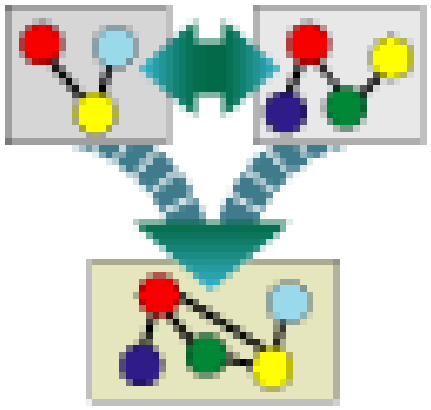


Merge Models Plugin

How to use the Merge Models Plugin for CellDesinger 4.1

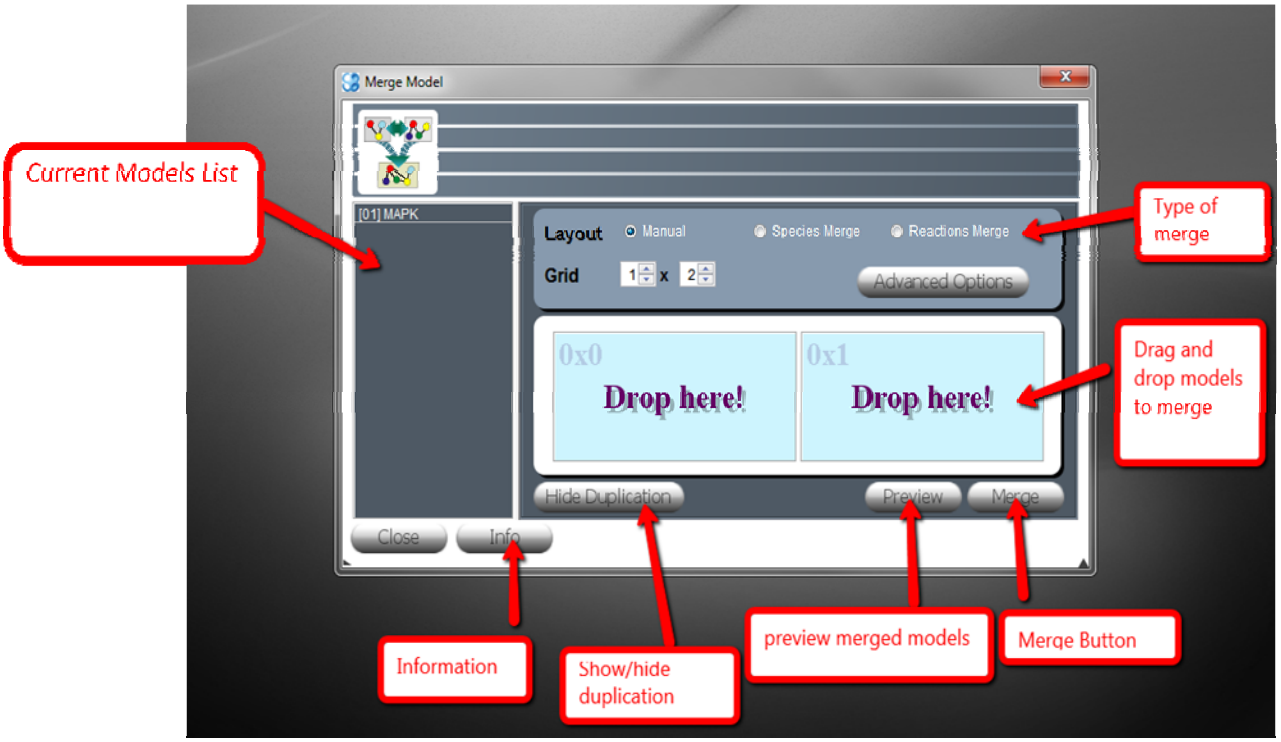
Version: 1.0 beta
CellDesigner Compatibility: Built for CellDesigner 4.1
Release Date: Oct 9th 2010

Powered by CellDesigner™

SBI The Systems Biology Institute

This document provides a short guide on the usage and functionality of the Merge Models plugin for Celldeisgner 4.1. The purpose of the plugin is to allow the user to merge different biological pathway models and build new pathway maps. It also provides the ability to analysis two or more models for merging, to identify the duplicate species and highlight them on the merged model map.
The plugin can be installed by copying the downloaded jar file (mergeModel.jar) and copying it into the plugins folder under the CellDesigner installed directory.

