presently a research technician at the University of Georgia)

Directed research of the following Post-doctoral Fellows and Visiting Scientists, (years, present activity):

Past:

Yasuhiro Kagawa, (1995-96, Research Biochemist, Toray Pharmaceuticals, Japan).

Dr. Roberta Merkle, (1994-1995, subsequently Technical Director, Biomedical Complex Carbohydrates, CCRC, University of Georgia, now retired)

Dr. Daniel Gonzalez, (1992-1998, Faculty, Auburn University, deceased)

Dr. Steven Mast (2004-2006, Postdoctoral fellow, Crown Research Institute, New Zealand, 2006-2008; Staff Scientist, Prozyme, 2008-present)

Dr. Khanita Karaveg (2006-2008, Sr. Research Biologist, Glycofi/Merck, Inc. 2008-present)

Dr. Bakthavatsalam Sundararaju (2006-2008, presently working in academic instruction in India)

Dr. Amgad Albohy (2015-present, Assistant Professor in Egypt)

Dr. Shuo Wang (2013-2015, presently working in a postdoc position in Harvard University)

Dr. Pradeep Prabhakar (2015-2017, postdoctoral fellow in Don Jarvis Lab, U. Wyoming)

Dr. Lu Meng (2002-2017, research staff, Glycosensors, Athens, GA)

Dr. Yong Xiang (2015-present, postdoctoral fellow in the Department of Biochemistry, U. Kentucky)

Present:

Dr. Alison Vandersall-Nairn (2001-2002, 2003-present, Associate Research Scientist in the Moremen lab, University of Georgia)

Dr. Zhifeng Zheng (2006- present, postdoctoral fellow in the Moremen lab, University of Georgia)

Dr. Jeong Yeh Yang (2014-present, Assistant Research Scientist in the Moremen lab, University of Georgia)

Dr. Bhargavi Boruah (2015-present, postdoctoral fellow in the Moremen lab, University of Georgia)

Dr. Digantkumar Chapla (2015-present, postdoctoral fellow in the Moremen lab, University of Georgia)

Research technicians in the Moremen lab:

Melina Galizzi

Annapoorani Ramiah

Zhongwei Gao

Rosemary Kim

Thesis committee membership:

Department of Biochemistry and Molecular Biology: 40 (6 present)
Department of Cellular Biology: 10
Department of Genetics: 4

RESEARCH

CITATIONS AND IMPACT

Google Scholar
h-index: 46
¡10-index: 104
Citations total: 7244

ResearchGate:
RG score: 43.86

Web of Science
h-index: 39
Citations total: 5060

PUBLICATIONS:

Book Chapters:

1. Nairn, A.V. and **Moremen, K. W.** (2015) Glycotranscriptomics in ***Glycoscience: Biology and Medicine*** (N. Taniguchi, T. Endo, G. Hart, P. Seeberger, C.-H. Wang eds.) Springer-Verlag, Tokyo, pp. 1475-1482 [PMCID not applicable]
2. Nairn, A.V. and **Moremen, K. W.** (2014) Mannosyl-oligosaccharide glucosidase (Glucosidase I, MOGS) in ***Handbook of Glycosyltransferases and Related Genes***, 2nd edition (N. Taniguchi, K. Honke, M. Fukuda, H. Narimatsu, Y. Yamaguchi, and T. Angata, eds.) Springer-Verlag, Tokyo, pp. 1273-1282. [PMCID not applicable]
3. **Moremen, K. W.** and Nairn, A.V. (2014) Mannosidase, alpha, class 2a1 (MAN2A1, Golgi α-mannosidase II) in ***Handbook of Glycosyltransferases and Related Genes***, 2nd edition (N. Taniguchi, K. Honke, M. Fukuda, H. Narimatsu, Y. Yamaguchi, and T. Angata, eds.) Springer-Verlag, Tokyo, pp. 1313-1326. [PMCID not applicable]
4. **Moremen, K. W.** and Nairn, A.V. (2014) Mannosidase, alpha, class 1 (MAN1A1 (Golgi α-mannnosidase IA), Man1A2 (Golgi α-mannosidase IB), MAN1B1(ER α-mannosidase I), MAN1C1 (Golgi α-mannosidase IC) in ***Handbook of Glycosyltransferases and Related Genes*****,** 2nd edition (N. Taniguchi, K. Honke, M. Fukuda, H. Narimatsu, Y. Yamaguchi, and T. Angata, eds.) Springer-Verlag, Tokyo, pp. 1297-1312. [PMCID not applicable]
5. Nairn, A.V. and **Moremen, K. W.** (2014) Glucosidase, alpha neutral AB; glucosidase II subunit beta (GANAB, PRKCSH, α-glucosidase II) in ***Handbook of Glycosyltransferases and Related Genes***, 2nd edition (N. Taniguchi, K. Honke, M. Fukuda, H. Narimatsu, Y. Yamaguchi, and T. Angata, eds.) Springer-Verlag, Tokyo, pp. 1283-1295 [PMCID not applicable]
6. Nairn, A.V. and **Moremen, K.W.** (2009) Glycotranscriptomics. In **Handbook of Glycomics** (J.M. Pierce and R.D. Cummings eds.) Academic Press/Elsevier, pp. 81-136 [PMCID not applicable]
7. **Moremen, K. W.** (2002) α-Mannosidase II in ***Handbook of Glycosyltransferases and Related Genes*****,** (N. Taniguchi and M. Fukuda, eds.) Springer-Verlag, Tokyo, pp. 600-606
8. **Moremen, K. W.** (2000) α-Mannosidases in Asparagine-linked Oligosaccharide Processing and Catabolism. in ***Oligosaccharides in Chemistry and Biology: A Comprehensive Handbook***, Vol. II, Part 1 (B. Ernst, G. Hart, and P. Sinay, eds.) Wiley and Sons Publishers, New York, 81-117.
9. Trimble, R. B., **Moremen, K.W.**, and Herscovics, A. (1994) Mannosidases of the Golgi Apparatus. in ***Guidebook to the Secretory Pathway*** (J. A. Rothblatt, T. Stevens, and P. Novick eds.) Sambrook and Tooze Scientific Publishers. pp. 185-188.
10. Trimble, R. B., **Moremen, K.W.**, and Herscovics, A. (1994) N-glycan processing in the endoplasmic reticulum in ***Guidebook to the Secretory Pathway*** (J. A. Rothblatt, T. Stevens, and P. Novick eds.) Sambrook and Tooze Scientific Publishers. pp. 100-104.
11. **Moremen, K. W.** and Touster, O. (1987) Mannosidases in Mammalian Glycoprotein Processing. in ***Protein Transfer and Organelle Biogenesis*** (R.C. Das and P.W. Robbins eds.) Academic Press, pp. 209-240.

Manuscripts submitted:

1. Lopez Aguilar, A., Meng, L., Hou, X., Li, W., **Moremen, K.W.** Wu, P. (2018) Exploiting sialyltransferases for chemoenzymatic histology detection of N- and O- glycans.
2. Amos, R.A., Pattathil, S., Yang, J.Y., Atmodjo, M.A., Urbanowicz, B.R., **Moremen, K.W.**, Mohnen, D. (2018) The galacturonosyltransferase GAUT1:GAUT7 complex synthesizes homogalacturonan polysaccharides using distinct processive and distributive mechanisms.
3. Saeui, C.T., Nairn, A.V., Galizzi, M., Douville, C., Gowda, P., Park, M., Dharma, V., Shah, S., Clark, A.,

Austin, M., Moremen, K.W., and Yarema, K.J. (2018) Integration of genetic and metabolic features related to sialic acid metabolism distinguishes human breast cell subtypes.

4. Qi Gao, Q., Yang, J.Y., **Moremen, K.W.**, Flanagan, J.G., and Prestegard, J.H. (2018) Structural Characterization of a Heparan Sulfate Pentamer Interacting with LAR-Ig1-2
5. Thieker, D., Xu, Y., Chapla, D., Qiu, H., Nora, C., Felix, T., Esko, J., Wang, L., **Moremen, K.W.**, Liu, J., and Woods, R.J. Unexpected Binding Specificity of HS2ST: Implications for Heparan Sulfate Biosynthesis
6. Kadirvelraj, R., Yang, J.-Y., Sanders, J.H., Liu, L., Ramiah, A., Prabhakar, P.K., Boons, G.-J., Wood, Z.A., and **Moremen, K.W.** (2017) Human N-acetylglucosaminyltransferase II substrate recognition uses a modular architecture that includes a convergent exosite. Submitted.

Peer-reviewed Journal Articles:

2018

126. Jensen, J.K., Busse-Wicher, M., Poulsen, C.P., Fangel, J.U., Smith, P.J., Yang, J.-Y., Peña, M.-J., Dinesen, M.H., Martens, H.J., Melkonian, M., Wong, G.K, **Moremen, K.W**., Wilkerson, C.G., Scheller, H.V., Dupree, P., Ulvskov, P., Urbanowicz, B.R., and Harholt, J. Identification of an algal xylan synthase KfXYS1 proves that there is functional orthology between algal and plant cell wall biosynthesis. ***New Phytologist.*** In press.
125. Briard, J.G., Jiang, H., **Moremen, K.W**., Macauley, M.S., and Wu, P. (2018) Cell-Based Glycan Arrays for Probing Glycan–Glycan Binding Protein Interactions. ***Nature Commun***. In press
124. Zhao, Y., Yang, J.Y., Thieker, D.F., Xu, Y., Zong, C., Boons, G.-J., Liu, J., Woods, R.J., ***Moremen, K.W.***, Amster. I.J. (2018) Traveling wave ion mobility spectrometry (TWIMS) study of the Robo1-heparan sulfate interaction ***J. Amer. Soc. Mass Spectrom***. in press
123. Rouhanifard, S.H., Aguilar, A.L., Meng, L., Izumori, K., **Moremen, K.W**., and Wu, P. (2018) Engineered glycocalyx regulates stem cell proliferation in crypt organoids. ***Cell Chem. Biol.*** In press.
122. Kudelka, M., Nairn, A.V., Sardar, M.Y., Sun, X., Chaikof, E.L., **Moremen, K.W.**, and Cummings, R.D. (2018) Isotopic Labeling with Cellular O-glycome Reporter/Amplification (ICORA) for Comparative O-glycomics of Cultured Cells. ***Glycobiology***, in press.
121. Jiang, H., López-Aguilar, A., Meng, L., Gao, Z., Liu, Y., Tian, X., Yu, G., Ovryn. B., **Moremen, K.W**., Wu, P. (2018) Modulating Cell-Surface Receptor Signaling and Ion Channel Functions by In Situ Glycan Editing. ***Angew Chem Int Ed Engl.*** 56, 1-6. doi: 10.1002/anie.201706535. [PMID 29292859; PMCID in process]
120. **Moremen, K.W.**, Ramiah, A., Stuart, M., Steel, J., Meng, L., Forouhar, F., Moniz, H.A., Gahlay, G., Gao, Z., Chapla, D., Wang, S., Yang, J.-Y., Prabahkar, P. K., Johnson, R., dela Rosa, M., Geisler, C., Nairn, A.V., Wu, S.-C., Tong, L., Gilbert, H.J., LaBaer, J., and Jarvis, D.L. (2018) Expression system for structural and functional studies of human glycosylation enzymes. ***Nature Chem. Biol.*** 14, 156-162 [PMID 29251719; PMC5774587]
119. Epp, A., Hobusch, J., Bartsch, Y., Eschweiler, S., Möbs, C., Hall, A., Morris, S.C., Petzold, D., Lilienthal, G.-M., Engellenner, C., Bitterling,J., Petry,J., Rahmöller,R., Collin, M., **Moremen, K.W**., Strait, R.T., Blanchard, V., Petersen, A., Gemoll, T., Habermann, J.K., Petersen, F., Nandy, A., Kahlert, H., Hertl, M., Pfützner, W., Jappe, U., Finkelman, F.D., and Ehlers, M. (2018) Sialylation of IgG antibodies inhibits IgG-mediated allergic reactions. ***J. Allergy Clin. Immunol.*** 141, 399-402. [PMID:28728998; PMCID in process]

2017

118. Benedetti, E., Pučić-Baković, M., Keser, T., Wahl, A., Hassinen, H., Trbojević Akmačić , I., Vila, M., Razdorov , G., Stambuk , J., Klarić,L., Ugrina, I., Selman, M., Wuhrer, M., Rudan, I., Polasek, O., Caroline Hayward, C., Grallert, H., Strauch, K., Peters, A., Meitinger, T., Gieger, C., Yang, J.-Y., Lui, L., Boons, G.-J., Kellokumpu , S., **Moremen, K.W**., Bovin, N., Theis, F.J., Lauc, G., and Krumsiek, J. (2017) Network inference from glycoproteomics data reveals new reactions in the IgG glycosylation pathway. ***Nat Commun***. 8, 1483. [PMID:29133956; PMC5684356]
117. Tuomivaara, S.T., Schliekelman, P., Nairn, A.V., **Moremen, K.W**., and York W.S. (2017) RElative QUantitation Inferred by Evaluating Mixtures (REQUIEM). ***Analytica Chim Acta*** 993, 22-37 [PMID: 29078952; PMC5735846]
116. Tong, W., Dwyer, C.A., Thacker, B.E., Glass, Brown, J.R., Hamil, K., **Moremen, K.W**., Sarrazin, S., Gordts, P.L.S.M., Dozier, L., Patrick, G.N.,Tor, Y., and Esko, J.D. Guanidinylated Neomycin Conjugation Enhances Intranasal Enzyme Replacement in the Brain. ***Molecular Therapy*** 25, 2743-2752. [PMID

28958576; PMCID in process]

115. Urbanowicz, B.R., Bharadwaj, V.S., Alahuhta, M., Peña, M.J., Lunin, V.V., Bomble, Y.J., Wang, S., Yang, J.-Y., Tuomivaara, S., Himmel, M.E., **Moremen, K.W**., York, W.S., and Crowley, M.F. (2017) Structural, Mutagenic and In Silico studies of Xyloglucan Fucosylation in Arabidopsis thaliana Suggest a Water-Mediated Mechanism. ***Plant J***. 91: 931-949. [PMID:28670741; PMC5735850]
114. Hanes, M.S., **Moremen, K.W**., Cummings, R.D. (2017) Biochemical characterization of functional domains of the chaperone Cosmc. ***PLOS One,*** 12:e0180242. [PMID:28665962; PMC5493369]
113. Prudden, A.R., Liu, L., Capicciotti, C.J., Wolfert, M.A., Wang, S., Gao, Z., Meng, L., **Moremen, K.W**., Boons, G.-J. (2017) Synthesis of asymmetrical multi-antennary human milk oligosaccharides. ***Proc. Natl. Acad. Sci. USA*** 114, 6954-6959 [PMID:28630345; PMC5502611]
112. Gao, Q., Chalmers, G.R., **Moremen, K.W.**, and Prestegard, J.H. (2017) NMR Assignments of Sparsely Labeled Proteins Using a Genetic Algorithm ***J. Biomolecular NMR.*** 67, 283-294. [PMID:28289927; PMC5434516]
111. Guo, H., Zhang, B., Nairn, A., Nagy, T., **Moremen, K.W**., Buckhaults, P., and Pierce, M. (2017) O-GlcNAc expression levels epigenetically regulate colon cancer tumorigenesis by affecting the cancer stem cell compartment via modulating expression of transcriptional factor MYBL1. ***J. Biol. Chem***. 292, 4123-4137. [PMID:28096468; PMC5354504]
110. Halmo, S.M., Singh, D., Patel, S., Wang, S., Edlin, E., Boons, G.J., **Moremen, K.W**., Live, D.H., and Wells, L. (2017) Protein O-linked mannose β-1,4-N-acetylglucosaminyltransferase 2 (POMGNT2) is a Gatekeeper Enzyme for Functional Glycosylation of α-Dystroglycan. ***J. Biol. Chem***. 292, 2101-2109. [PMID:27932460; PMC5313085]
109. Sheikh, M.O., Halmo, S.M., Patel, S., Middleton, D., Takeuchi, H., Schafer, C.M., West, C.M., Haltiwanger, R.S., Avci, F.Y., **Moremen, K.W**., and Wells, L. (2017) Rapid screening of sugar-nucleotide donor specificities of putative glycosyltransferases ***Glycobiology***, 27, 206-212. [PMID:28177478; PMC5789813]

2016

108. Xiang, Y., Karaveg, K., and **Moremen, K.W**. (2016) Substrate recognition and catalysis by GH47 a-mannosidases involved in Asn-linked glycan maturation in the mammalian secretory pathway. ***Proc. Natl. Acad. Sci. USA***, 113: E7890-E7899. [PMID:27856750] [PMC5150396]
107. Li, T., Huang, M., Liu, L., Wang, S., **Moremen, K.W**., Boons, G.J. (2016) Divergent Chemoenzymatic Synthesis of Asymmetrical Core Fucosylated and Core-Unmodified N-Glycans. ***Chemistry*** 22, 18742-18746 [PMID:27798819] [PMC5442444]
106. Aoki-Kinoshita K, Agravat S, Aoki NP, Arpinar S, Cummings RD, Fujita A, Fujita N, Hart GM, Haslam SM, Kawasaki T, Matsubara M, **Moremen KW**, Okuda S, Pierce M, Ranzinger R, Shikanai T, Shinmachi D, Solovieva E, Suzuki Y, Tsuchiya S, Yamada I, York WS, Zaia J, Narimatsu H. (2016) GlyTouCan 1.0--The international glycan structure repository. ***Nucleic Acids Res***. 44:D1237-42. [PMID 26476458] [PMC4702779]
105. Gao, Q., Chen,C.Y., Zong, C., Wang, S., Morris, L.C., Boons, G.-J., **Moremen, K.W.**, and Prestegard J.H. (2016) Structural Aspects of Heparan Sulfate Binding to Robo1-D12. ***ACS Chemical Biology*** 11:3106-3113. [PMID:27653286] [PMC5148660]
104. Zong, C., Huang, R., Condac, E., Chiu, Y., Xiao, W., Li, X., Lu, W, Ishihara, M., Wang, S., Ramiah, A., Stickney, M., Azadi, P., Amster, I.J., **Moremen, K.W**., Wang, L., Sharp, J.S., Boons, G.J. (2016) Integrated Approach to Identify Heparan Sulfate Ligand Requirements of Robo1. ***J Am Chem Soc***. 138:13059-13067. [PMID:27611601] [PMC5068570]
103. Sun, T., Yu, S., Zhao, P., Meng, L., **Moremen, K.W.**, Wells, L., Steet, R., and Boons, G.-J. (2016) A One-step Selective Exo-enzymatic Labeling (SEEL) Strategy for the Biotinylation and Identification of Glycoproteins of Living Cells. ***J Am Chem Soc***. 138, 11575-82 [PMID:27541995] [PMC5067740]
102. Zhuo,Y., Yang, J.-Y., **Moremen, K.W**., and Prestegard, J. (2016) Glycosylation alters dimerization properties of a cell-surface signaling protein, CEACAM1. ***J. Biol. Chem***. 291, 20085-95 [PMID:27471271] [PMC5025693]
101. Deligny, A., Dierker, T.,Dagalv, A., Lundequist, A., Eriksson, I., Nairn, A.V., **Moremen, K.W.**, Merry, C.R.L., Kjellen, L. (2016) NDST2 (N-Deacetylase/N-Sulfotransferase-2) Enzyme Regulates Heparan Sulfate Chain Length. ***J. Biol. Chem***. 291:18600-7 (paper of the week) [PMID:27387504] [PMC5009238]
100. Zhang, C, Zhang, T., Zou, J., Miller, C.J., Gorkhali, R., Yang, J.-Y., Schilmiller, A., Wang, S., Huang, K., Brown, E.M., **Moremen, K.W**., Hu, J., and Yang, J.J. (2016) Structural Basis for Regulation of Human

Calcium-Sensing Receptor by Magnesium Ions and an Unexpected Tryptophan Derivative Co-agonist ***Science Advances***, 2: e1600241 [PMID:27386547] [PMC4928972]

99. McMorran, B., McCarthy, F., Gibbs, E., Pang, M., Marshall. J., Nairn, A., **Moremen, K.W**., Crosbie-Watson, R., Baum. L. (2016) Differentiation-related glycan epitopes identify discrete domains of the muscle glycocalyx. ***Glycobiology***, 26, 1120-1132 [PMID:27236198] [PMCID5241718]
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INVITED SEMINARS, PRESENTATIONS, AND SYMPOSIA

Symposium presentations: (**Invited presentations, partial list of poster presentations)

1. Symposium Poster Presentation, American Society for Mass Spectrometry, San Diego, CA, June 2018, “Optimization of HRFP for Observation of Highly Basic Regions” Mobley, C., Prabhakar, P., Moremen K.W., Sharp. J.
2. Symposium Poster Presentation, American Society for Mass Spectrometry, San Diego, CA, June 2018, “Comparison of Gas-Phase and Solution Conformations of Roundabout 1 – Effect of Heparan Binding” Williams, R., Zhao, Y., Eletsky, A., Yang, J.Y., Prabhakar, P., Moremen, K.W., Prestegard, J.H., Amster, I.J.

3. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Portland, OR, November, 2017, “Metabolic pathway analysis that combines glyco-gene transcript analysis with glycan structural data derived from differentiated human stem cell lineages” Nairn, A.V., Grace, H., Galizzi, M., dela Rosa, M., Porterfield, M., Kulik, M., Pierce, M., Dalton, S., Tiemeyer, M., Moremen, K.W.
4. Symposium Poster Presentation, Experimental Nuclear Magnetic Resonance Conference, Orlando FL, April 2018 “Paramagnetic Tags for Glycoproteins – Structural Restraints for Heparan Sulfate Binding to Robo1” Eletsky, A., Moure, M., Gao, Q., Zhuo, Y., Morris, L., Yang, J.Y., Chapla, D., Zhao, Y., Boons, G.J., Moremen, K.W., Prestegard, J.
5. Symposium Poster Presentation, Experimental Nuclear Magnetic Resonance Conference, Orlando FL, April 2018 “Resonance Assignment, Interdomain Orientation and Dynamics from Paramagnetic Effects in Robo1-Ig1-2” Williams, R., Eletski, A., Zhao, Y.,Yang, J.Y., Prabhakar, P., Moremen, K.W., Jonathan Amster, I.J., Prestegard, J.
6. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Portland, OR, November, 2017, “Biochemical Characterization of Functional Domains of the Chaperone Cosmc” Hanes, M.S., Moremen, K.W., Cummings, R.D.
7. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Portland, OR, November, 2017, “Using Glycan Microarrays and Molecular Dynamics to Understand the Carbohydrate Specificities of the Human Intelectins.” Viola, J., Lee, J.-K., McBride, R., Heimburg-Molinaro, J., Paulson, J., Moremen, K.W., Sood, A., Woods, R., Pierce, J.M.
8. ** Invited Symposium Presentation, Glycobiology Gordon Conference, Ventura CA, March 2017, “Structural Basis of GlcNAc Transferase Substrate Specificity”.
9. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Maturation of Asn-linked glycans in the mam mammalian secretory pathway: structural basis of substrate recognition by GH47 alpha mannosidases.” Yong Xiang, Khanita Karaveg, Kelley W. Moremen
10. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “The glycan receptors of Helicobacter pylori: decoding the pathways underlying gastric glycophenotype modulation.” Ana Magalhaes, Ricardo Marcos-Pinto, Joana Gomes, Alison V. Nairn, Yannick Rossez, Catherine Robbe-Masselot, Emmanuel Maes, Jeanna Bugaytsova, Céu Figueiredo, Thomas Borén, Kelley W. Moremen, Celso A. Reis
11. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Human fucosyltransferase FUT5: Crystal structure and Acceptor specificity.” Digantkumar Chapla, Shuo Wang, Annapoorani Ramiah, Farhad Forouhar, Liang Tong, Kelley W. Moremen
12. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “COG Deficiency Drastically Alters Mucin-Type Glycosylation on Alpha-Dystroglycan Increasing its Proteolytic Susceptibility.” Seok-Ho Yu, Peng Zhao, Tiantian Sun, Pradeep Chopra, Aaron Beedle, Kelley W. Moremen, Geert-Jan Boons, Lance Wells, Richard Steet
13. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Analysis of Changes in Glycosylation as Pluripotent Human Stem Cells Differentiate into Separate Germ Cell Lineages.” Alison V. Nairn, Harrison Grace, Katelyn Rosenbalm, Melina Galizzi, Mitche dela Rosa, Mindy Porterfield, Michael Kulik, J. Michael Pierce, Stephen Dalton, Michael Tiemeyer, Kelley W. Moremen
14. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Genotype-Phenotype Correlations for POMGNTs in Congenital Muscular Dystrophy.” Danish Singh, Stephanie M. Halmo, Sneha Patel, Melanie Edlin, Geert-Jan Boons, Kelley Moremen, David Live, Lance Wells
15. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Biochemical characterization of Cosmc, a client specific endoplasmic reticulum chaperone.” Melinda S. Hanes, Kelley Moremen, Richard D. Cummings
16. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Impaired lysosomal targeting leads to sustained activation of the Met receptor via ROS-dependent oxidative inactivation of receptor protein-tyrosine phosphatases.” Megan C. Aarnio, Peng Zhao, Seokho Yu, Tiantian Sun, Zhongwei Gao, Kelley Moremen, Geert-Jan Boons, Lance Wells, Richard Steet

17. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Characterization and regulation of the functional O-mannose glycan on a-dystroglycan.” M. Osman Sheikh, Jeremy L. Praissman, Tobias Willer, Takako Yoshida-Moriguchi, David Venzke, Mary E. Anderson, Shuo Wang, Pradeep Prabhakar, Annapoorani Ramiah, John N. Glushka, Kelley W. Moremen, Kevin P. Campbell, Lance Wells
18. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Characterizing Glycosylated Proteins and Their Interactions Using Sparse-Labeling NMR.” James H. Prestegard, Kelley W. Moremen, Qi Gao, Gordon R. Chalmers
19. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Human Intelectin-1, a member of the X-type lectin family, binds specific microbial glycans.” Jonathan Viola, Jin Kyu Lee, Ryan McBride, David Smith, Richard Cummings, James Paulson, Kelley Moremen, Michael Pierce
20. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, New Orleans, LA, November, 2016, “Biochemical Characterization of Family GT47 Glycosyl Transferases Involved in Xylan Biosynthesis.” Peter Smith, Abigail Agyeman, Maria Peña, Malcolm O’Neill, Jeong Yeh Yang, Breeanna Urbanowicz, Kelley Moremen, and William York
21. **Session chair and discussion leader, International Carbohydrate Symposium, New Orleans, LA, July 2016
22. ** Invited Symposium Presentation, 10th International Symposium on Glycosyltransferases, Toronto, ON, June 2016, “Structural and functional studies on human alpha1,3/4-fucosyltransferases”
23. **Discussion leader, Harnessing glycoscience to understand and optimize HIV Env immunogenicity, Bill and Menlinda Bates Foundation, Seattle, WA, June 2016
24. ** Invited Symposium Presentation, American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA , April 2016, “Insights into the enzymology and structural biology of mammalian glytcosylation enzymes coming from large-scale eukaryotic expression platforms” FASEB J. 30, S 251.1
25. Symposium Poster Presentation, American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA , April 2016, “Crystal structure and mutagenesis studies of mammalian fucosyltransferase-9 (FUT9) reveals the catalytic core and substrate specificity” Bhargavi M Boruah, Renu Kadirvalraj, Shuo Wang, Annapoorani Ramiah, Zachary A Wood and Kelley W Moremen FASEB J., 30, b119
26. Symposium Poster Presentation, 7th Southeast Enzyme Conference, Atlanta, GA, April 2016, “The Crystal Structures and Acceptor Specificities of Human Fucosyltransferases FUT5 and FUT9.” Renuka Kadirvelraj, Shuo Wang, Bhargavi Boruah, Digantkumar Chapla, Kelley Moremen, and Zachary Woood
27. **Invited Symposium Presentation, P41 Director’s Meeting, Bethesda, MD, March 2016, “Resource for Integrated Glycotechnology”
28. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Intelectin-1 is induced by IL-13 via MAPK pathway and selectively binds to IL-13 stimulated LS174 T cells” Jin Kyu Lee, Jonathan Viola, Alison Nairn, Kelley Moremen, Michael Pierce
29. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Building the Cell Wall: Insights into the Mechanism of Xylan Synthesis and O-Acetylation”; Breeanna Urbanowicz, Maria Peña, Heather Moniz, Shuo Wang, Kelley Moremen, William York
30. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, Deciphering Determinants of Functional Glycosylation on Alpha-Dystroglycan”; Stephanie Halmo, Melanie Edlin, Sneha Patel, Danish Singh, Shuo Wang, Jeong Yeh Yang, Geert-Jan Boons, Kelley Moremen, David Live, Lance Wells
31. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Insights into mammalian glycosylation enzymes coming from large-scale eukaryotic expression platforms”; L. Meng, S. Wang, R. Kadirvelraj, F. Forouhar, A. Ramiah, Z. Gao, J. Seetharaman, S. Milaninia, G. Gahlay, M. Stuart, J. Steel, J. LaBaer, D. Jarvis, L. Tong, Z. Wood, K. W. Moremen
32. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Labeling Cell Surface Glycoproteins by Selective Exo-Enzymatic Labeling (SEEL) and Metabolic Labeling”; Peng Zhao, Seok-Ho Yu, Cheng Yu Chen, Kelley W. Moremen, Geert-Jan Boons, Richard Steet, Lance Wells

33. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “One-Step SEEL With ST6Gal1 Results in High Efficiency Labeling and Detection of Cell Surface Sialoglycoproteins”; Seok-Ho Yu, Tiantian Su, Peng Zhao, Lu Meng, Kelley W. Moremen, Lance Wells, Geert-Jan Boons, Richard Steet
34. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “An Cell Platform for Endothelial Heparan Sulfate Function Study”; Hong Qiu, Jingwen Yue, Alison V Nairn, Guoyun Li, Fuming Zhang, Stephanie A Archer-Hartmann, Mitche Dela Rosa, Parastoo Azadi, Toin H. van Kuppevelt, Wellington V. Cardoso, Koji Kimata, Robert J Linhardt, Jeffrey Esko, Kelley W Moremen, Lianchun Wang
35. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Identifying disease-specific differences in human muscle glycosylation that affect muscle function”; Brian J. McMorran, Francis E. McCarthy, Alison V. Nairn, Zhongyin Liu, Lara K. Mahal, Kelley W. Moremen, Carrie M. Miceli, Rachelle H. Crosbie-Watson, Linda G. Baum
36. Symposium Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “Hemicellulose biosynthesis is becoming crystal clear” William S. York, Breeanna Urbanowicz, Kelley Moremen, Maria J. Peña, Peter J. Smith, Sami Tuomivaara, Shuo Wang, Vladimir Linin, Petri Alahuhta, Michael Crowley, Michael Himmel
37. Symposium Presentation, Society for Glycobiology Annual Meeting, San Francisco, CA, December, 2015, “The Official Release of the International Glycan Structure Repository”; Nobuyuki P. Aoki, Kiyoko Aoki-Kinoshita, Sanjay Agravat, Sena Arpinar, Richard D. Cummings, Akihiro Fujita, Noriaki Fujita, Gerald M Hart, Stuart Haslam, Toshisuke Kawasaki, Masaaki Matsubara, Kelley W. Moremen, Hisashi Narimatsu, Shujiro Okuda, J. Michael Pierce, René Ranzinger, Toshihide Shikanai, Daisuke Shinmachi, Elena Solovieva, Yoshinori Suzuki, Shinichiro Tsuchiya, Issaku Yamada, William S. York, Joseph Zaia
38. ** Invited Symposium Presentation, International Conference on Protein Engineering in Chicago, IL , October 2015, “Strategies for Recombinant Production of Human Glycosylation Enzymes: Comparison of Mammalian and Insect Cell Expression Systems”
39. ** Invited Symposium Presentation, GLYCO23, Split, Croatia, September, 2015. “Insights into the enzymology and structural biology of mammalian glycosylation enzymes coming from large-scale eukaryotic expression platforms”
40. ** Invited Symposium Presentation, Glycobiology Gordon Research Conference, Il Ciocco, Barga, Italy, March 2015, "Structural Basis for Substrate Specificity Among N-Glycan (GH47) Processing Alpha-Mannosidases"
41. **Invited Symposium Presentation, P41 Director’s Meeting, Bethesda, MD, March 2015, “Resource for Integrated Glycotechnology”
42. Symposium Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “Development of an international glycan structure repository” Kiyoko Aoki-Kinoshita, Sanjay Agravat, Nobuyuki P. Aoki, Sena Arpinar, Richard D. Cummings, Akihiro Fujita, Noriaki Fujita, Gerald M Hart, Stuart Haslam, Toshisuke Kawasaki, Masaaki Matsubara, Kelley W. Moremen, Hisashi Narimatsu, Shujiro Okuda, J. Michael Pierce, René Ranzinger, Toshihide Shikanai, Daisuke Shinmachi, Elena Solovieva, Yoshinori Suzuki, Shinichiro Tsuchiya, Issaku Yamada, William S. York, Joseph Zaia
43. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “Homogeneous heparin sulfate oligomers for NMR studies of VACV B18 GAG binding” Pederson, K., Wang, S., Moremen, K.W., and Prestegard, J.H.
44. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “Whole transcriptome andlysis of human embryonic stem cells and differentiated cell populations” Nairn, A.V., dela Rosa, M., Kulik, M., Dalton, S., Pierce, J.M., and Moremen, K.W.
45. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “Hemicellulose synthesis and function in land plants” York, W., Urbanowicz, B., Pena, M., Moremen, K., O’Niell, M., Moniz, H., Kulkarni,A., and Wang, S.
46. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “Mitigation of non-typeable hemophilus influenza induced acute airway inflammation by manipulating circulatory ST6Gal-1 levels” Naseirikenari, M., Lugade, A., Dougher, C., Neelamegham, S., Thanavala, Y., Moremen, K.W., Lau, J.

47. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, Honolulu, HI, November, 2014, “B4GAT1 is the priming enzyme for the LARGE-dependent functional glycosylation of a-dystroglycan” Praissman, J., Live, D., Wang, S., Ramiah, A., Moremen, K.W., Wells, L.
48. **Invited Symposium Presentation, Global Technology Community 2nd Protein Expression, Purification & Characterization Conference in Boston, MA, October 2014, “Strategies for Recombinant Production of Human Glycosylation Enzymes: Comparison of Mammalian and Insect Cell Expression Systems”
49. **Invited Symposium Presentation, GlycoT 2014, Porto, Portugal, June 2014, “Enzymatic basis for N-glycan sialylation: structure of rat ST6GAL1 reveals conserved and unique features for glycan sialylation”
50. **Invited Symposium Presentation, Consortium for Functional Glycomics Workshop, Bethesda MD, May 2014, “Resource of Mammalian Glycosylation Enzymes for Glycan Synthesis”
51. **Invited Symposium Presentation, P41 Director’s Meeting, Bethesda, MD, March 2014, “Resource for Integrated Glycotechnology”
52. **Invited Symposium Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Enzymatic basis for N-glycan sialylation: structure of rat ST6GAL1 reveals conserved and unique features for N-glycan sialylation”
53. Symposium Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Heparan sulfate is required for prostate cancer initiation and progression” Li, X., Nairn, A., Nagy, T., Wang, F., Yamaguchi, Y., Moremen, K., Wang, L.
54. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Repository of recombinant expression constructs for mammalian glycosylation enzymes: production of glycosyltransferases and glycoside hydrolases in mammalian cells” Moremen, K.W., Moniz, H., Ramiah, A., Meng, L., Gao, Z., Nairn, A.V., Xiang, Y., delaRosa, M., Jarvis, D., Steel, J., LaBaer, J.
55. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Repository of recombinant expression constructs for mammalian glycosylation enzymes: baculovirus vectors for glycosyltransferase and glycoside hydrolase production in insect cells” Gahlay, G., Stuart, M., Geisler, C., Moremen, K.W., Steel, J., LaBaer, J., Jarvis, D.L.
56. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Enzymatic basis for N-glycan sialylation: structure of rat ST6GAL1 reveals conserved and unique features for N-glycan sialylation” L. Meng, F. Forouhar, Z. Gao, A. Ramiah, H. Moniz, D. Thieker, J. Seetharaman, S. Milaninia, M. Su, L. Veillon, R. Bridger, P. Azadi, G. Kornhaber, L. Wells, R. Woods, G. Montelione, L. Tong, K. W. Moremen
57. Symposium Poster Presentation, Society for Glycobiology Annual Meeting, St. Petersburg, FL, November, 2013, “Pentavalent siglecs: high avidity tools for detection of siglec counter-receptors” Wei, Y., Fernandez, S.M., Yu, H., Gonzalez-Gil, A., Moniz, H., Moremen, K.W., and Schnaar, R.L.
58. **Invited Symposium Presentation, Carbohydrates Gordon Research Conference, Mt. Snow, Vermont, June, 2013, “Production and use of mammalian glycosylation enzymes for enzymatic and structural studies”
59. **Invited Symposium Presentation, EMBO Workshop, Glycoproteins from structure to disease, April 2013, Mallorca, Spain, “Leveraging glycosylation enzyme expression platforms: new structural insights on mammalian glycosyltransferase and glycosidase specificity”
60. **Invited Symposium Presentation, Northeast Structural Genomics Consortium Annual Meeting, New Brunswick, NJ, April 2013, “Structural biology of mammalian glycosylation enzymes: insights from complex expression systems”
61. **Chair, 2013 Glycobiology Gordon Research Conference, Ventura, CA
62. **Invited Symposium Presentation, Society for Glycobiology Annual Meeting, San Diego, CA, November, 2012, “Regulation and Recombinant Production of Mammalian Glycosylation Enzymes”
63. **Invited Symposium Presentation, 1st Conference on Diagnostics and Therapeutics (CDT), March, 2012, GA State University, Atlanta, GA, “High-Throughput Production of Mammalian Glycosylation Enzymes for Structural and Functional Studies”
64. Symposium Poster Presentation, Glycobiology-2012 Conference, San Diego, CA, 2012, “Repository of recombinant expression constructs for mammalian glycosylation enzymes: production of glycosyltransferases and glycoside hydrolases in mammalian cells” Moremen, K.W., Strachan, H.,

Ramiah, A., Johnson, R., Meng, L., Gao, Z., Nairn, A.V., Xiang, Y., delaRosa, M., Jarvis, D., Steel, J., LaBaer, J

