عنوان مقاله:

A new reconstruction of mouse metebolic model using orthology- based approach

محل انتشار:

اولین همایش بین المللی و دهمین همایش ملی بیوانفورماتیک ایران (سال: 1400)

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خلاصه مقاله:

A genome-scale metabolic (GSM) model is an in silco metabolic model including chemical reactions thattake place inside a cell, tissue, or organism. In a GSM model, gene- protein reaction rules represent themapping between gene encoding enzymes and the reaction they catalyze. These rules are a fundamentalcomponent in orthology-based model to reconstruct a new GSM model of a target organism through a GSMmodel of a reference organism.In this study, we reconstructed a new mouse GSM model (iMM۱۸۶۵) from human Recon۳D model. For thispurpose, we used homologous gene mapping and extracting mouse specific reactions through literature anddatabases. iMM۱۸۶۵ has been validated using ۴۳۱ metabolic objective functions which were created to verifyRecon۳ model. This model with no dead-end metabolites and blocked reactions is more comprehensive thanprevious reported mouse models. Also it has passed more metabolic objective functions tests. Furthermore,to evaluate of the predictive ability of the model, gene essentiality simulations was performed.

کلمات کلیدی:

genome-scale metabolic model, orthology-based reconstruction, Mouse metabolic model, iMM۱۸۶۵, Recon۳D