The basis plugin functions are highlighted below:

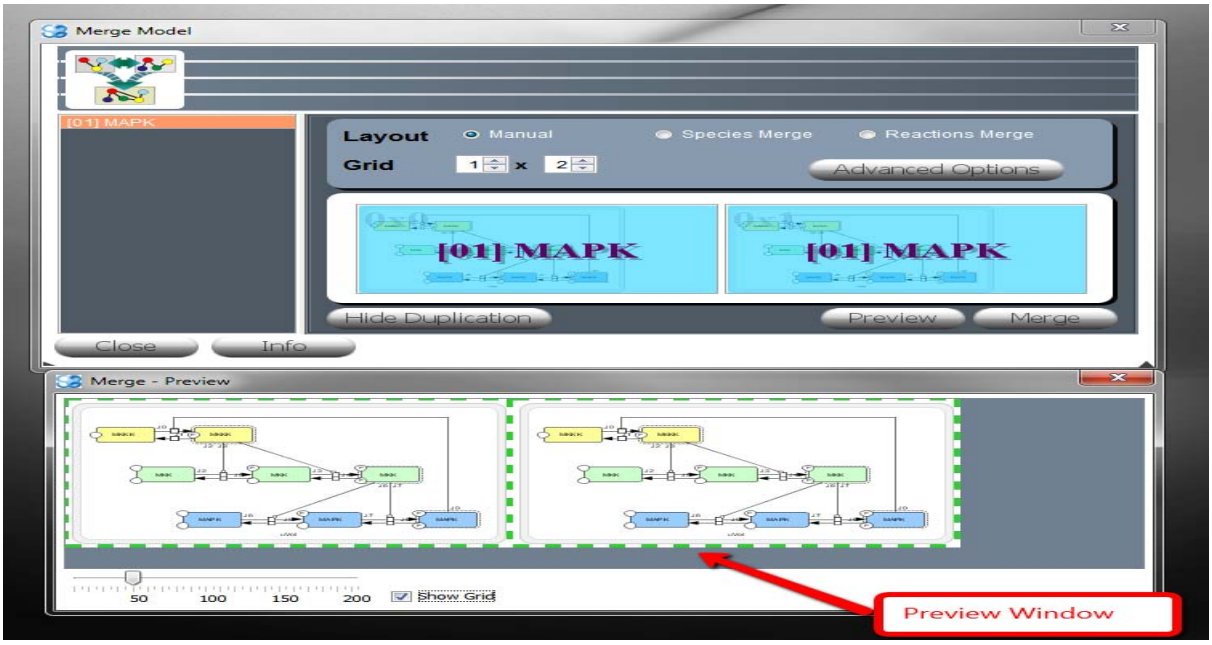


There are currently 3 types of Merge function

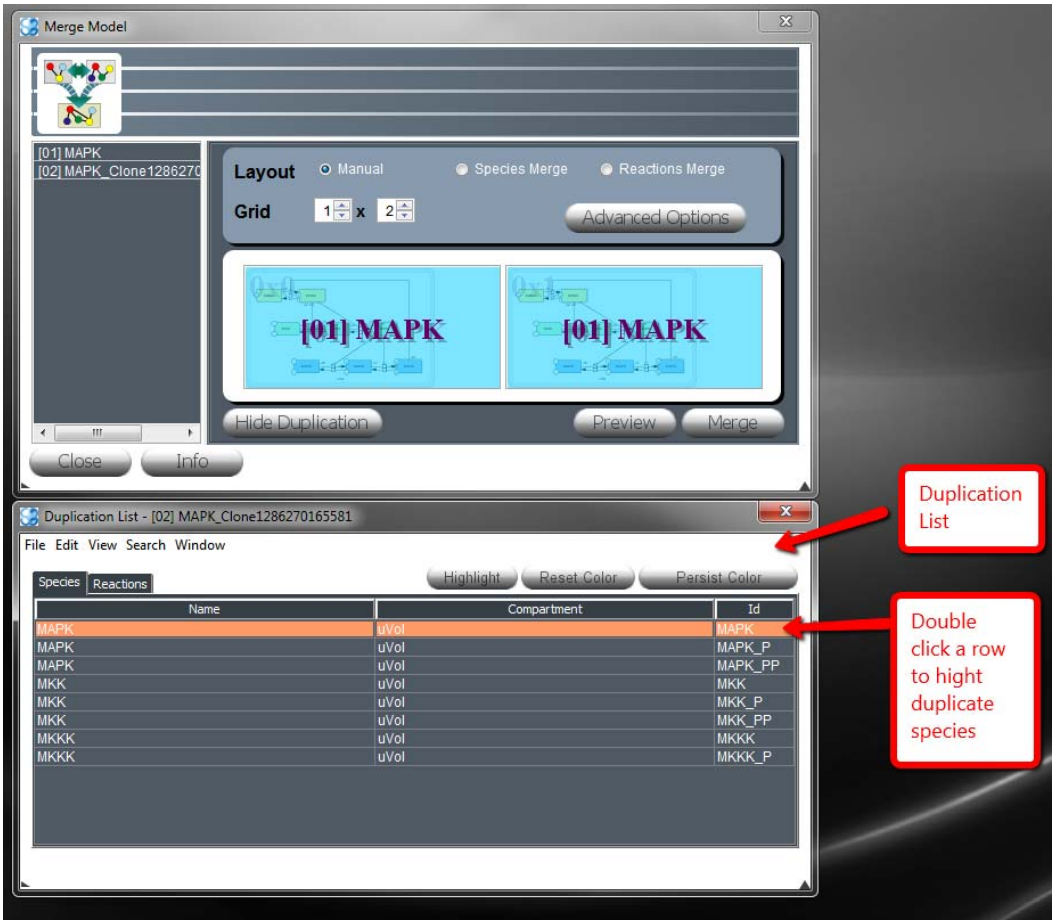
1. **Manual:** This function copies the models to be merged onto a new canvas according to the grid layout chosen (specifying the number of rows and number of colums). Each model preserves its species, reactions and their layout and duplicates are not merged.