65. Symposium Poster Presentation, Glycobiology-2012 Conference, San Diego, CA, 2012, "Repository of recombinant expression constructs for mammalian glycosylation enzymes: baculovirus vectors for glycosyltransferase and glycoside hydrolase production in insect cells" Gahlay, G., Moremen, K.W., Steel, J., LaBaer, J., Jarvis, D.L.
66. Symposium Poster Presentation, Glycobiology-2012 Conference, San Diego, CA, 2012, "Changes in glycan-related gene transcripts following human embryonic stem cell differentiation into cell types derived from ctoderm, mesoderm, or endoderm lineages" Nairn, A.V., dela Rosa, M., Memendez, L., Kulik, M., Dalton, S., Pierce, J.M., and Moremen, K.W.
67. **Invited Symposium Presentation, Satellite Meeting: Glycans in Cell Communication, Seattle, WA, November, 2011, "Repository for Glycan-Related Enzymes High-throughput production of mammalian glycosylation enzymes for structural and functional studies "
68. **Invited Symposium Presentation, 31st Naito Conference on Glycan expression and regulation, Sapporo, Japan, Sept 2011, "Regulation of mammalian glycosylation enzyme expression during human stem cell differentiation"
69. **Vice Chair, 2011 Glycobiology Gordon Research Conference, Il Ciocco, Barga, Italy
70. Symposium Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Repository of Recombinant Expression constructs for mammalian glycosylation enzymes: baculovirus vectors for glycosyltransferase and glycoside hydrolase production in insect cells" Gahlay, G., Geisler, C., Aumiller, J., Moremen, K.W., Steel, J., LaBaer, J., Jarvis, D.L.
71. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Repository of recombinant expression constructs for mammalian glycosylation enzymes: production of glycosyltransferases and glycoside hydrolases in mammalian cells" Moremen, K.W., Meng, L., Strachan, H., Ramiah, A., Gao, Z., Johnson, R.,, Nairn, A.V., Xiang, Y., delaRosa, M., Wu, S.-C., Gilbert, H.J., Jarvis, D., Steel, J., LaBaer, J.
72. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Slit3 C-terminal binds heparin and neutralizes heparin's anticoagulant activity" Condac, E., Strachan, H., Heiss, C., Johnson, D., Azadi, P., Orlando, R., Harenberg, J., Moremen, K.W., Wang, L.
73. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Enzyme-substrate complexes of human ER mannosidase I and Golgi mannosidase IA demonstrate the structural basis ofor differences in substrate specificity"
74. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Investigation of glycan catabolism and biosynthesis in human embryonic stem cells" Nairn, A.V., dela Rosa, M., Aoki, K., Porterfield, M., Kulik, M., Dalton, S., Pierce, J.M.,Tiemeyer, M., and Moremen, K.W.
75. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Enzyme-substrate complexes of human ER mannosidase I and Golgi mannosidase IA demonstrate the structural basis for differences in substrate specificity" Xiang, Y., Karaveg, K., Chen, L., Wang, B.C., and Moremen, K.W.
76. Symposium Poster Presentation, Glycobiology-2011 Conference, Seattle WA, 2011, "Identification of glycosyltranferases involved in the synthesis of functional O-Man glycans" Stalnaker, S.H., Live, D., Boons, G.J., Moremen, K.W., Wells, L., Stuart, R.
77. **Invited Symposium Presentation, Universidad de Guanajuato, Mexico, March 2011, "Challenges in the studies of the biochemistry and regulation of mammalian glycosylation enzymes"
78. **Invited Symposium Presentation, Glycobiology-2010 Conference, St. Pete Beach, FL, November 2010, "Repository of recombinant expression constructs for mammalian glycosylation enzymes: production of glycosyltransferases and glycoside hydrolases in mammalian cells"
79. **Invited Symposium Presentation, 25th International Carbohydrate Symposium (ICS 2010), Tokyo, Japan "Glycan biosynthesis and regulation: development of technology platforms for analyzing the expression and recombinant production of mammalian glycosylation enzymes"
80. **Invited meeting presentation: Joint Japan/CCRC Symposium, CCRC, March 2010 "Transcript Analysis of Glycan-related Genes"

81. **Invited Symposium Presentation, HUPO 2009, Toronto, Ontario, CA, Title: Glycomic Analysis of Differentiated Animal Stem Cells for Biomarker Identification
82. Symposium Presentation, Glyco XX Conference, San Juan, Puerto Rico, 2009, Transcript Analysis of Glycan-related Genes in Human Embryonic Stem Cells.
83. **Invited Symposium Presentation, Glycobiology-2009 Conference, San Diego, CA, 2009, Linking glycan expression to pathway dynamics during stem cell differentiation.
84. Symposium Presentation, Glycobiology-2009 Conference, San Diego, CA, 2009, Transcript Analysis of Glycan-related Genes in Pluripotent and Differentiated Human Embryonic Stem Cells.
85. Poster Chair, Glycobiology Gordon Conference, Oxnard, CA, 2009.
86. Symposium Presentation, 2009 Gordon Research Conference on Glycobiology, Ventura, CA, Alterations in Extracellular Matrix Homeostasis are associated with Cartilage Defects in Mucolipidosis-II Zebrafish.
87. **Invited Symposium Presentation, Glycobiology-2008 Conference, Ft. Worth, TX, 2008, Glycome Analysis during Differentiation of Embryonic Stem Cells.
88. Symposium Presentation, Glycobiology-2008 Conference, Ft. Worth, TX, 2008, Transcript Analysis of Glycan Biosynthesis in Human Embryonic Stem Cells
89. Symposium Presentation, Glycobiology-2008 Conference, Ft. Worth, TX, 2008, The Mammalian Endoplasmic Reticulum Stress Response Selectively Increases *Asparagine-Linked Glycosylation (Alg)* Transcripts.
90. Workshop Facilitator, 2nd Charles Warren Workshop on Glycoconjugate Analysis 2008, University of New Hampshire, Durham, NH
91. **Invited Symposium Presentation, Glyco T 2008, 6th International Confrerence, Emory University, Atlanta GA, Alterations in glycan-related transcripts and glycan structural changes during differentiation of murine embryonic stem cells
92. Symposium Presentation, Glyco T 2008, 6th International Confrerence, Emory University, Atlanta GA, Alterations in Glycan-related Transcripts and Glycan Structural Changes During Differentiation of Murine Embryonic Stem Cells.
93. **Invited Symposium Presentation, National Mucopolysaccharidosis Society Family Conference, Rockville, MD, 2007, Lysosomal storage diseases; an overview.
94. **Symposium Presentation, Glycobiology Gordon Conference, Oxnard, CA, 2007, Glycome analysis during differentiation of murine embryonic stem cells.
95. Symposium Presentation, Glycobiology-2006 Conference, Los Angeles, CA, 2006, Heterologous Expression of Rat ST6Gal1 in *Pichia pastoris* for Structural and Functional Studies.
96. Symposium Presentation, Glycobiology-2006 Conference, Los Angeles, CA, 2006, Expression and Isotope Labeling of ST6Gal1—Enabling NMR Characterization of Glycosylated Proteins.
97. Symposium Presentation, Glycobiology-2006 Conference, Los Angeles, CA, 2006,) Mechanism of substrate binding and catalysis for Class I (GH 47) ✔1,2-mannosidases: the effect Ca^{2+} coordination on catalysis.
98. Symposium Presentation, Glycobiology-2006 Conference, Los Angeles, CA, 2006, Glycotranscriptome analysis during differentiation of murine embryonic stem cells assayed by high-throughput real-time RT-PCR.
99. Symposium Presentation, XXIIIrd International Carbohydrate Symposium, Whistler, BC, Canada, 2006 Meeting, Whistler Canada, Characterization of a human core-specific lysosomal α-1,6-mannosidase involved in glycan catabolism.
100. **Invited Symposium Presentation, Charles Warren Workshop on Structural Glycomics, University of New Hampshire, 2006, High-throughput transcript analysis of glycan-related genes.
101. **Invited Symposium Presentation, Second Annual Glycoscience Symposium, University of Georgia, Athens, GA, 2006, Regulation of glycan structures in animal tissues: transcriptome analysis of glycan-related genes.
102. **Invited Symposium Presentation, Glycobiology-2005 Conference, Boston, MA, 2005, Characterization of a human core-specific lysosomal ✔1,6-mannosidase involved in glycan catabolism.

103. Symposium Presentation, Glycobiology-2005 Conference, Boston, MA, 2005, Development of a high-throughput transcript analysis of glycan-related genes and a cross-platform comparison with microarray expression analysis and correlation with relative quanitation of glycan mass spectral analysis.
104. Symposium Presentation, Glycobiology Gordon Conference, Oxnard, CA, 2005, Development of a quantitative real-time PCR method for analyzing transcript abundance of glycan-related genes in mouse tissues and embryonic stem cells.
105. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Glycomic analysis of mouse embryonic stem cell differentiation.
106. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Characterization of a novel human core-specific lysosomal ✔1,6-mannosidase involved in glycan catabolism. *Glycobiology,* 14, 1030.
107. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Mechanism of substrate binding and catalysis for Class 1 (glycosylhydrolase family 47) α-mannosidases. *Glycobiology,* 14, 1030.
108. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Substrate specificity of Golgi a-mannosidase IIx indicates a functional redundancy with Golgi a-mannosidase II in animal tissues. *Glycobiology,* 14, 1030.
109. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Human EDEM2, a novel homolog of family 47 glycosidases, is involved in the ER-associated degradation of glycoproteins. *Glycobiology,* 14, 1037.
110. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Enzymatic activity of a-mannosidase IIx in N-glycan biosynthesis.
111. Symposium Presentation, Joint meeting of the Society for Glycobiology and the Japanese Society of Carbohydrate Research, Honolulu, HI, 2004, Development of a quantitative real-time PCR method for analyzing transcript abundance of glycan-related genes in mouse tissues and embryonic stem cells.
112. **Invited Symposium Presentation, Keystone Symposium on "Golgi Apparatus and Secretory pathway of eukaryotic cells", Breckinridge, CO, 2004, Title: Class 1 α-1,2-mannosidase structure and function in N-glycan biosynthesis and quality control.
113. **Invited Symposium Presentation, 1st International Conference on Glycoprotein & Related Storage Diseases, Rockville, MD, 2004, Title: Lysosomal storage diseases; an overview.
114. Symposium Presentation, Glycobiology-2002 Conference, Boston, MA, 2002, Development of selective inhibitors of processing and catabolic Class 2 (family 38 glycosyl hydrolase) ✔-mannosidases: synthesis and evaluation of mannostatin derivatives.
115. Symposium Presentation, Glycobiology-2002 Conference, Boston, MA, 2002, Design and synthesis of sulfonium salts and azasugar analogs of swainsonins as selective inhibitors of processing and catabolic Class 2 (family 38 glycosyl hydrolase) α-mannosidases.
116. Symposium Presentation, Glycobiology-2002 Conference, Boston, MA, 2002, Structure of mouse Golgi mannosidase IA reveals the molecular basis for substrate specificity among Class I (family 47 glycosyl hydrolase) α-1,2-mannosidases.
117. **Invited Symposium Presentation, "Protein Science Symposium" Nagoya, Japan 2002, Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.
118. **Invited Symposium Presentation, "Molecular Target Drug Discovery for Cancer" Annapolis, MD, 2002, Title: Selective Mannosidase Inhibitors as Cancer Therapeutics
119. **Invited Symposium Presentation, "Molecular Recognition Based on the Carbohydrates" Nagoya, Japan 2001, Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation. (cancelled due to 9/11 terrorist attack)
120. Symposium Presentation, Glycobiology-2001 Conference, San Francisco, CA, 2001, Studies on the biosynthesis and targeting of the acid ✔-mannosidase from *Trypanosoma cruzi* in mammalian cells.
121. Symposium Presentation, Glycobiology-2001 Conference, San Francisco, CA, 2001, Characterization of the Xenopus oocyte cortical granule lectin and its human homologs.

