

Letter to Glyco-Forum

The GlySpace Alliance: toward a collaborative global glycoinformatics community

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It is known that glycans (variously known as carbohydrates, sugars, saccharides) play crucial roles in almost all known biological processes, and they are a target for biotherapeutics as well as for biofuels and biomaterials. Therefore, the information about these complex carbohydrates is important to organize carefully and to comprehensively integrate with other molecular data in order to understand their pivotal role in biology.

Since the development of CarbBank (Doubet et al., 1989) 30 years ago, a plethora of glycan-related databases have been developed, each with their unique set of metadata regarding glycan structure, localization and function. Since then there have been numerous attempts to capture and catalog data on glycan structures and their functional properties (Aoki-Kinoshita, 2013; Lisacek et al., 2017). The development of the glycan structure repository GlyTouCan has greatly aided in organizing this data by assigning unique identifiers that allow diverse glycan information to be shared more easily among researchers and databases (Tiemeyer et al., 2017). Subsequently, the year 2018 in particular marked the announcement of three major glycan-related database integration projects: Glycomics@ExpASY (<https://www.expasy.org/glycomics>) funded by several Swiss public sources, GlyGen (<https://glygen.org>) funded by the US National Institutes of Health and GlyCosmos (<https://glycosmos.org>) funded by the Japan Science and Technology Agency. In order to ensure that these projects do not duplicate efforts, the GlySpace Alliance consisting of these three groups was established in August 2018. This tri-continent alliance of glycoinformatics promises a cooperation and collaboration between experts in the field across the

world and a maximization of available resources that has hitherto been thought to be too difficult to achieve.

The overarching objective of the GlySpace Alliance is to respond to the needs of the scientific community by providing relevant, trustable, quality information regarding the structures of biologically relevant glycans, the glycoconjugates within which they are found, their biosynthesis and regulation and their roles in biological processes. The members of the GlySpace Alliance are committed to achieving this objective by freely sharing information in the glycobiology domain, which will facilitate accomplishment of the following specific goals: (1) promote the use of informatic standards for representing and exchanging glycobiology information; (2) develop protocols for establishing and representing the provenance of glycobiology data and acknowledgement of the individuals and groups that collect, curate, map and integrate this data; (3) establish metrics regarding the quality, reliability and accuracy of the data; (4) reach consensus for data filtering and/or annotation when disparities are found among the data and (5) provide globally distributed data storage redundancy to enhance data accessibility and ensure its longevity.

Ultimately, the purpose of the GlySpace Alliance is to work collaboratively and synergistically with representative glycoscience portal projects around the world to avoid duplication of effort, while at the same time individually developing unique and useful resources that benefit the community as a whole. In order to do so, each member database project, and associated software, must be assured to be stable and accessible to researchers. Unhindered communication

about data access and available resources is essential to assess the needs of the community and to most efficiently respond to these needs. The outcomes of the Alliance will benefit each member by ensuring that the data will be sustained and furthered across the Alliance. The latest information regarding membership and rules/by-laws can be obtained from the Alliance home page at <http://glyspace.org>, where a feedback form is available to receive expected input from the community.

Conflict of interest statement

None declared.

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