2. **Species Merge:** This mode will merge the common (duplicate) species in the models
3. **Reactions Merge:** This mode will merge the reactions which have the same set of reactants, products and modifiers.

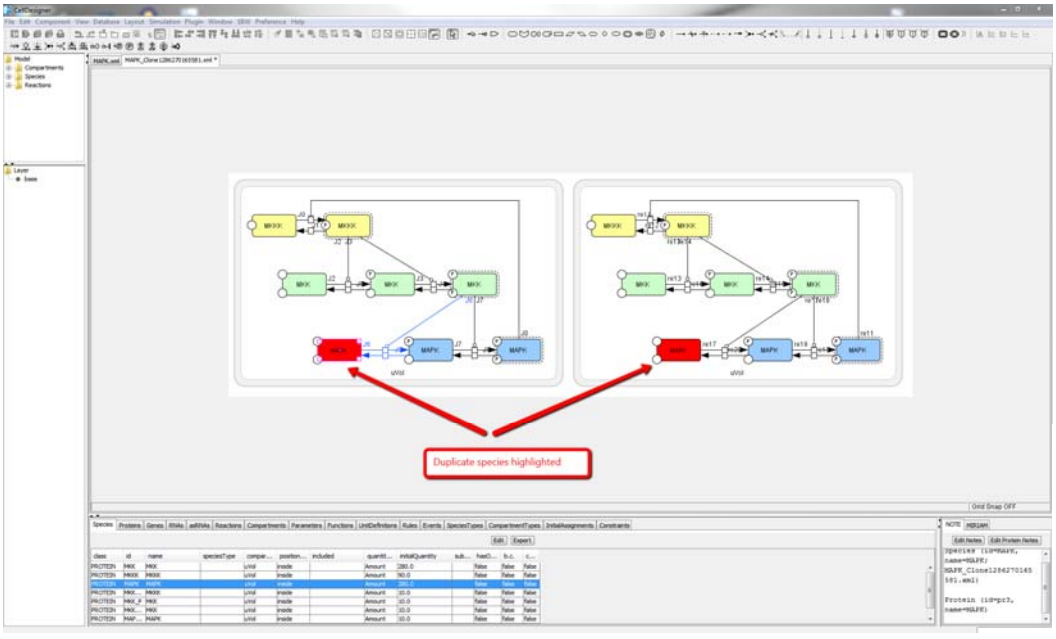
In order to select models to merge, the user can open the models in CellDesigner and invoke the Merge Models plugin.
This will show the current open models in the left panel from which the user can drag and drop the models onto the merge panel as shown below.

