Reviewer's report

Title: Mimoza: Web-Based Semantic Zooming and Navigation in Metabolic Networks

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Reviewer number:3

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The authors introduce and describe Mimoza, which is a pan-and-zoom-based explorer for metabolic networks with similarity to the Google Maps interface. Their web-service allows users to upload and visualize models and the algorithm infers groupings of metabolites through ChEBI annotations, which it can also infer. The work is nicely documented with movies that explain the use of the program. However, some important aspects need to be better elaborated before publication.

Major Compulsory Revisions

Important related work is not cited and not compared with Mimoza. The most important article to be considered is http://www.biomedcentral.com/1756-0500/6/179 ("What google maps can do for biomedical data dissemination: examples and a design study"). The authors should also compare their work to:

* X:Map by Yates, Okoniewski & Miller, Nucl Acids Res 2007

* Genome Projector By Arakawa et al., BMC Bioinform 2009

* Potentially also important would be ZAME: Zoomable Adjacency Matrix Explorer and CATMAID: Collaborative Annotation Toolkit for Massive Amounts of Image Data.

All these works have in common that a ZUI is used to present biological data, some of which also consider metabolic networks and related data. It would therefore be interesting for readers to obtain a broader overview about available ZUI tools for biological data and the benefit of Mimoza.

In connection with BioModels Database and the description of formats, the authors might also mention that a large number of pathway maps is nowadays available in standard formats including layout information (http://www.biomedcentral.com/1752-0509/7/116).

Several aspects of the actual procedures in the program remain unclear. For instance, how ChEBI annotations are derived should be better explained. The authors might consider to split their Implementation section into two parts. The first part should describe procedures and approaches, the second part should be really restricted to implementation details (programming language, data formats etc. and be therefore very short). Details about hardware are also missing. The

focus should be that readers of the article understand how Mimoza works in order to reproduce the effort or at least to reproduce the main findings. To stick with the ChEBI example, other researchers should be able to find the same ChEBI identifiers when implementing the annotation algorithm mentioned here. There are many more details, where the authors could describe better who things are done.

Figure 1 is to difficult to interpret because of the strongly overlapping pictures. It is difficult to display three zoom levels in one image, but this figure should be rearranged so that the left-bottom image is further away from the top-left image.

It is also unclear how what the authors mean with SBML, because depending on Level and Version this can mean quite different languages. The "outside" attribute on compartment, which the authors mention, is only defined before SBML Level 3. In this connection, it would also be nice if the authors could give insights in how they convert uploaded SBML files to JSON? Mimoza is based on JavaScript, but neither libSBML nor JSBML support this directly. It would therefore be nice to explain how SBML is parsed and postprocessed. If one of these libraries is used, it should also be cited.

Does Mimoza understand or interpret layout information in SBML files, i.e., the layout extension?

A better reference for the COMBINE archive format is http://arxiv.org/abs/1407.4992 (instead of citing the COMBINE website).

In my tests, I found it a bit difficult to follow the flow of information in Mimoza because the structure of the maps changes when altering the zoom level. Maybe the authors could discuss this a bit more intensive in the article.

Minor Essential Revisions

* Insert a blank between words and references (e.g., "models[1]" -> "models [1]")
* BIGGs -> BiGG
* CEllML -> CellML
* First author of citation 30 is misspelled.

Discretionary Revisions

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.