
Minutes of the Kick-off (1st) MIRAGE meeting

Seattle, November 7th and 8th, 2011

Participants

- Sanjay Agravat, Emory University, Atlanta, GA, USA
- Matthew Campbell, Macquarie University, Sydney, Australia
- Stuart Haslam, Imperial College London, UK
- Masaki Kato, RIKEN, Saitama, Japan
- Carsten Kettner, Beilstein-Institut, Frankfurt, Germany
- Daniel Kolarich, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany
- Ryan McBride, Scripps Institute, La Jolla, CA, USA
- René Ranzinger, University of Georgia, Athens, USA
- Erdmann Rapp, Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany
- Weston Struwe, NIBRT, Dublin, Ireland
- Will York, University of Georgia, Athens, USA
- Joseph Zaia, Boston University, Boston, MA, USA

Aims of this Meeting

Short term (for this meeting)

- Setting up a working group for the development and proposition of reporting standards for glycomic. Reporting standards means checklists on minimum information for the description of experiments and results in scientific publication.
- Establishment of consensus on the requirement of functional standards
- Development of a common perspective for the future works and discussions
- Creation of work group structures and sub-groups
- Definition of time line(s) for future developments

Long term (for the next years)

- Development of guidelines that are required for the publication in scientific journals
- Standards for data storage and exchange formats: make raw data (publicly) available in a commonly readable format so it can be reprocessed and reinterpreted in light of new knowledge
- Creation of a framework for data integration and mining

Results

The prerequisite for a fruitful cooperation among the working group members was to establish a common view on the perspectives of the MIRAGE working group. A solid basis for further discussions was generated by addressing the expectations and issues which are requested to be considered during this or the next meetings (see Fig. 1).



Figure 1. Notes about the expectations and considerations of the meeting and beyond.

The group members agreed to the general demand for reporting standards in glycomics and to devote time to working out reporting guidelines. Additionally, driven by both the scientific background and individual experiences with the handling of data the proposition of uniform

data exchange formats and the development of software tools as a service by MIRAGE were identified as possible goals of the initiative (see Fig. 2).