Once the user has selected the models and their layout in the grid, they can preview the output by clicking on the preview button which opens the preview window shown below.



On clicking the Merge button, the plugin will run to generate the merged model in a new file opened on the CellDesigner canvas. A new window which shows the statistics of the duplicate species and reactions in the merged models will also appear as shown below

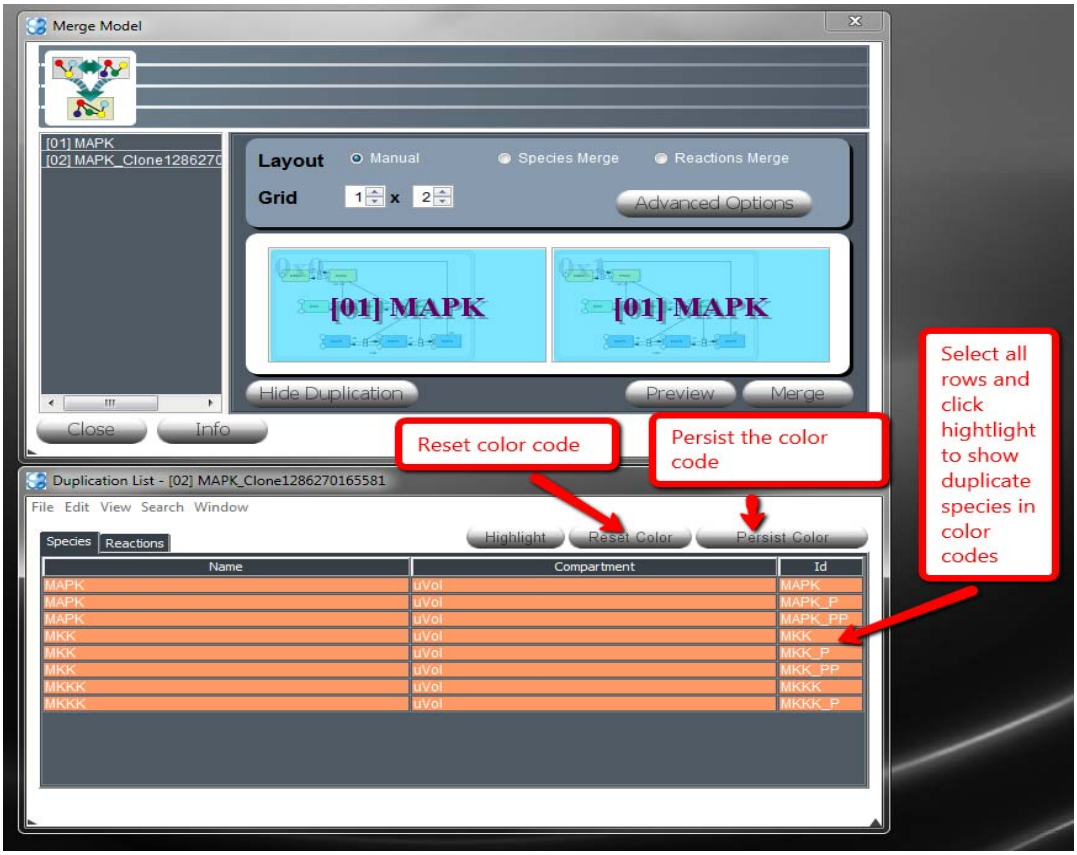


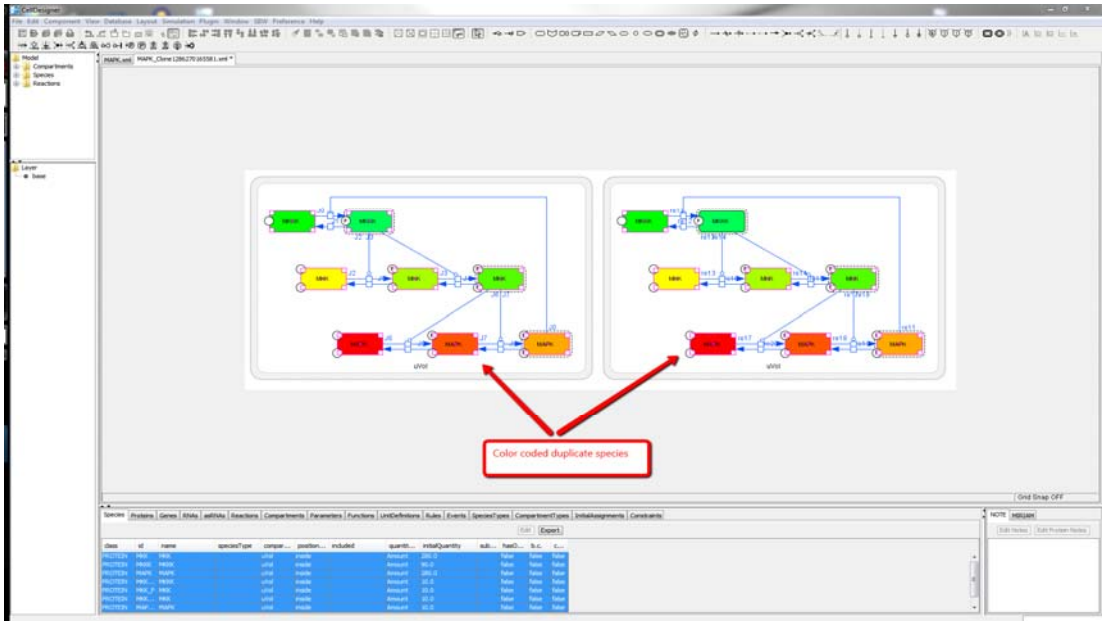


