

# Glycomics & Glycoproteomics in Glycoconjugate journal

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## Glycoconjugate journal special issue on “glycomics and glycoproteomics”

Glycoconjugates belong without doubt to the most complex and diverse molecules found in nature. They are crucial for both prokaryotic and eukaryotic life despite the fact that the glycosylation pathways and building blocks do diverge tremendously between the different phylogenetic kingdoms [1]. Research over the past decades has impressively demonstrated the importance of glycoconjugates in numerous, almost uncountable aspects of cellular life such as cell-cell interaction, pathogen recognition, immune system modulation cell adhesion, endocytosis, receptor activation, signal transduction or molecular trafficking [1, 2]. Glycoproteins represent one particular large group of glycoconjugates that are the major focus of this *Glycomics and Glycoproteomics* special issue. The ultimate aims of these –omics branches range from detection and sequencing of glycans and glycoproteins, understanding the basic principles of protein glycosylation function to the identification of glycan & glycoprotein based disease markers or therapeutic targets. Deciphering disease induced molecular effects associated with altered glycosylation patterns has uncovered fundamental relationships of health and disease state with associated glycosylation patterns. Moreover, the tremendous complexity of glycoconjugates within a single organism,

their systematic sequencing and collection of these data still represent major challenges towards a global understanding of the effects glycosylation alterations induce in living beings.

Accounting for the needs of the community to also have dedicated, high quality publication platforms Glycoconjugate Journal has decided to make a long-term commitment in establishing a special section dedicated to Glycomics & Glycoproteomics. In the light of recent developments on the reporting of experimental procedures, the MIAPE and MIRAGE guidelines [3–5] also serve as a basis to support researchers in the field, and Glycoconjugate Journal supports these developments and recommends any future submissions to follow these guidelines in the best possible manner. Also with regard to the depiction of glycan structures and glycoconjugates in general the guidelines as recently proposed by the editors of the third edition of the “Essentials of Glycobiology” should be followed [6].

This inaugural special issue highlights a diverse set of interesting topics: eight review and seven original research articles cover a wide range of glycomics and glycoproteomics methods, their clinical applications but also touch on aspects of novel dedicated databases. In general, the *Glycomics & Glycoproteomics* section welcomes submissions from a diverse range of topics including (but not limited) to synthetic, analytical and technological advances as well as structural and functional aspects of glycosylation including bacterial glycosylation. For the *Glycomics & Glycoproteomics* section of Glycoconjugate Journal, papers covering bioinformatics aspects are also of high interest as bioinformatics tools are key for advancing the analysis of glycoconjugates. The same holds true for dataset briefs that can provide a crucial basis for researchers in various scientific branches. We would like to invite researchers across the disciplines and continents to consider submission of suitable articles to the *Glycomics & Glycoproteomics* section in Glycoconjugate Journal and look

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forward to receiving interesting cutting edge submissions for this new section.

## References

1. Varki A., Cummings R.D., Esko J.D., Freeze H.H., Stanley P., Bertozzi C.R., Hart G., Etzler M.E.: *Essentials of Glycobiology*, 2nd edition, 2 edn. Cold Spring Harbor Laboratory Press, New York (2009)
2. Varki A.: Biological roles of oligosaccharides: all of the theories are correct. *Glycobiology*. **3**(2), 97–130 (1993)
3. Taylor C.F., Paton N.W., Lilley K.S., Binz P.A., Julian Jr. R.K., Jones A.R., Zhu W., Apweiler R., Aebersold R., Deutsch E.W., Dunn M.J., Heck A.J., Leitner A., Macht M., Mann M., Martens L., Neubert T.A., Patterson S.D., Ping P., Seymour S.L., Souda P., Tsugita A., Vandekerckhove J., Vondriska T.M., Whitelegge J.P., Wilkins M.R., Xenarios I., Yates J.R., 3rd, Hermjakob H.: The minimum information about a proteomics experiment (MIAPE). *Nat. Biotechnol.* **25**(8), 887–893 (2007). doi:10.1038/nbt1329
4. Kolarich D., Rapp E., Struwe W.B., Haslam S.M., Zaia J., McBride R., Agravat S., Campbell M.P., Kato M., Ranzinger R., Kettner C., York W.S.: The minimum information required for a glycomics experiment (MIRAGE) project: improving the standards for reporting mass-spectrometry-based glycoanalytic data. *Mol. Cell. Proteomics*. **12**(4), 991–995 (2013). doi:10.1074/mcp.O112.026492
5. York W.S., Agravat S., Aoki-Kinoshita K.F., McBride R., Campbell M.P., Costello C.E., Dell A., Feizi T., Haslam S.M., Karlsson N., Khoo K.H., Kolarich D., Liu Y., Novotny M., Packer N.H., Paulson J.C., Rapp E., Ranzinger R., Rudd P.M., Smith D.F., Struwe W.B., Tiemeyer M., Wells L., Zaia J., Kettner C.: MIRAGE: the minimum information required for a glycomics experiment. *Glycobiology*. **24**(5), 402–406 (2014). doi:10.1093/glycob/cwu018
6. Varki A., Cummings R.D., Aebi M., Packer N.H., Seeberger P.H., Esko J.D., Stanley P., Hart G., Darvill A., Kinoshita T., Prestegard J.J., Schnaar R.L., Freeze H.H., Marth J.D., Bertozzi C.R., Etzler M.E., Frank M., Vliegthart J.F., Lutteke T., Perez S., Bolton E., Rudd P., Paulson J., Kanehisa M., Toukach P., Aoki-Kinoshita K.F., Dell A., Narimatsu H., York W., Taniguchi N., Komfeld S.: Symbol Nomenclature for Graphical Representations of Glycans. *Glycobiology*. **25**(12), 1323–1324 (2015). doi:10.1093/glycob/cwv091