122. Symposium Presentation, Glycobiology-2001 Conference, San Francisco, CA, 2001, Role of selected domains and conserved residues in the function of HTM1p/Mnl1p in ER associated degradation of glycoproteins in yeast.
123. **Invited Symposium Presentation, Glycobiology Boston-2000 Conference, Boston, MA, 2000, Title: Class 1 mannosidases in glycoprotein biosynthesis and quality control
124. Symposium Presentation, Glycobiology-2000 Conference, Boston, MA, 2000, Human and mouse homologs of the Xenopus oocyte cortical granule lectin XL-35.
125. Symposium Presentation, Glycobiology-2000 Conference, Boston, MA, 2000, Structure and function of Class 1 ✔-mannosidases in glycoprotein maturation and quality control.
126. Symposium Presentation, Glycobiology-2000 Conference, Boston, MA, 2000, Structure and function of Class I ✔1,2-mannosidase involved in N-glycan processing and ER quality control.
127. Symposium Presentation, GLYCO XV, Tokyo, Japan, 1999, Characterization and in vivo role of a-mannosidase Iix, an enzyme encoded by a gene similar to the Golgi mannosidase II.
128. Symposium Presentation, GLYCO XV, Tokyo, Japan, 1999, Identification, expression, and characterization of a cDNA encoding human ER mannosidase I, the enzyme that catalyzes the first mannose trimming step in mammalian Asn-linked oligosaccharide biosynthesis.
129. Symposium Presentation, Glycobiology-97 Conference, San Francisco, CA 1999, Identification, expression, and characterization of a cDNA encoding human ER mannosidase I, the enzyme that catalyzes the first mannose trimming step in mammalian Asn-linked oligosaccharide biosynthesis.
130. Symposium Presentation, GLYCO XIV, Zurich Switzerland, 1997, Substrates specificity of recombinant alpha1,2-mannosidase IA and IB.
131. Symposium Presentation, GLYCO XIV, Zurich Switzerland, 1997, Characterization of genetic defects in human alpha-mannosidosis patients.
132. Symposium Presentation, GLYCO XIV, Zurich Switzerland, 1997, Characterization of human alpha-mannosidase IIx and its potential involvement in an alternative pathway for complex N-glycan biosynthesis.
133. Symposium Presentation, GLYCO XIV, Zurich Switzerland, 1997, Discovery of a new superfamily of animal lectins.
134. Symposium Presentation, Glycobiology-97 Conference, Long Beach, CA (1997) Purification and post-translational processing of recombinant acid α-mannosidase of *Trypanosoma cruzi*.
135. Symposium Presentation, Glycobiology-97 Conference, Long Beach, CA (1997) Expression, purification, and characterization of the murine lysosomal ✔-mannosidase.
136. **Invited Symposium Presentation, Glycobiology Boston-96 Conference, Boston, MA, 1996, Title: Expression and Characterization of the Human Lysosomal α-Mannosidase cDNA and Characterization of the Defect in Human α-Mannosidosis Patients.
137. **Invited Symposium Presentation, Glycobiology Boston-96 Conference, Boston, MA, 1996, Title: Biochemical Characterization and Substrate Specificity of Murine Class I Mannosidases
138. Symposium Presentation, Glycobiology Boston-96 Conference, Boston, MA, 1996, Title: Genomic Organization and Chromosomal Mapping of the Human and Mouse Lysosomal ✔🎗Mannosidases.
139. Symposium Presentation, Glycobiology Boston-96 Conference, Boston, MA, 1996, Title: Cloning and Expression of the Acid α-Mannosidase of *Trypanosoma cruzi*.
140. **Invited Symposium Presentation, International Symposium on Molecular and Cell Biology of Glycoconjugate Expression, Rigi Kaltbad, Switzerland, 1996, Title: Isolation and Characterization of Mammalian Processing and Catabolic α-Mannosidases
141. **Invited Symposium Presentation, International Symposium on Molecular and Cell Biology of Glycoconjugate Expression, Rigi Kaltbad, Switzerland, 1996, Title: Defect of the Golgi α-Mannosidase II in HEMPAS disease.
142. **Invited Symposium Presentation, International Symposium on Molecular and Cell Biology of Glycoconjugate Expression, Rigi Kaltbad, Switzerland, 1996, Title: Analyses of Mice Lacking α-Mannosidase II Gene function: a Model of HEMPAS/CDA type II Disease.

143. Symposium Presentation, International Symposium on Molecular and Cell Biology of Glycoconjugate Expression, Rigi Kaltbad, Switzerland, 1996, Title: Discovery of a new family of C-type vertebrate lectins
144. Symposium Presentation, Annual Meeting of the American Society of Biological Chemists, New Orleans, LA 1996 Title: Discovery of a new family of C-type vertebrate lectins.
145. **Invited Symposium Presentation, Gordon Research Conference on Glycobiology, Oxnard, CA, 1995, Title: Mannosidase multi-gene families in glycoprotein biosynthesis and catabolism
146. Symposium Presentation, Fourteenth Annual Meeting of the American Society for Virology, Austin, TX 1995 Title: Using Molecular Genetics to Study the N-Glycosylation Pathway in Lepidopteran insect cells.
147. **Invited Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: Mannosidase multi-gene families in glycoprotein biosynthesis and catabolism.
148. Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: The α-mannosidase of *Trypanosoma cruzi*: Structure and function.
149. Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: cDNA cloning of a murine lysosomal α-mannosidase.
150. Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: Isolation of human α-mannosidase II cDNA and characterization of the HEMPAS defect in α-mannosidase II.
151. Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: Isolation, expression and characterization of a murine α1, 2-mannosidase.
152. Symposium Presentation, 23rd Annual Meeting of the Society for Glycobiology, University of Notre, South Bend, IN, 1994, Title: Cloning and characterization of an insect (Sf9) homolog of the mammalian processing enzyme, α-mannosidase II.
153. **Invited Symposium Presentation, Keystone Symposia, Frisco, CO, 1994, Title: Molecular Biology of Mammalian Processing Mannosidases.
154. Symposium Presentation, Keystone Symposia, CO, 1994, Title: Studies on the structure and function of the stem domain of the murine α1,3-Galactosyltransferase.
155. Symposium Presentation, 12th International Symposium on Glycoconjugates, Krakow, Poland 1993 Cloning of a murine homolog of the *Dictyostelium discoideum* lysosomal α-mannosidase.
156. Symposium Presentation, 12th International Symposium on Glycoconjugates, Krakow, Poland 1993 Isolation of a mouse cDNA encoding a processing mannosidase.
157. **Invited Symposium Presentation, Retirement Symposium for Dr. Oscar Touster, Department of Molecular Biology, Vanderbilt University, Nashville, TN, 1992, Title: Molecular biology of processing mannosidases.
158. Symposium Presentation, American Society for Cell Biology, Boston, MA 1991 Title: Variable immunolocalization of α-mannosidases IA and II in the Golgi complex of different cell types.
159. Symposium Presentation, American Society for Cell Biology, Boston, MA 1991 Title: A temperature sensitive mutant of Chinese Hamster Ovary cells expresses key phenotypic changes associated with Brefeldin A treatment.
160. Symposium Presentation, 11th International Symposium on Glycoconjugates, Toronto, Ontario, Canada 1991 Title: Temperature-sensitive mutant of Chinese hamster ovary cells with a reversible block in protein secretion, Golgi apparatus disassembly and redistribution of the Golgi apparatus components into the Endoplasmic reticulum.
161. Symposium Presentation, 11th International Symposium on Glycoconjugates, Toronto, Ontario, Canada 1991 Title: Demonstration of a novel α-mannosidase gene in mammalian cells.
162. Symposium Presentation, 11th International Symposium on Glycoconjugates, Toronto, Ontario, Canada 1991 Title: HEMPAS disease: Mutation in α-mannosidase II gene.
163. **Invited Symposium Presentation, Society for Complex Carbohydrates Annual Meeting, La Jolla, CA, 1990, Title: Molecular biology of processing mannosidases.

164. Symposium Presentation, American Society for Biochemistry and Molecular Biology, New Orleans, LA, 1990 Title: Defective N-glycan synthesis of erythrocyte membrane glycoproteins caused by low expression of α-mannosidase II in a HEMPAS patient.
165. Symposium Presentation, Annual Meeting of the American Society for Cell Biology, Houston, TX 1989 Cloning and characterization of murine Golgi mannosidase II.
166. **Invited Symposium Presentation, Society for Complex Carbohydrates Annual Meeting, San Antonio, TX, 1988, Title: Molecular approaches for glycoprotein cloning.
167. Symposium Presentation, Annual Meeting of the American Society of Biological Chemists, Washington, DC 1986 Title: A Novel Purification of the Catalytic Domain of Golgi Mannosidase II : Comparison with the Intact Enzyme.
168. Symposium Presentation, Annual Meeting of the Federation of American Societies for Experimental Biology, Anaheim, CA 1985 Title: Topology of Mannosidase II in Rat Liver Golgi Membranes and Release by Selective Proteolysis.
169. Symposium Presentation, Annual Meeting of the American Society of Biological Chemists, St. Louis, MO, 1984 Title: Biosynthesis of Golgi Mannosidase II in 3T3 and HeLa Cells.