On double-clicking a duplicate species, it will be highlighted in the CellDesigner Canvas as shown above. In case the species has been merged, it will shown the existing species only. In the above screen shot, manual merge mode was chosen and the duplicate species appear twice (in red) on the canvas.

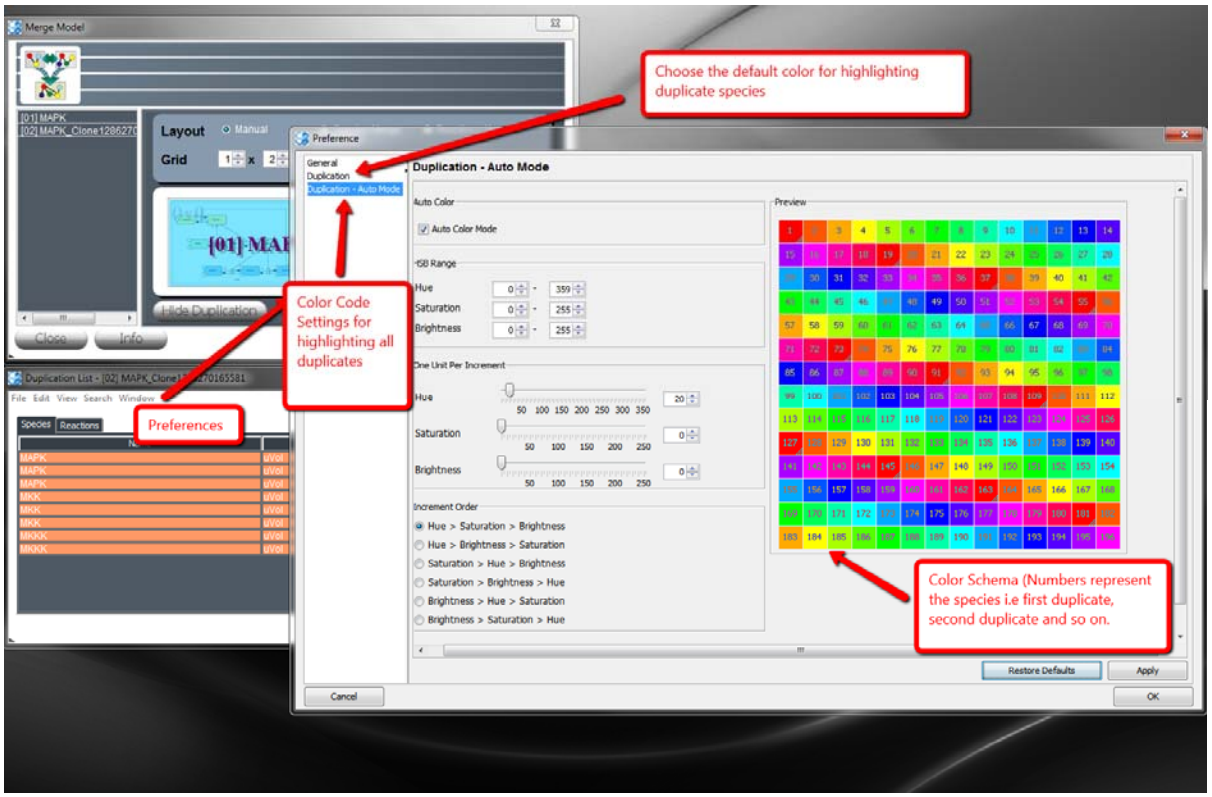
If the user wants to highlight the entire list of duplicate species, they can do a select all (Ctrl A) and then click on Highlight. This will lead to automatic highlighting of all duplicates using the default color code (as shown below in the next two screen shots).

