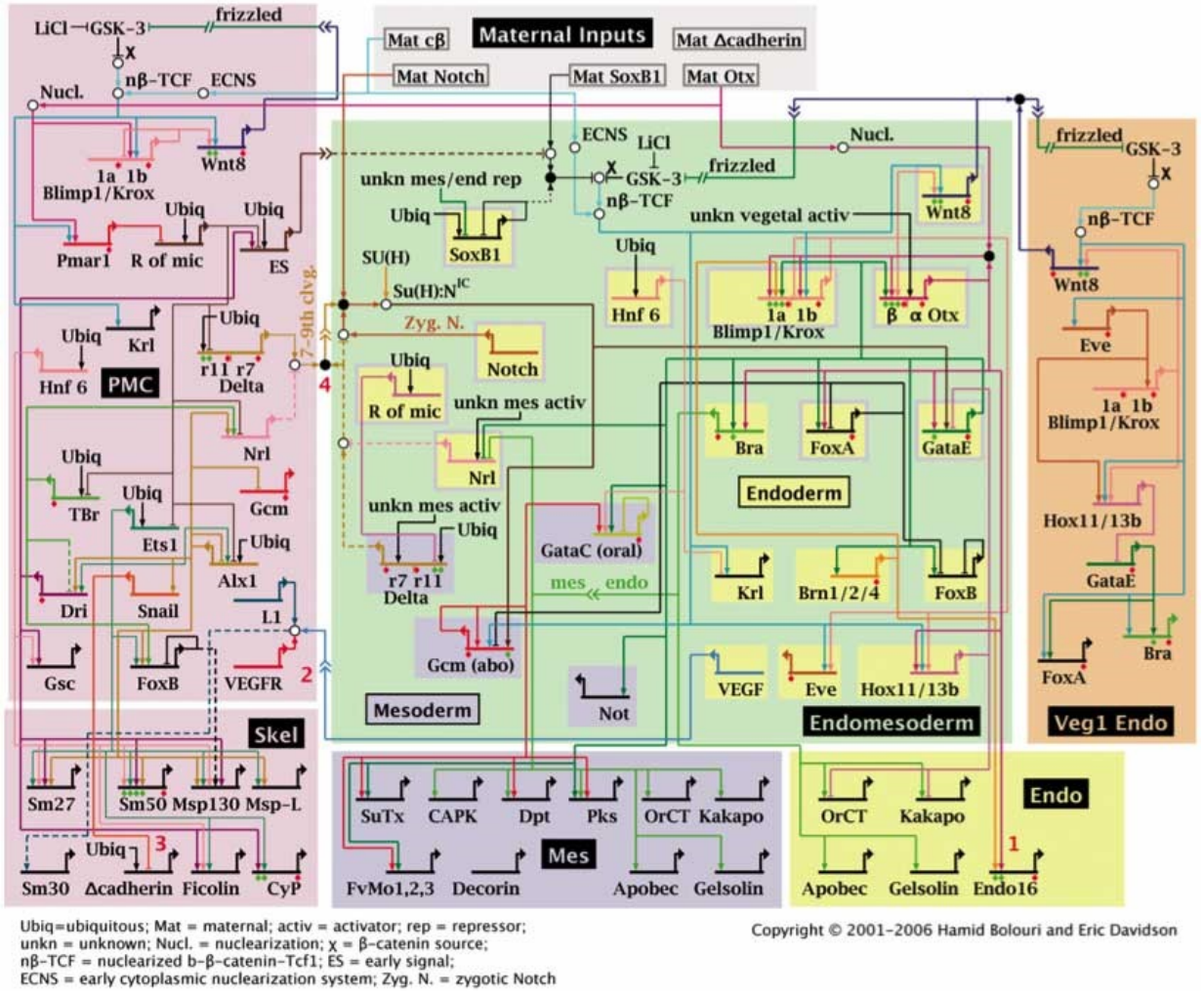
# Types of Cellular Networks

# Gene Regulatory Networks

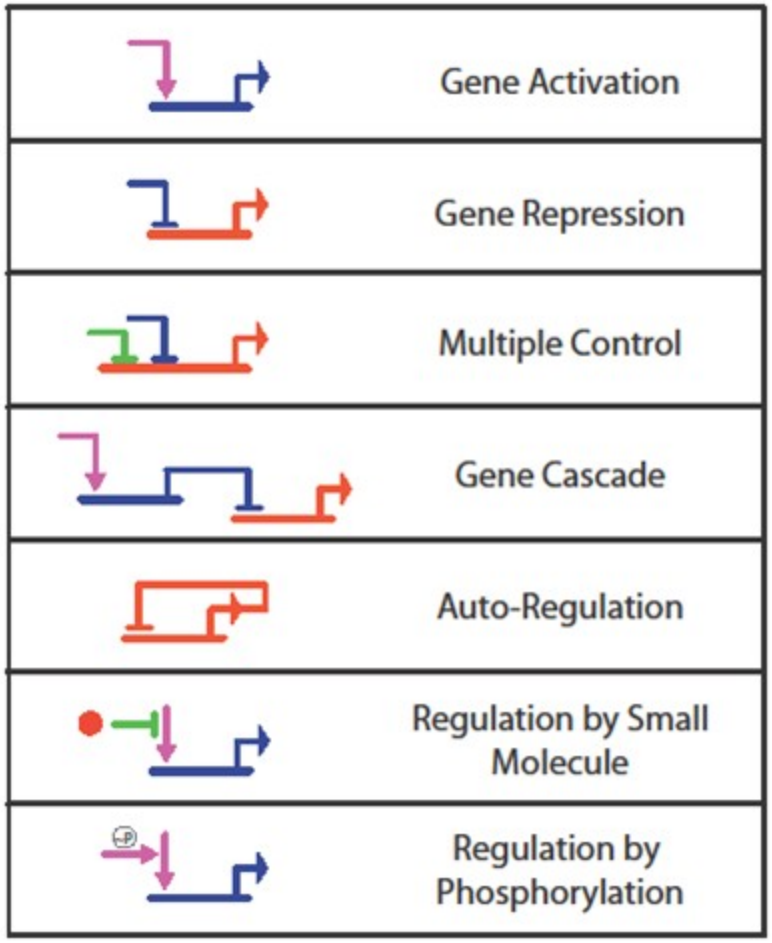



Ubiq=ubiquitous; Mat = maternal; activ = activator; rep = repressor;
unkn = unknown; Nucl. = nuclearization; χ = β-catenin source;
nβ-TCF = nuclearized b-β-catenin-Tcf1; ES = early signal;
ECNS = early cytoplasmic nuclearization system; Zyg. N. = zygotic Notch

