SBGN-ED – working with the Systems Biology Graphical Notation

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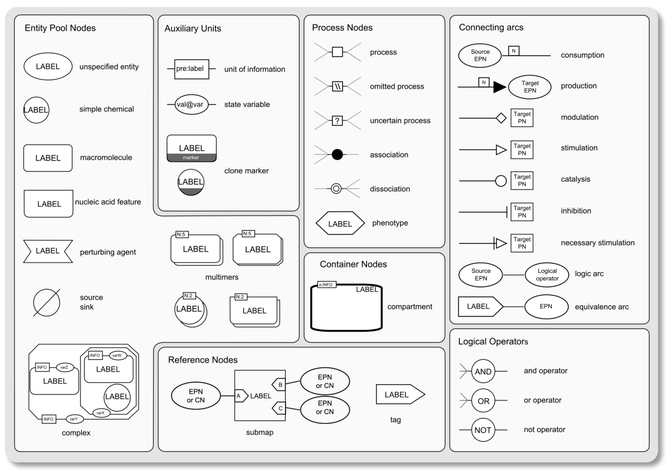
The Systems Biology Graphical Notation (SBGN) [1] is a standard for the visual representation of biochemical and cellular processes and networks. Three different views (Process Description, Entity Relationship, and Activity Flow) cover several aspects of the biological system in different levels of detail. SBGN helps to communicate biological knowledge more efficient and accurate between different research communities. However, to work efficiently with SBGN, powerful and easy to use tools are necessary.
Here we present methods for working with SBGN implemented in SBGN-ED [2], a tool which allows to create all types of SBGN maps from scratch, to validate these maps for syntactical and semantical correctness, to translate maps from the KEGG databases into SBGN, to explore SBGN maps, and to export them into several file and image formats.

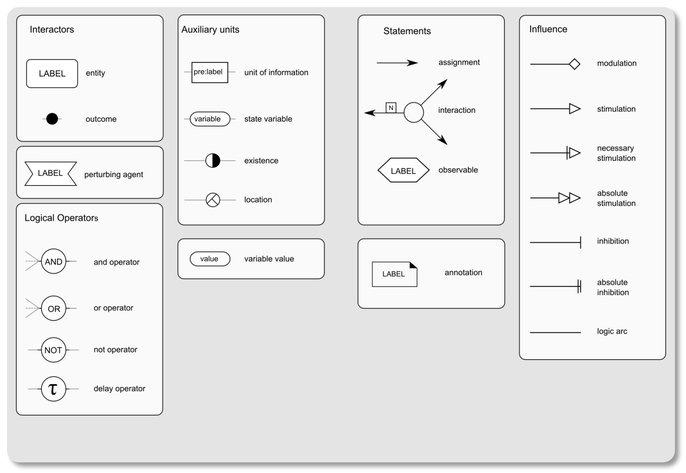
SBGN - Process Description (PD)

The Process Description notation shows the temporal course of biochemical interactions in a network. It can be used to illustrate molecular interactions taking place in a network of biochemical entities, with the same entity appearing multiple times in the same map. PD can use the following glyphs:



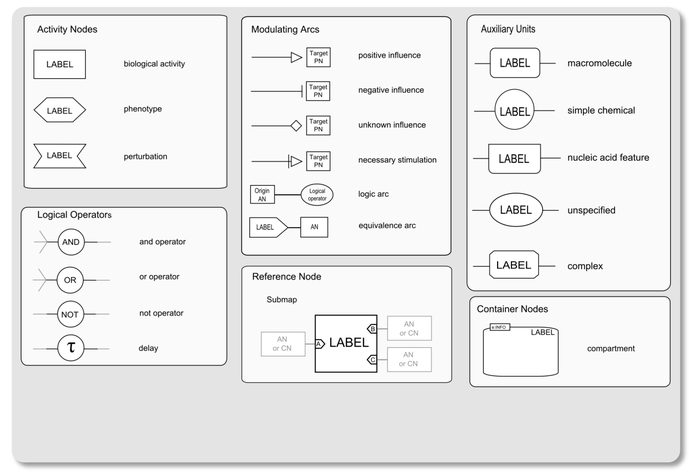
SBGN - Entity Relationship (ER)

The Entity Relationship notation allows to see all relationships in which a given entity participates, regardless of temporal aspects. Relationships can be seen as rules describing the influences of entities. ER can use the following glyphs:

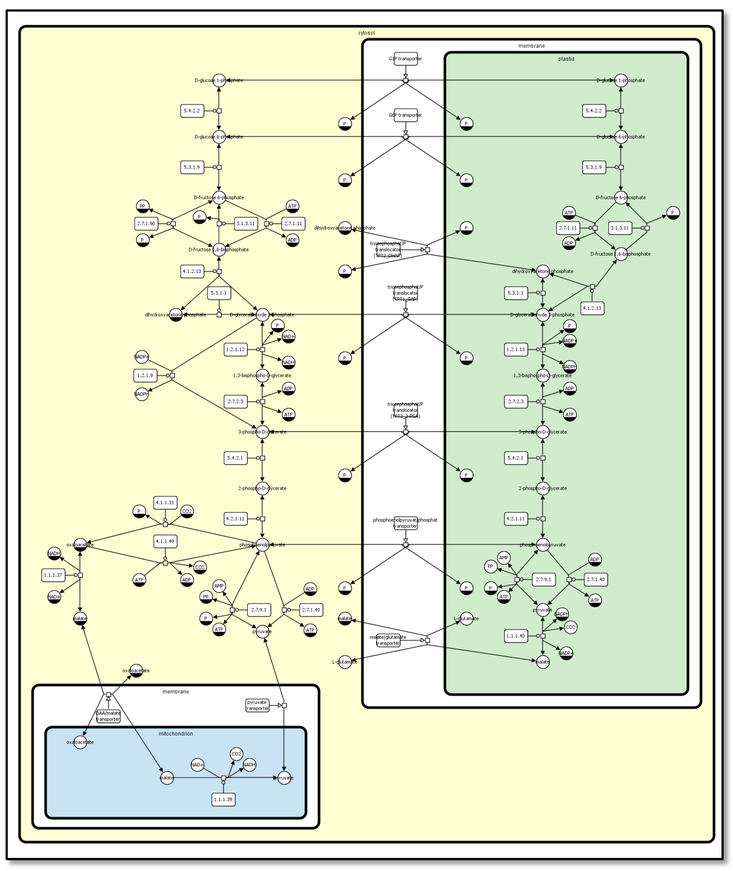


SBGN - Activity Flow (AF)

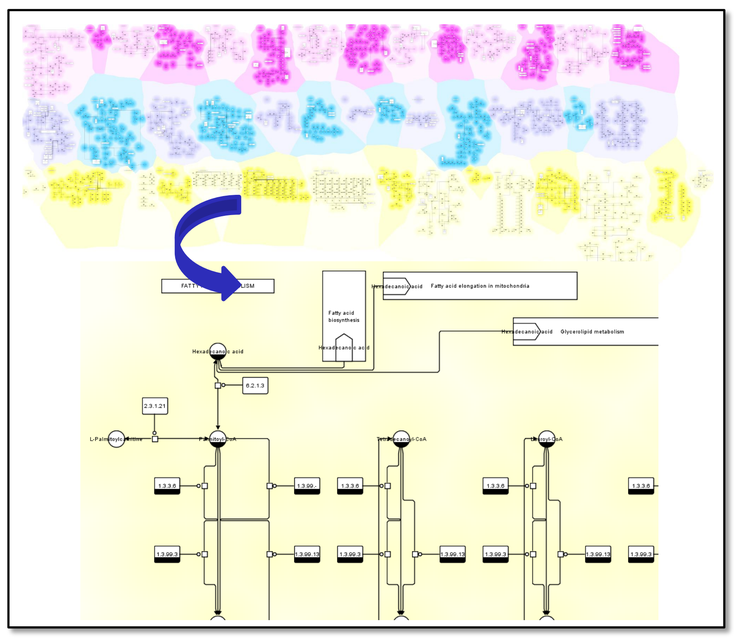
The Activity Flow notation shows the flow of information between biochemical entities in a network. It omits information about state transitions of entities and is convenient for representing the effects of perturbations, whether genetic or environmental in nature. AF can use the following glyphs:



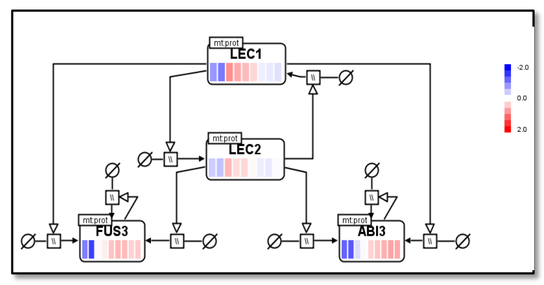
Creating Editing Validating

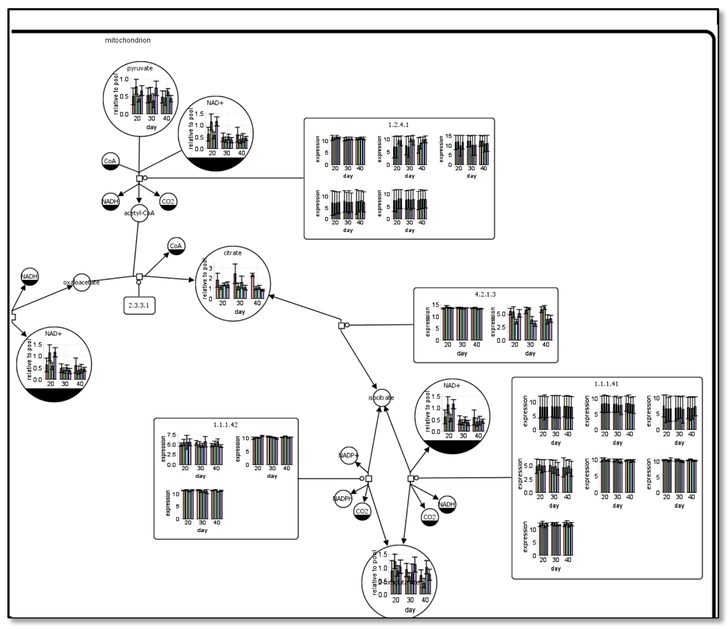


Exploring Navigating



Data integrating Analysing





Import

GML
GraphML
SBGN-ML

SBGN-ED

Editing, Translating and Validating of SBGN Maps

www.sbgn-ed.org

GML
GraphML
SBGN-ML
PPT (Powerpoint)
Web page

PNG
JPG
SVG
PDF

Export

References
[1] N. Le Novère *et. al*: Systems Biology Graphical Notation. *Nature Biotechnology*, 27:735-741 (2009).
[2] T. Czauderna, C. Klukas, F. Schreiber: Editing, Validating, and Translating of SBGN Maps. *Bioinformatics*, 26(18):2340-2341 (2010).

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