

Analysis of 140 published GSMs and identification of the most common representation problems

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The number of publications related to GSMs is increasing exponentially, but as most of these models are scattered across the Internet there is a need to centralize these data in a way that users can easily access and load them into stoichiometric modelling tools. This work presents a web platform to collect scientific work related with the reconstruction of GSMs, providing links to the original publications and the available models (www.optflux.org/models). The platform also indicates which models are compatible with OptFlux, an open-source reference computational platform for the optimization of cellular factories by the application of *in silico* ME methods, designed for non-computational experts by providing a user-friendly interface. The compatible models can be automatically loaded into OptFlux via a repository manager.

This work also presents a thorough analysis on more than 140 published GSMs available in the platform. This analysis highlights some common problems in published models, such as the lack of standards to represent them. The SBML format has been adopted as the main standard by the community, despite some limitations in representing all the information required for modelling purposes. As consequence, this format has been extended ad-hoc by several authors, thus making its automatic interpretation a non-trivial problem.

This analysis provides some insight into the limitations of formats used and the recurrent problems in the representation of GSMs.