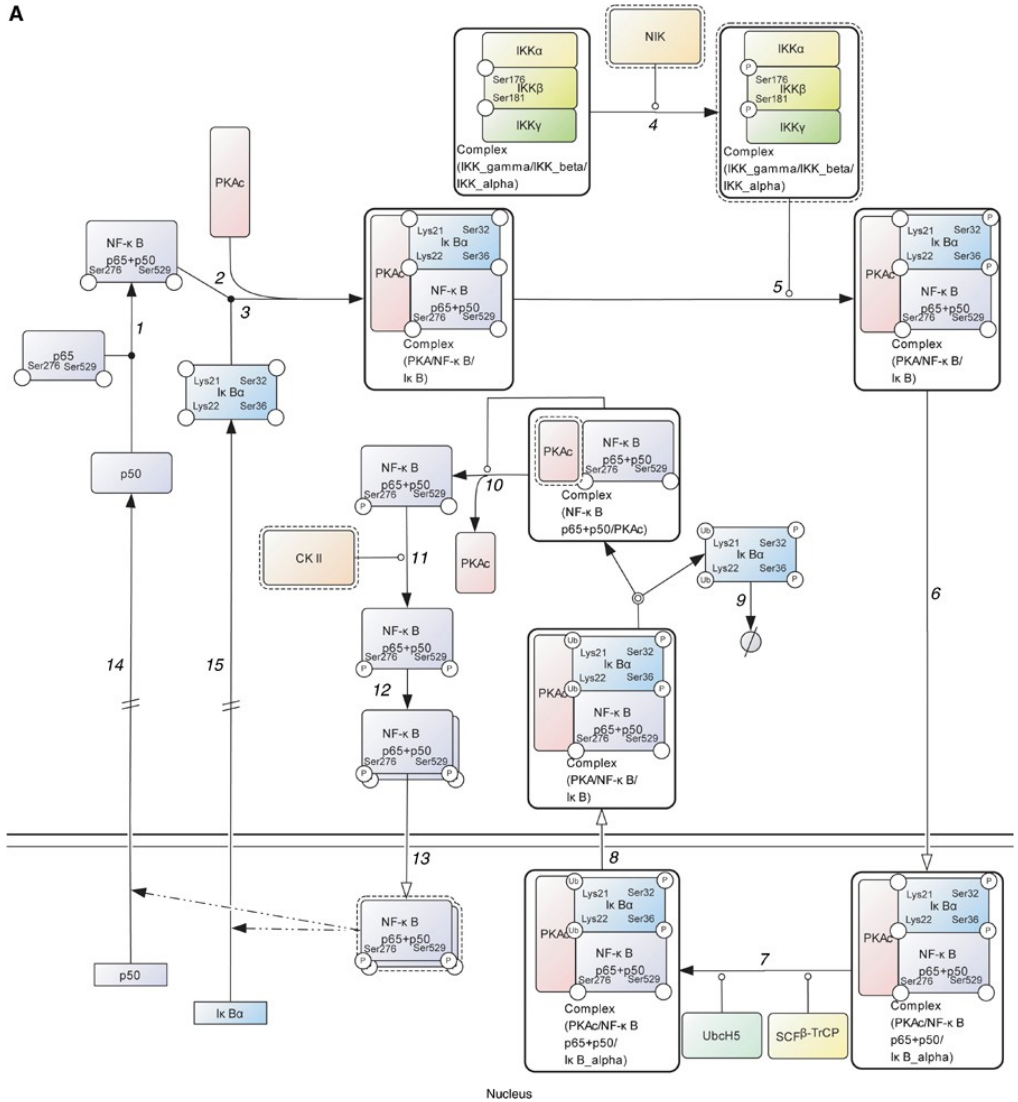


http://scienceblogs.com/pharyngula/2006/06/modules_and_the_promise_of_the.php

# Gene Regulatory Network Basic Operations

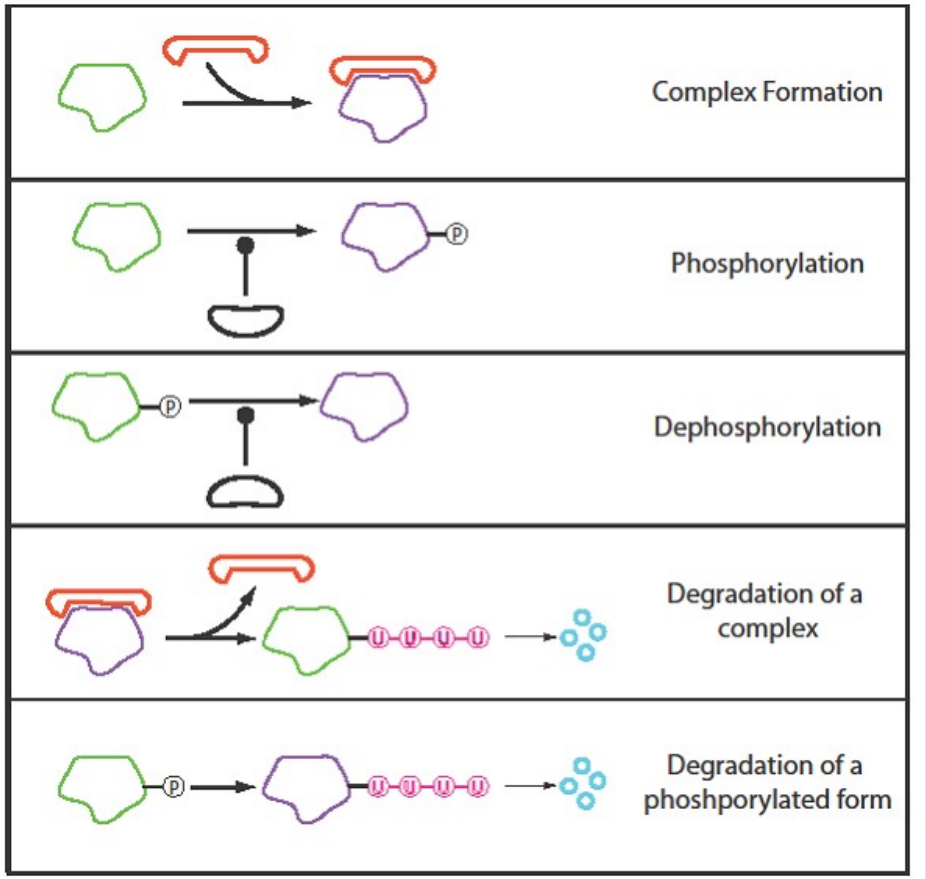


# Protein Signaling Networks

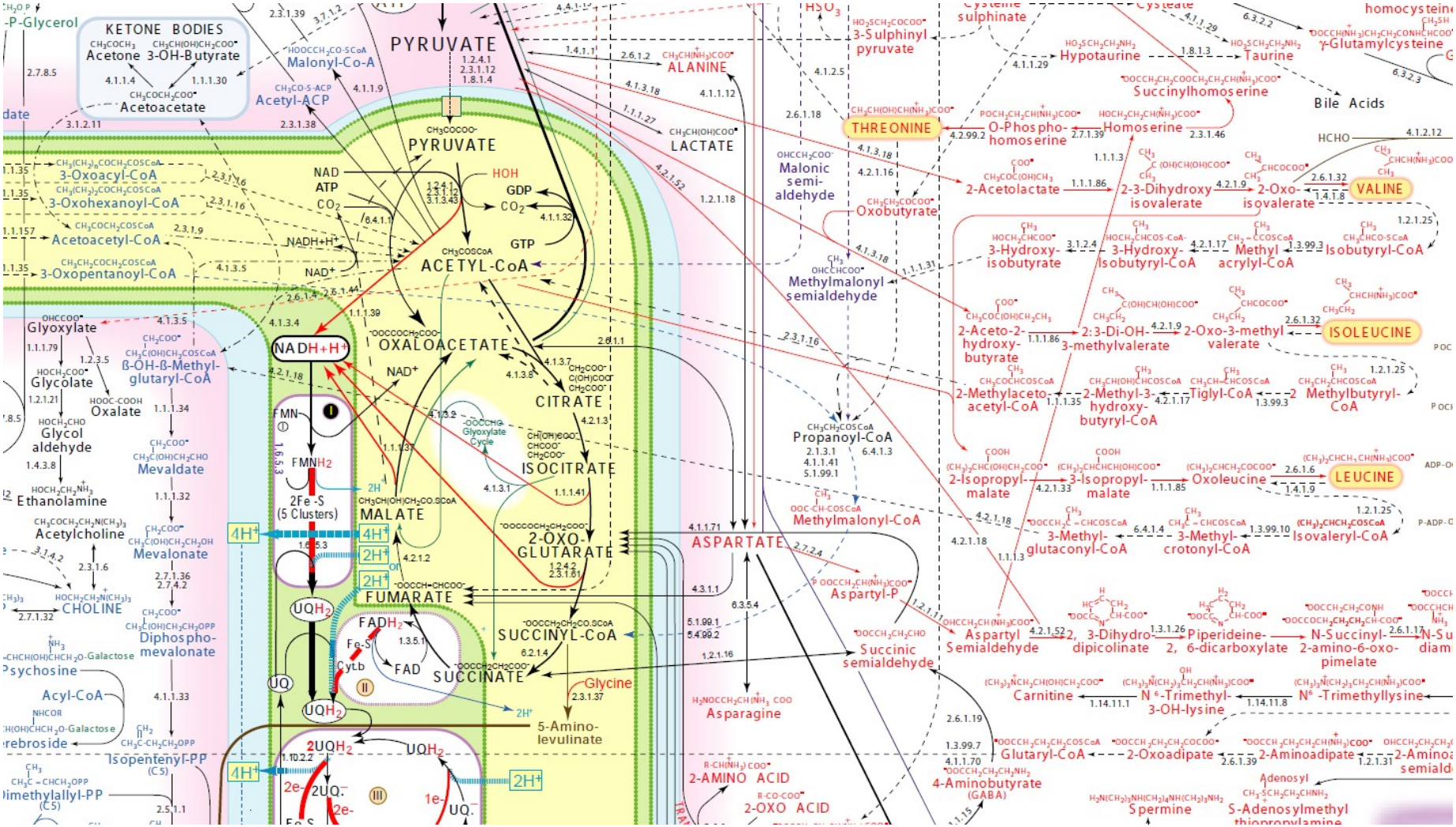



http://www.nature.com/msb/journal/v2/n1/full/msb4100088.html

# Protein Signaling Networks Basic Operations



# Metabolic Networks




http://www.iubmb-nicholson.org/chart.html

# Some Characteristics

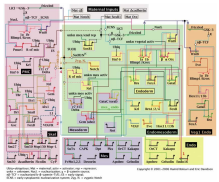
| Network | Speed | Purpose | 'Technology' |
|---|---|---|---|
| Gene | Slow to medium | Remodeling signaling and metabolic networks | DNA binding to control expression |
| Protein | Medium to fast | Signal processing | Protein covalent modification and sequestration |
| Metabolic | Fast | Manufacturing, energy systems | Enzymes, allosteric control |