Invited seminars: Academic and Industry

1. Invited Speaker, Johns Hopkins University School of Medicine, Techniques in Glycobiology Lecture Series, July 2015 "Glycosyltransferases and glycogenes: classification, structure, function, and roles in glycoconjugates synthesis"
2. Invited Speaker, Michigan State University, March 2014 "Insights into the structural basis and regulation of mammalian protein glycosylation: *challenges and advances in technologies for studies on mammalian glycosylation*"
3. Invited Speaker, Scientific Advisory Committee Meeting, Callidus Pharmaceuticals, Inc. Princeton, NJ, March 2013 "Production and use of mammalian glycosylation enzymes for enzymatic and structural studies"
4. Invited Speaker, Center for Drug Discovery, University of Georgia, Athens, GA, March 2011, "Challenges of structural and inhibitor studies on mammalian glycosylation enzymes".
5. Invited Speaker, RIKEN Advanced Science Institute, Wako, JAPAN, Aug, 2010, "Function, structure, and regulation of mammalian glycosylation enzymes"
6. Invited Speaker, Glycofi/Merck, Hanover NH, Feb, 2010, Title "Biochemistry of mammalian glycosylation: what do we want to know and how do we get there?"
7. Invited Speaker, Department of Cellular Biology, University of Georgia, Athens, GA (2007) Seminar Title: Quality control in the Endoplasmic Reticulum: Carbs are Important
8. Invited Speaker, Genzyme Corporation, Framingham MA (2006) Seminar Title: Mannose trimming in animal cells: alpha-mannosidases in glycan biosynthesis, catabolism and quality control
9. Invited speaker, Amicus Therapeutics, Cranbury, NJ (2005) Seminar Title: Early steps in glycoprotein biosynthesis: protein folding versus quality control glycoprotein degradation.
10. Invited Speaker, Department of Plant Biology, University of Georgia, Athens, GA (2005) Seminar Title: Glycoprotein Biosynthesis and Quality Control: Diversity of Pathways and Functions throughout Evolution
11. Invited Speaker, Department of Biochemistry and Molecular Biology, University of Illinois at Chicago, College of Medicine, Chicago, IL. (2005) Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.
12. Invited Speaker, Glycofi. Inc. (2004) Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.
13. Invited Speaker, Second Department of Medicine, Nagoya City University Medical School, Nagoya, Japan, 2002, Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.
14. Invited Speaker, Department of Biosignal Research, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan, 2002, Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.

15. Invited Speaker, Department of Molecular Biology, University of Wyoming, Laramie, WY, 2002, Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation.
16. Invited Speaker, Department of Biosignal Research, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan, 2001 Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation. (cancelled due to 9/11 terrorist attack)
17. Invited Speaker, Department of Cell Biology and Anatomy, Miami University School of Medicine, Miami, FL 2001, Seminar Title: Early steps in glycoprotein biosynthesis: involvement in protein folding versus quality control glycoprotein degradation
18. Invited Speaker, Glycodesign, Inc. Toronto, Ontario, Canada, 1999, Seminar title: Recombinant expression of glycoprotein processing enzymes
19. Invited speaker, School of Veternary Medicine, University of Georgia, Athens, GA, 1999, Seminar Title Biochemical and genetic studies on the lysosomal ✔‰mannosidase: characterization of the molecular basis of ✔-mannosidosis
20. Invited Speaker, Department of Biology, Dickinson College, Carlisle, PA, 1998, Seminar Title: Glycoprotein processing and catabolism: lessons from studies on human genetic disease.
21. Invited Speaker, Department of Biological Chemistry, University of Michigan Medical Center, 1998, Seminar title: Biochemical and genetic studies on the lysosomal ✔‰mannosidase: characterization of the molecular basis of ✔-mannosidosis
22. Invited Speaker, Department of Medical Genetics, University of Toronto, Toronto, ON, 1997, Seminar Title: Molecular biology of mammalian processing mannosidases.
23. Invited Speaker, Department of Biochemistry annd Molecular Biology, University of South Alabama, 1997, Seminar title: Biochemical and genetic studies on the lysosomal ✔‰mannosidase: characterization of the molecular basis of ✔-mannosidosis
24. Invited Speaker, Department of Cellular Biology, University of Georgia, 1997, Seminar title: Too much sugar can be bad for your health: Lysosomal storage diseases and lysosomal ✔-mannosidosis
25. Invited Speaker, Glycodesign, Inc. Toronto, Ontario, Canada, 1996, Seminar title: Recombinant expression of glycoprotein processing enzymes
26. Invited Speaker, Department of Reproductive Biology, Vanderbilt University School of Medicine, Nashville, TN, 1996, Title: Isolation and characterization of mammalian processing and catabolic α-mannosidases
27. Invited Speaker, Glycodesign, Inc. Toronto, Ontario, Canada, 1996, Seminar title: Recombinant expression of glycoprotein processing enzymes
28. Invited Speaker, Amgen, Inc. Boulder CO, 1995, Seminar title: Identification of Lipid A antagonists in bacteria
29. Invited Speaker, Glycodesign, Inc. Toronto, Ontario, Canada, 1995, Seminar title: Recombinant expression of glycoprotein processing enzymes
30. Invited Speaker, Department of Medical Genetics, University of Toronto, Toronto, ON, 1993, Seminar Title: Molecular biology of mammalian processing mannosidases.
31. Invited Speaker, Faculty of Cell Biology, University of Georgia, Athens, GA, 1993, Seminar title: Structure and function of mammalian Golgi enzymes.
32. Invited Speaker, Department of Biochemistry, Texas A & M, College Station, TX, 1993, Seminar Title: Molecular biology of processing ✔-mannosidases.
33. Invited Speaker, Ross Labs, Cleveland, OH, 1993, Seminar title: Preparation of transgenic constructs for glycosyltransferase expression.
34. Invited Speaker, Department of Molecular Biology, Vanderbilt University, Nashville, TN, 1992, Title: Molecular biology of processing mannosidases.
35. Invited Speaker, Department of Biochemistry and Cell Biology, SUNY at Stony Brook, Stony Brook, NY, 1991, Seminar title: Molecular biology of processing mannosidases.
36. Invited Speaker, La Jolla Cancer Research Foundation, La Jolla, CA, 1991, Seminar title: Molecular biology of processing mannosidases.

37. Invited Speaker, Complex Carbohydrate Research Center, University of Georgia, Athens, GA, 1991, Seminar title: Molecular biology of processing mannosidases.
38. Invited Speaker, Protein Purification and Characterization course, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, 1990, Title: Protein Glycosylation.
39. Invited Speaker, Glycomed, Alameda, CA 1989 Title: Molecular biology of glycosylation.
40. Invited Speaker, Department of Biochemistry, UCLA Medical Center, Los Angeles, CA, 1988, Seminar title: Molecular biology of processing mannosidases.

RESEARCH GRANTS: (total direct cost funding for 2017: $813,835)

1. *Mammalian Glycosyltransferases for Use in Chemistry and Biology* (P.I. Boons, Kelley W. Moremen, Co-PI) National Institutes of Health (NIH/NIGMS 1P01GM107012-01) 07/01/13 – 06/30/18 (Moremen Portion: $309,663 per year direct costs)
2. *Resource for Integrated Glycotechnology.* (P.I. Moremen, Kelley W. Moremen, Senior Investigator) National Institutes of Health (NIH-NIGMS GM103390-23, formerly NIH-NCRR P41 RR05351) 1/31/15 – 1/31/20, (Moremen portion: $128,000 per year direct costs)
3. *Integrated Technology Resource for Biomedical Glycomics*. (P.I. Pierce, Kelley W. Moremen, Senior Investigator) National Institutes of Health (NIH-NCRR P41 2P41GM103490-11, formerly NIH-NCRR 2P41 RR018502) 9/01/08 – 6/30/18, (Moremen portion: $232,706 per year direct costs)
4. *NMR Investigations of Cell Surface Oligosaccharides*. (P.I. Prestegard, Kelley Moremen, Co-Investigator) (NIH/NIGMS 4R37GM033225-22) 07/01/18 – 04/30/23, (Moremen portion, $125,000 per year direct costs)

Past Support:

1. *The Tumor Antigens Tn and Sialyl Tn in Human Colorectal Carcinoma* (P.I. Cummings (Emory), Kelley Moremen Subaward Investigator) National Institutes of Health (1U01CA168930) 07/01/12 – 06/30/17, (Moremen portion: $11,560 per year direct costs)
2. *Targeted Glycomics and Affinity Reagents for Cancer Biomarker Development* (P.I Haab, Kelley Moremen Subaward Investigator) National Institutes of Health (1U01CA168896-01) 07/01/12 – 06/30/17, (Moremen portion: $6,909 per year direct costs)
3. *Development of a Repository for Glycan-related Enzymes* (P.I. Kelley W. Moremen) (NIH-NCRR P41 RR05351-20S1, Admin Supplement to P41RR05351) 8/01/11 – 1/31/15, (Moremen portion, $237,907 per year direct costs)
4. *The Human Skeletal Muscle Cell Glycol-Structures and Function* (P.I. Baum, Kelley Moremen Subaward Investigator) Muscular Dystrophy Association (MDA 254647) 02/01/13 - 01/31/14
5. *Tumor Glycomics Laboratory for Discovery of Pancreatic Cancer Markers* (P.I. Pierce, Kelley W. Moremen, Senior Investigator) National Institutes of Health (NIH-NCI 1U01CA128454-01) 07/25/07 – 06/30/14, receives no direct funding
6. *NMR Investigations of Cell Surface Oligosaccharides* ((P.I. Prestegard, Kelley W. Moremen, Co-PI) National Institutes of Health (NIH GM033225-22), 07/01/84 – 04/30/14, $125,000 (Moremen portion)
7. *Mannosidase inhibitors as therapeutics for glycoprotein misfolding diseases*, National Institutes of Health (NIA/NIDDK RO1-DK075322-01); 7/1/06-6/30/11, no cost extension for 2011-2012
8. *Mannosidases in glycoprotein biosynthesis and catabolism*, National Institutes of Health (NIGMS RO1-GM47533-18); 5/1/92-4/30/11; $215,000 direct costs for 2009-2010; $768,000, total direct costs.
9. *Selective mannosidase inhibitors as cancer therapeutics*, National Institutes of Health (NCI UO1-CA91295-01); 5/1/01-4/31/05; $270,430 direct costs for 2003-2004; $1,101,010, total direct costs.
10. Research Agreement, Amicus Therapeutics, 8/15/06 – 8/14/08
11. *Structure and function of a new family of endothelial lectins*, (Co-P.I. with Michael Pierce) National Institutes of Health (NIGMS RO1 GM58679), 1/1/99-12/31/03; $176,014, direct costs first year; $742,224, total direct costs.
12. *Design and expression of carbohydrate recognition domains*, component of NIH Biomedical Complex Carbohydrate Resource Center (P41 RR05351), 7/1/99-6/30/04; $300,000, total direct costs for subproject.
13. *Human heart lectin: characterization and tests of function*. (with Michael Pierce) American Heart Association; 7/96-6/99; $120,000, total direct costs.
14. *Characterization of the carbohydrates bound by tumor necrosis factor-* ✔, (with Michael Pierce), University of Georgia Research Foundation Biotechnology Grant, 6/1/95-5/31/97; $60,000, total direct costs.
15. *Isolation and purification of mammalian* α*-mannosidases for rational-based inhibitor desig*n. Supported by Glycodesign, Inc., 07/95-7/96, $104,360 (direct costs), renewed 7/96-12/99; $51,975, direct costs each year; $260,285, total direct costs, 1995-99.

