Dear SBML editors,

we are happy to announce that the SBML Level 3 Flux Balance Constraints Package (henceforth FBC package) is at a point where it can be presented to the SBML editors for examination, comment and eventual approval. The final specification is attached to this email and available for download from: http://tinyurl.com/sbml-fbc-rc1

In order to facilitate your evaluation we will highlight specific aspects of the FBC package pertaining to its format, design and tool support.

Specification format
The FBC specification has been prepared using the official LaTeX document format as required wherein all data structures have been included as UML class diagrams that clearly show how SBML Level 3 Core is extended (where relevant). Following the SBML Level 3 package numbering scheme this specification describes SBML Level 3 Flux Balance Constraints, Version 1 with namespace: http://www.sbml.org/sbml/level3/version1/fbc/version1

Package design
Constraint based modelling is a widely used modelling methodology in the Life Sciences and there is a large and growing pool of the genome scale models, used in this type of analysis, that cannot be described in SBML Level 3 Core. The FBC package provides this capability.

Designed to address this problem the FBC package enhances SBML Level 3 Core without duplication of data structures or overlap with other packages. In addition the FBC package can be completely stripped from an FBC package model description without affecting the validity of the underlying SBML Level 3 Core model. Following the design philosophy of SBML Level 3 Core no explicit defaults are defined and care has been taken to limit potential ambiguity through the use of required attributes.

Throughout the development process of the FBC package we have made efforts to engage with the constraint based modelling community and keep both them and the SBML community abreast of current developments. This has taken the form of consultation with members of the FBC Package Working Group (FBC-PWG), the presentation of progress at HARMONY, COMBINE and ICSB meetings as well as discussions with software developers in the FBA community. Finally we have successfully presented this version of the specification to the community (via the FBC-PWG) comment and review.
Software support
Throughout the development process of the FBC package we ensured that there would always be tools that implement it. This has begun in the form of an SBML Level 2 annotation (SBW Flux Balance, PySCeS-CBM ca. 2009-2012) and culminated in the current SBML Level 3 package (SBW Flux Balance, PySCeS-CBM, libSBML experimental, SBML Toolbox ca. 2011-2012). The latest version of Software tools that implement complete support for the entire FBC package are:

FAME: [http://f-a-m-e.org](http://f-a-m-e.org)

In order to facilitate the usage of the FBC package we have created tests compatible with the SBML Test Suite that are ready to be included with the official release of the FBC package.

In conclusion we thank you for taking the time to consider the suitability of this specification and hopefully the future inclusion of the FBC Package in SBML Level 3.

Yours sincerely
Brett Olivier and Frank Bergmann