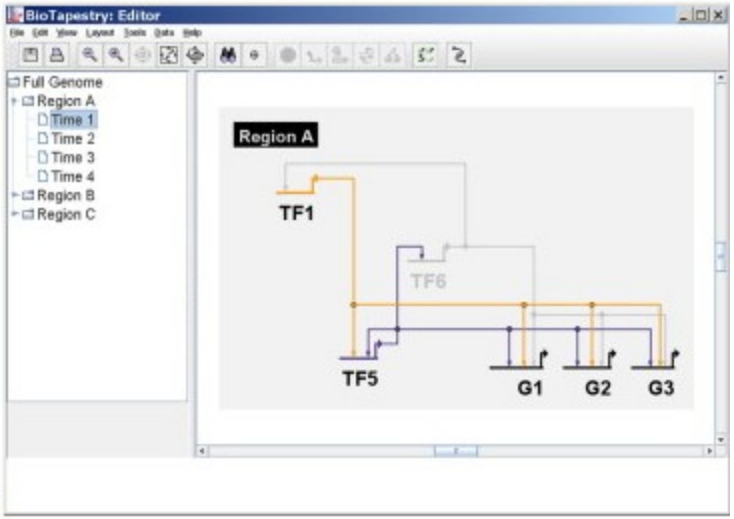
# Software for Network Visualization

## Does not include ball-stick networks, eg cytoscape

# Gene Regulatory Networks

## BioTapestry