The user can decide to remove the duplication by clicking on Reset Color or can save the Color coded duplication list by clicking on Persist Color button as shown below.

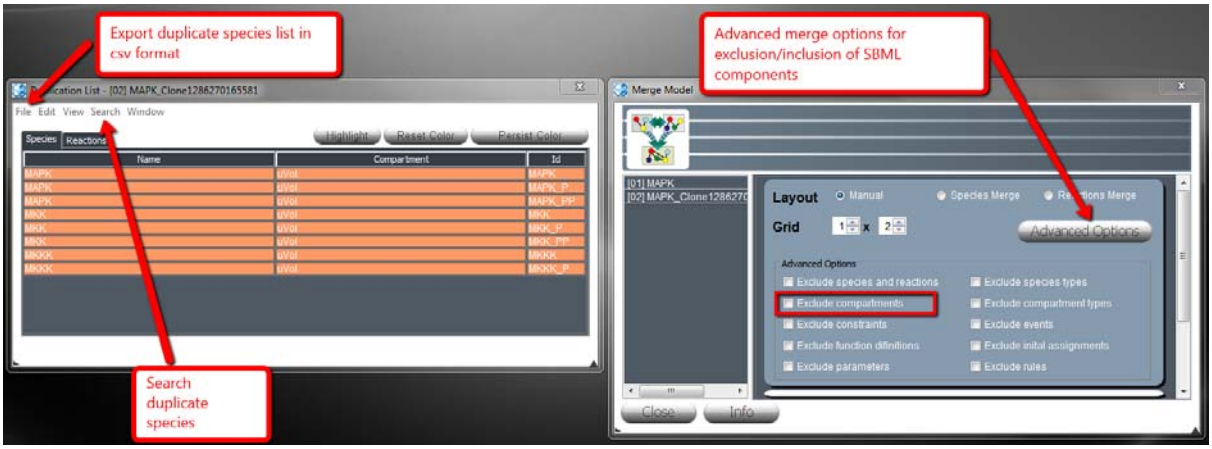




The plugin also provides advanced color code selection schema. The user can go to Windows>Preference to open the Preference panel which allows the user to select the color code schema which would be used to color all duplicate species in automatic mode



The plugin also provides advanced options for Merge Modes which can be viewed by clicking the Advanced Options button as shown below



This option allows the users to select to include/exclude specific SBML component information from the merge options.

Caveat: As the current plugin is in beta version, the option of Exclude/Include compartments can lead to generation of in-correct merged models and layouts. The users are advised to take these possibilities into account while in Advanced Options mode.
Also, for beginners, it is recommended to first check the plugin usability by selecting the Manual merge Mode and excluding compartments. Then, as the user proceeds, advanced options can be incorporated.
Although there is no upper limit on the total number of models that can be merged, the performance and output of the plugin can be severely affected for merging more than 5 models in 1 run. It is advised to follow a bottom-up merge approach for optimal performance.

Please save your merged models and re-open in CellDesigner after every run!!!

This version is releases in beta mode to help us understand the usability of the plugin as well as identify bugs. Thus, your feedback is of utmost importance. Please let us know what you think at info@celldesigner.org.

Thank You

SBI Engineering Team