16. *Elaboration of genetic constructs of transferases*, Supported by Abbott Labs, 8/1/92- 5/30/94; $100,000, direct costs per year; Renewed, 6/10/94-5/30/95; $275,000, total direct costs, 1992-95.
17. *Cloning of a Golgi enzyme: mannosidase II*; Postdoctoral fellowship supported by the Juvenile Diabetes Foundation, 7/88-6/90; $56,000, total direct costs.
18. *Cloning and expression of a Golgi enzyme: mannosidase II*, , National Institutes of Health, (NIGMS postdoctoral fellowship) 12/85-11/87; $39,000, total direct costs.
19. *Biosynthesis of Golgi mannosidase II and lysosomal mannosidase in cultured cells*, National Institutes of Health, (NRSA postdoctoral fellowship), 5/84-4/85; $14,040, direct costs.
20. National Research Service Award predoctoral traineeship, National Institutes of Health, 1/79-12/81, $13,410, total direct costs.
21. Special Dissertation Research Award, Vanderbilt University, 1983; $1200.

PATENTS:

1. U.S. Patent No.: 5.700.671: *Methods of making transgenic animals producing oligosaccharides and glycoproteins*, by Prieto, P., Smith, D., Cummings, R., Kopchick, J, Mukerji, P., **Moremen, K.,** Pierce, J. M., issued Dec 23, 1997
2. U.S.Patent No.: 5,714,376: *Heparinase gene from flavobacterium heparanum*, by Sasisekharan, R., **Moremen, K.,** Cooney, C., Zimmermann, J., Langer, R., issued Feb 3, 1998
3. U.S. Patent No.: 5,750,176: *Transgenic non-human mammal milk comprising 2'-fucosyl-lactose*, by Prieto, P., Smith, D., Cummings, R., Kopchick, J, Mukerji, P., **Moremen, K.,** Pierce; J. M.,issued May 12, 1998.
4. U.S. Patent No.:5,830,726: *Method for obtaining a modified heparinase gene*, by Sasisekharan, R., **Moremen, K.,** Cooney, C., Zimmermann, J., Langer, R., issued Nov 3, 1998
5. U.S. Patent No.: 5,891,698: *Oligosaccharides and glycoproteins produced in milk of transgenic non-human mammals*, by Prieto, P., Smith, D., Cummings, R., Kopchick, J, Mukerji, P., **Moremen, K.,** Pierce; J. M., issued April 6, 1999.
6. U.S. Patent No.: 5,892,070: *Transgenic non-human mammals producing oligosaccharides and glycoconjugates*, by Prieto, P., Smith, D., Cummings, R., Kopchick, J, Mukerji, P., **Moremen, K.,** Pierce; J. M., issued April 6, 1999.
7. U.S. Patent No.: 6,146,849: *Lectins and Coding Sequences*, by Pierce, J. M., **Moremen, K.,** Lee, J.K., issued November 14, 2000
8. U.S. Patent No.: 6,204,431: *Transgenic non-human mammals expressing heterologous glycosyltransferase DNA sequences produce oligosaccharides and glycoproteins in their milk*, by Prieto, P., Smith, D., Cummings, R., Kopchick, J, Mukerji, P., **Moremen, K.,** Pierce, J. M., issued March 20, 2001
9. U.S. Patent No.: 9,329,169: *In vivo isotopic labeling method for quantitative glycomics* R.L. Wells, R. C. Orlando, S. Dalton, **K. W. Moremen,** J M. Pierce, J.A. Atwood, M. Tiemeyer, W. S. York. May 3, 2016
10. U.S. Patent applied for: *Xylosyltransferases, O-acetyltransferases, and methods of use*, by Urbanowicz, B.R., Pena, M.J., Moniz, H., Moremen, K.W., and York, W.S., submitted July 11, 2014

PROFESSIONAL ACTIVITIES:

Editorial Board positions:

Glycoconjugate Journal *(Editorial Board, 1994-present)*
Journal of Biological Chemistry *(Editorial Board, 2005-2010)*
Glycobiology *(Editorial Board, 2005-present)*

Ad hoc reviewer for scholarly journals

EMBO Journal
Archives of Biochemistry and Biophysics
Proceedings of the National Academy of the Sciences
Biochemica et Biophysica Acta
Experimental Cell Research
Biochemistry
European Journal of Biochemistry
European Journal of Cell Biology
Journal of Bacteriology
Protein Engineering, Design, and Selection
Cell and Tissue Research
Biotechnology Progress
FEBS Journal
PLOS One
Protein Science
Nature Translation Psychiatry
Nature Communications
Biochemical Journal

Gene
Angewandte Chemie
Protein Expression and Purification
Nature Scientific Reports
eLife
Nature Reviews
Journal of Proteome Research

Reviewer for grant funding agencies:

National Institutes of Health (MSFB Study Section: 2009 – 2012)

Ad hoc reviewer for granting agencies:

National Institutes of Health (PC Study Section, ad hoc member 1999, 2001; MSFB Study Section, ad hoc member 2007, 2008), Special Emphasis Panels (ZRG1, NIH, 2005; CHHD-C, NIH, 2006; BCMB-K, 2013, NIH, ZRG-1 BCMB-P41, 2016), ad hoc phone reviews (2002, 2003)
ETH Grants research proposals
Fonds zur Forderung der wissenschaftlichen Forschung (Austria)
American Cancer Society
National Science Foundation (Cellular Organization Study Section)
U.S. Army Research Office (2007)

Commercial Activities:

Scientific Advisory Board for Gates Foundation HIV Vaccine design grant (2015-present)
Scientific Advisory Board, Callidus Biopharma, Inc., Doylestown, PA, 2010-2013
Scientific Advisory Board, Glycofi, Inc., Hanover, NH, 2004-2007
Scientific Advisory Board, Novazyme Pharmaceuticals, Inc., Oklahoma City, OK, 1999-2003
Scientific Advisory Board, Glycodesign, Inc., Toronto, Ontario, Canada, 1993-1998
Consultant, Glycodesign, Inc., Toronto, Ontario, Canada, 1993-1998
Founder, Glycobiotics, Inc., Athens, GA 1996-2000

Society Memberships/Offices/Meeting Organization:

Glycobiology Gordon Conference
Poster Chair, Oxnard, CA, 2009.
Vice Chair, Il Ciocco, Italy, 2011.
Chair, Ventura, CA, 2013.

Member, Society for Glycobiology, 1990-present
Board of Directors, 1998-2003
Secretary, 2005-2015
President-elect, 2017
President, 2018

Member, American Society for Cell Biology, 1992, present
Member, American Society for Biochemistry/Molecular Biology, 1992, present

UNIVERSITY GOVERNANCE:

University and Community:

University Distinguished Professor Review Committee, 2017
University Promotion and Tenure Review Committee – Life Sciences 2015 - 2018
Program Review Committee, Bioenergy Systems Research Institute, 2015
University of Georgia Research Foundation Faculty Research Grants Committee: 2007-2010
Franklin College Promotion and Tenure Committee, 2006-2008
Franklin College Program Review Committee, Department of Cellular Biology, 2006
Faculty Advisory Committee for the University of Georgia Center for Ultrastructural Research, 2006-2010
Conflicts of Interest Committee, University of Georgia, 1996-2001
Franklin College Computer Committee, University of Georgia, 2001-2003
Faculty Senate Representative, Franklin College of Arts and Sciences, University of Georgia, 1994-1997.

Faculty Senate Professional Concerns Committee Representative, University of Georgia, 1994-1996.
Faculty Senate Academic Affairs Committee Representative, University of Georgia, 1994-1996.
Judge, State Science Fairs: 1994-1998.
Steering committee, Faculty of Cell Biology, University of Georgia, 1992-1994.
Steering Committee, Biological Sciences Computing Resources, University of Georgia, 1993-2000.

Departmental:

Chair, University of Georgia X-ray Diffraction Core Facility (XRDC) Advisory Committee, 2016-present
Department of Biochemistry & Molecular Biology Graduate Affairs Committee, 2010-2015.
Faculty Recruitment Committee for Bioinformaticist, Complex Carbohydrate Research Center and Department of Biochemistry & Molecular Biology 2008
Faculty Recruitment Committee for Biomedical Glycobiologist, Complex Carbohydrate Research Center and Department of Biochemistry & Molecular Biology 2006
Faculty Recruitment Committee for Biomedical Glycobiologist, Complex Carbohydrate Research Center and Department of Biochemistry & Molecular Biology 2005
Chair, Faculty Recruitment Committee for Biomedical Glycobiologist, Complex Carbohydrate Research Center and Department of Biochemistry & Molecular Biology 2003
Co-chair, Faculty Recruitment Committee for Protein Crystallographer, Department of Biochemistry & Molecular Biology 2001
Department of Biochemistry & Molecular Biology Research Direction Committee, 1997-2002.
Department of Biochemistry & Molecular Biology Long-range Planning Committee, 1998-2002.
Department of Biochemistry & Molecular Biology Computer Committee (Chairman), 1998-2002.
Department of Biochemistry & Molecular Biology Graduate Curriculum Committee, 1997-2003.
Faculty Recruitment Search Committee, Department of Biochemistry & Molecular Biology, 1995.
Co-organizer, CCRC Seminar Series, University of Georgia, 1991-1998.