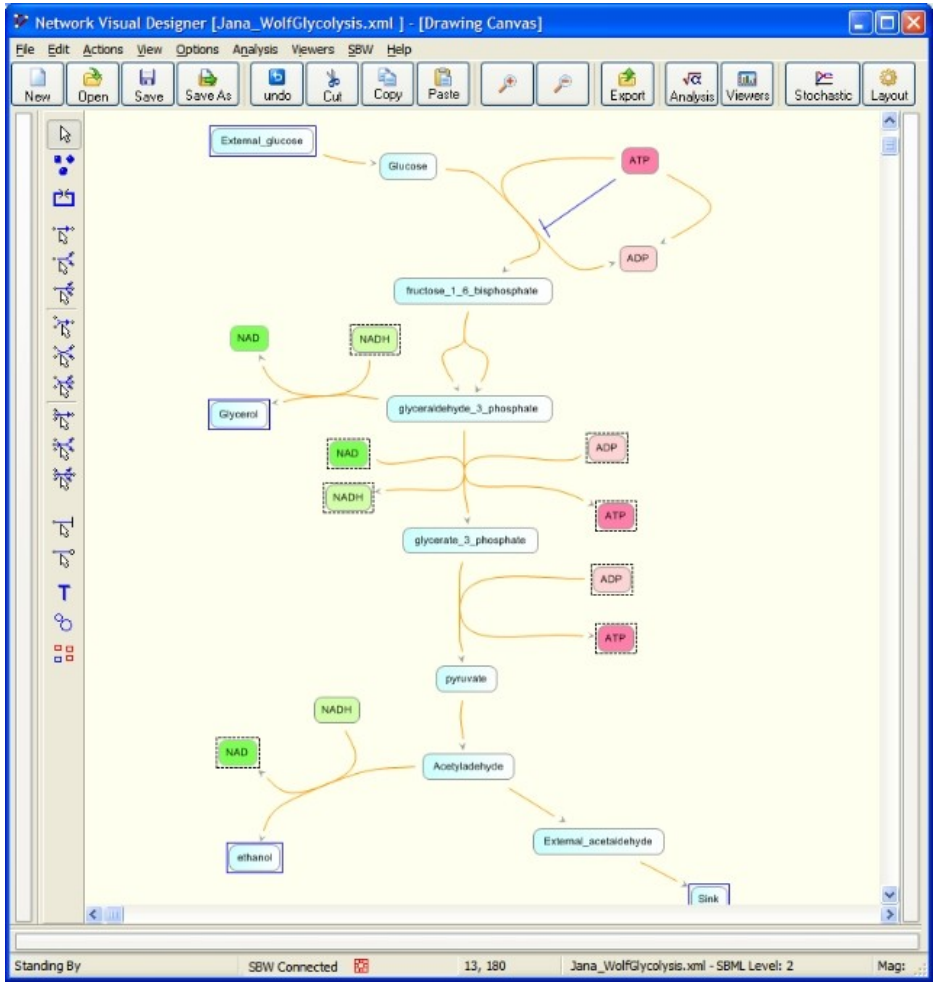




Cross-platform,
Java, Open Source,
SBML?, no simulation

Biotapestry.org

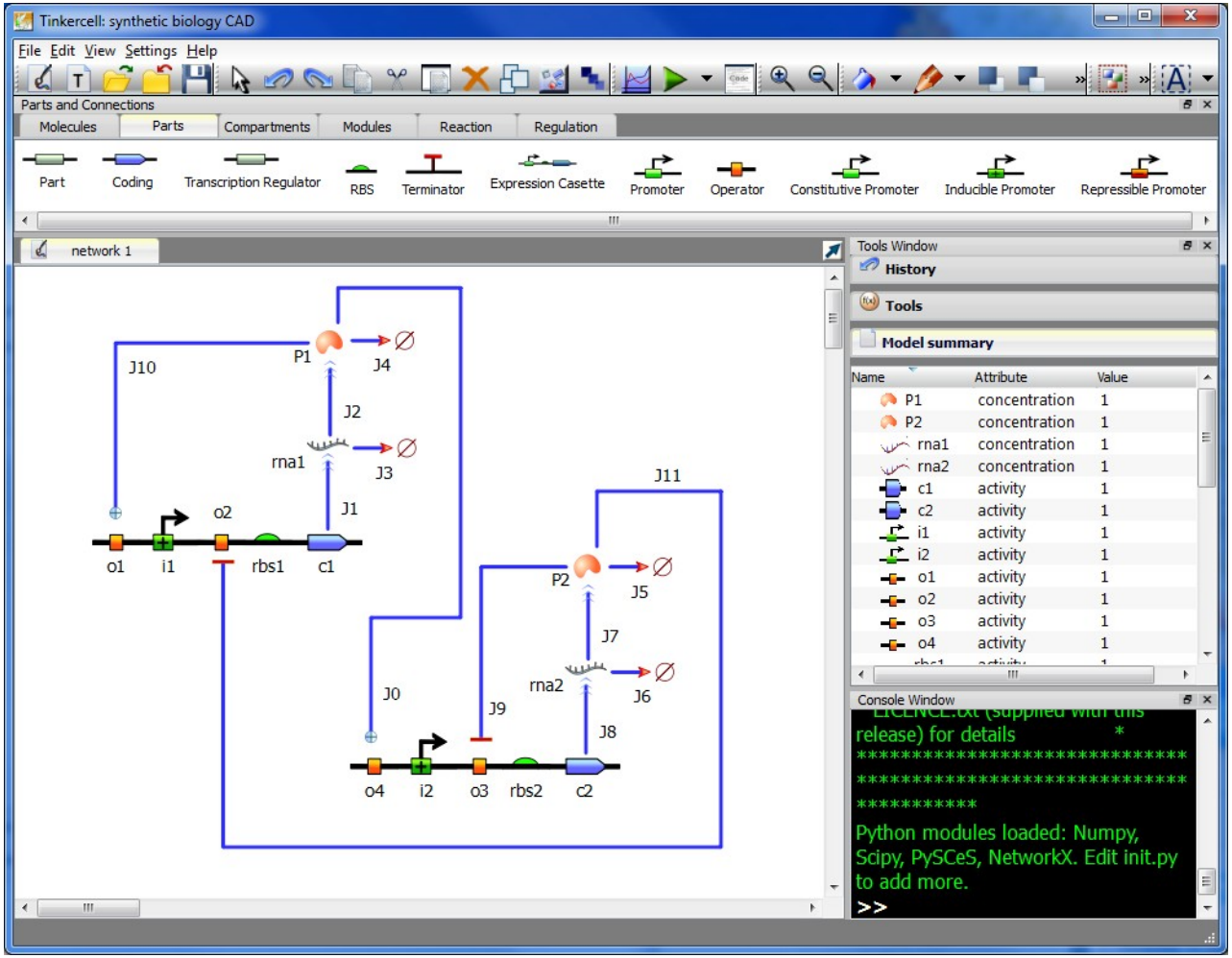
# Metabolic and Protein Networks
# JDesigner




