Propagating Protein-Protein Interaction Network Support into GRNsight 7.0, a Web Application for Visualizing Gene Regulatory Network Models

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GRNsight is an open-source web application and service for visualizing models of gene regulatory networks (GRNs). A gene regulatory network consists of genes, transcription factors, and the regulatory connections between them, which govern the expression level of mRNA and protein from genes. GRNsight reads user-uploaded Microsoft Excel adjacency matrices or SIF files and automatically displays a graph. Users without their own data can use GRNsight's back-end PostgreSQL database to select a GRN based on the *Saccharomyces* Genome Database (SGD). Besides GRN data, we have recently incorporated protein-protein physical interaction (PPI) data from SGD so that users can also visualize this type of network. Due to this new type of network, the rest of the application needed updates in order to fully support PPIs. For example, PPI networks have undirected edges vs. directed edges for GRNs. Gene and protein labels also differ. Notable additions include a PPI demo graph, allowing users to visualize a graph automatically without inputting specific data. This new demo exclusively showcases interactions involving yeast mitochondrial protein Aim32p, offering users a detailed exploration of its network connections. Furthermore, GRNsight now incorporates functionality to detect the network type of the imported file, distinguishing between GRNs and PPIs. Ongoing development efforts prioritize bug resolution, user interface enhancements, and improved documentation. In response to user needs, GRNsight is now positioned to comprehensively address GRNs and PPIs, offering a unified platform for visualizing diverse molecular interaction models. GRNsight is available at http://dondi.github.io/GRNsight/.