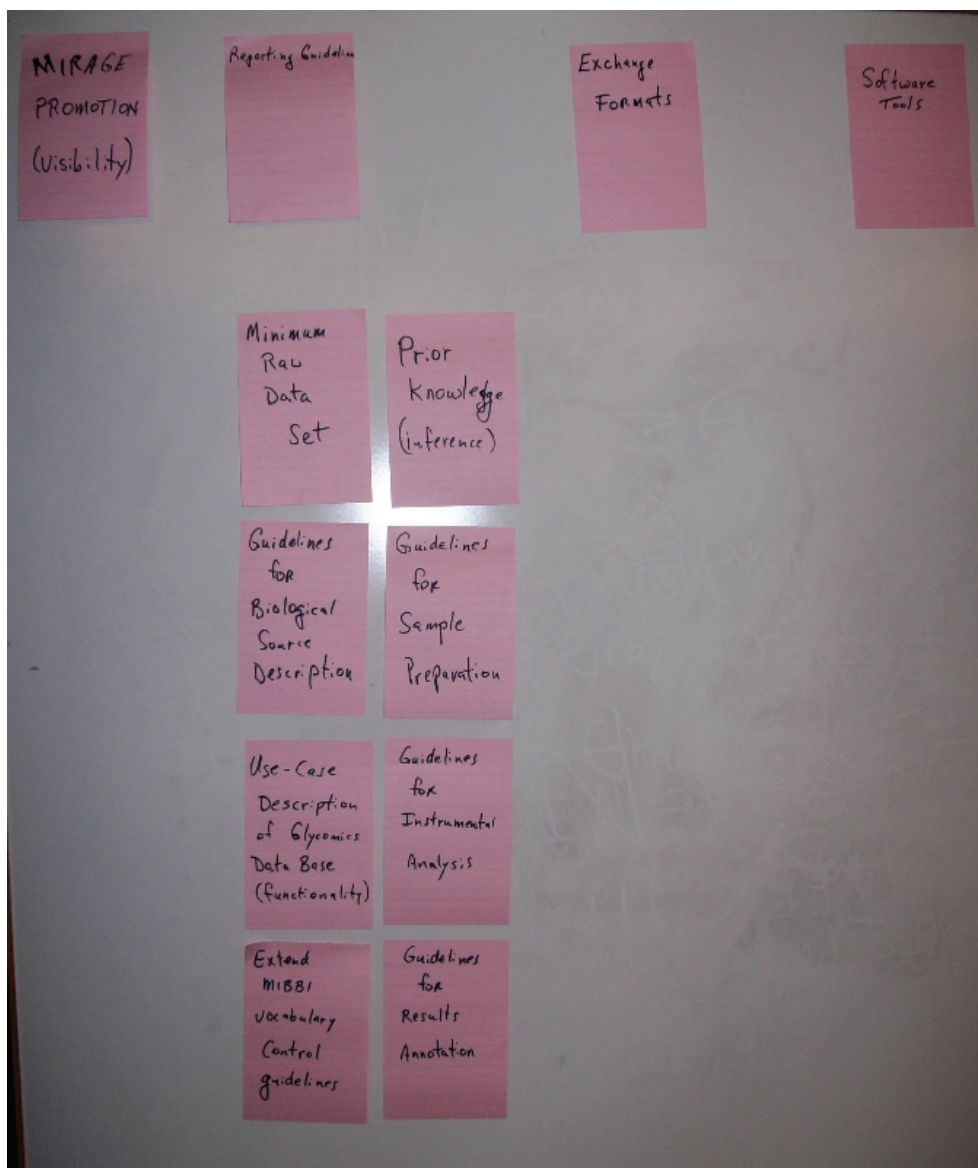


Figure 2. Key note collection about the aims of the MIRAGE group.

However, due to the limited capacities of the group caused by a number of commitments it became clear that these goals needed to be prioritized. The development of the guidelines was defined as the most important issue which supports the aim "getting something up and running that is useful as soon as possible". This induced the participants to deliberate on the question of the kind of reporting guidelines. At the end, at least eight different areas were identified for which guidelines would be useful:

- Minimum raw data sets
- Use-case description of Glycomics data base (functionality)
- Guidelines for biological source description
- Guidelines for sample preparation

- Guidelines for Instrumental Analysis
- Guidelines for results annotation
- Extended MIBBI vocabulary control guidelines
- Prior Knowledge (inference)

The proposition of data exchange formats and the development of software tools for querying databases and analysis of carbohydrate data sets was determined as mid-term and long-term goals, respectively and has been made dependent on the progress of the proposition of the reporting guidelines.

Stakeholders who Benefit from Guidelines

- Glycoscientists – understand and reproduce glycanalytic experiments
- Journal editors and reader – improve quality of publications
- Funding agencies (guidelines can be used to introduce open access of publicly funded data sets)
- Scientific community at large

Requirements for and Approaches to the Development of Guidelines

The different requirements of the various methods and techniques for the detection and characterization of glycans made it necessary to establish subgroups with subclasses for specific areas – may be some overlap among different subgroups (e.g., sample preparation). The following tasks were identified and decisions made:

- The following issues need to be addressed by the subgroups:
 - Definition of levels of information, e.g., in glycoproteomics - which sites occupied, what is there, how much, does protein level change or glycosylation level change, etc.
 - Definition of information content of glycan array data – e.g., fold change, absolute signal, normalized signal, etc.
 - Sample preparation and experimental conditions - how much and what information should be required?
- The guidelines should provide sufficient flexibility to accommodate different analytical tools - what is common (minimum common criteria or information content [annotated results])
- Use previously established guidelines as a basis (define our requirements first, then look in lists from [MIBBI](#) and the [Biosharing page](#) to find commonality and redundancy)
- Define a common organizational structure (framework/format) of guidelines to facilitate integration and comparison – a "guideline for guidelines"

Documentation and Communication

Since the group members recognize that any recommendation on reporting standards will require broad discussions within the scientific community it is essential to provide all information regarding both the status and progress of discussions and decisions to the community in a transparent way.

The following infrastructure will be set up:

- Wiki (private) for standard development and (public) for dissemination of standard to community
- Publish mature drafts on Public Wiki for critical review by Advisory Committee
- Mailing list to keep track of personal discussion via email

What to Do Next (within the next 6 months)?

- Creation of a MIRAGE logo/icon/graphics
- Mission statement
- Description of the sub-groups: Aims and scopes regarding the development of guidelines
- Publication of a white paper describing the MIRAGE guidelines

Open Questions

However, despite of a number of decisions made by the group a number of questions remained unanswered since the group felt unable to make appropriate suggestions without having consulted the community. During the discussions the following questions came up:

- "Best" (preferred) structural annotations (commonly used graphical formats) – is glycomics nomenclature an issue for MIRAGE?
- Representation of structures for human consumer? - Does the field need a common graphical format? Should MIRAGE promote a list of approved graphical formats?
- Should a description of the inferences used to arrive at structure be required?