Windows,
Delphi, open source
SBML, Part of SBW

# Gene Protein and Metabolic Networks

# TinkerCell

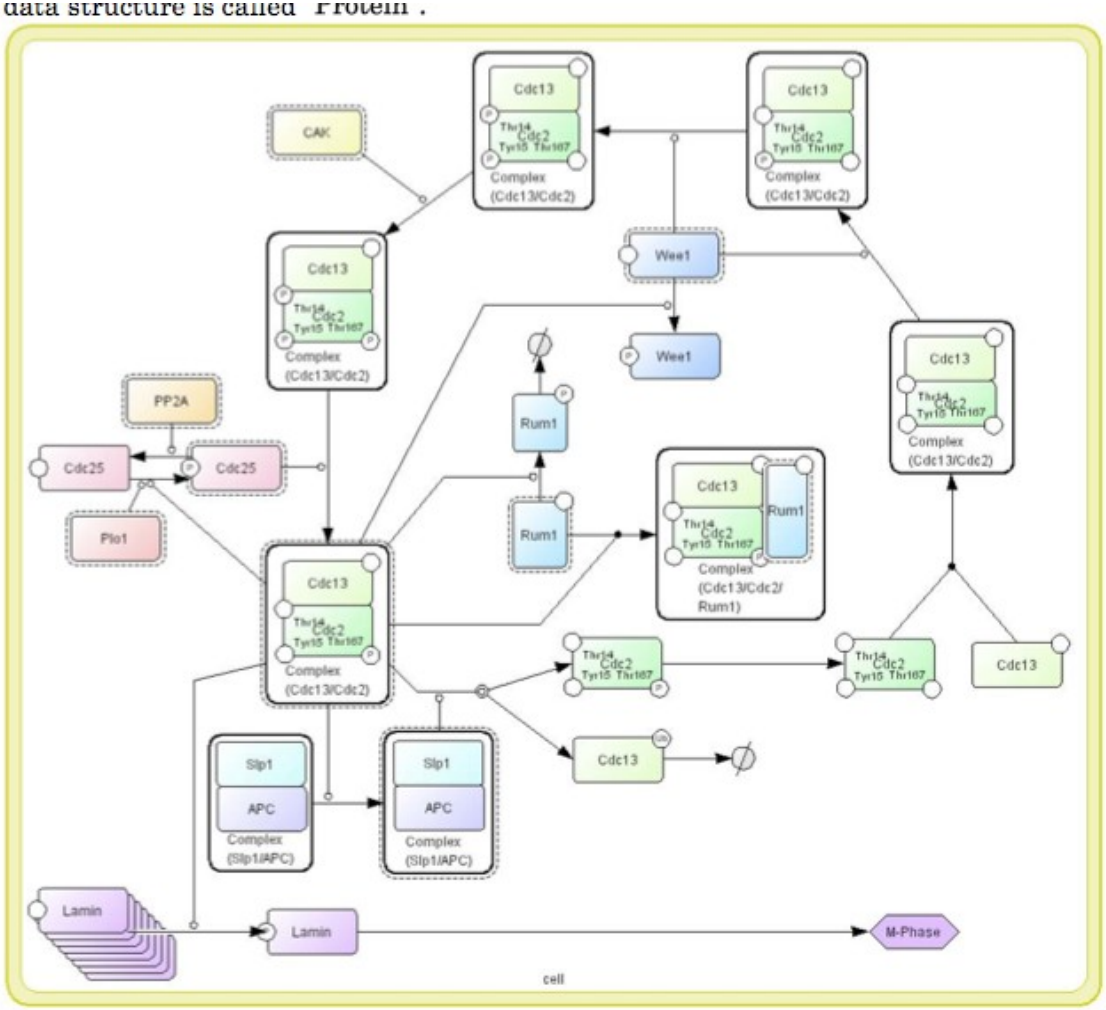



Cross-platform,
Open source,
C/C++, Qt, Python,
SBML?

tinkercell.com

# Metabolic and Protein Networks CellDesigner

Cross-platform
Works with SBW, Java, SBML




http://celldesigner.org