

SBGN Activity Flow

SBGN-4

Oct. 16th-17th, 2008

Rostock, Germany

What is activity flow diagram

- A connection map between entities that displays the flow of activity.
- Ignores entity states and processes
- Widely used in research papers and textbooks.

Why activity flow in SBGN

- Survey to our curators in 2004.
 - Question: If you are a customer using our pathway website, how would you like the diagrams to be displayed.
 - 12 out of 13 said that they liked the way CellDesigner captured data, but would like to use a “reduced” diagram to display the results.
- PharmGKB
- Gene expression analysis
- Biology journals

AF for viewing only

- Activity flow is only for viewing purpose.
- PD or ER should be used to edit or curate the pathways.
- Rules should be defined to convert PD or ER to AF.

Hybrid diagram

- Do we allow hybrid diagram if rules can't be defined for the automatic conversion?
- AF hybrid with PD?
- AF hybrid with ER?

User define rules?

- Can user draw both PD and AF, and specify which part of the PD correspond to AF?

User generate AF diagram?



- AF is not a reduced view of PD or ER
- AF can be generated from PD or ER.
- Users should be allowed to create AF diagram.

- Nodes in AF do not represent entity pool, but activity.
- Edges
- Each node represents one activity.

Proposal I

Positive
influence



Negative
influence



Proposal I

Proposal II

Positive
influence



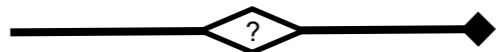
Negative
influence



Unknown
influence



Unknown



Proposal I

Proposal II

Positive
influence



Negative
influence



Unknown
influence



Unknown



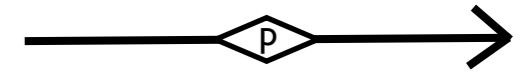
Better terms
for these?

Proposal I

Proposal II

Proposal III

Positive
influence



Negative
influence



Unknown
influence



Unknown



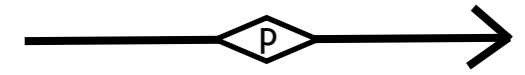
Better terms
for these?

Proposal I

Proposal II

Proposal III

Positive influence



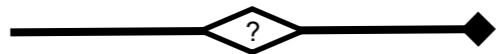
Negative influence



Unknown influence



Unknown



Better terms for these?

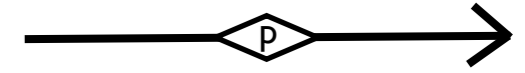
These notations are used in (stimulation and inhibition)

Proposal I

Proposal II

Proposal III

Positive
influence



Negative
influence



Unknown
influence



Unknown



Better terms
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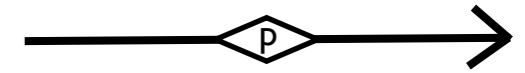
Only the protein
state is considered

Proposal I

Proposal II

Proposal III

Positive
influence



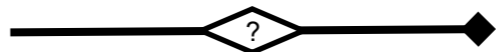
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influence



Unknown
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Better terms
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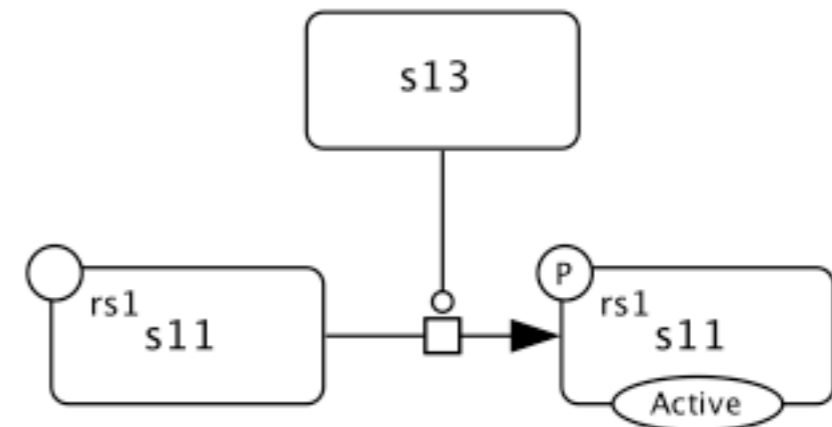
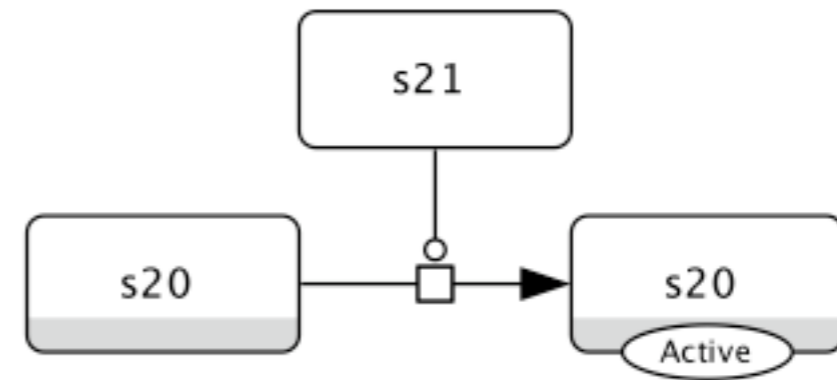
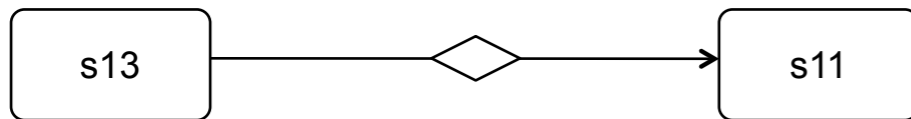
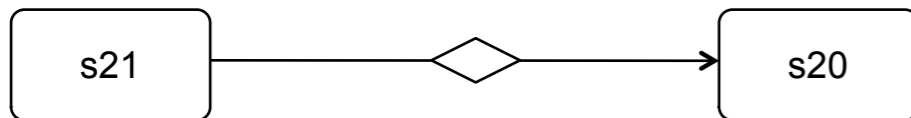
Only the protein
state is considered

Both states and
modifications are
displayed

Activation

-Rule I

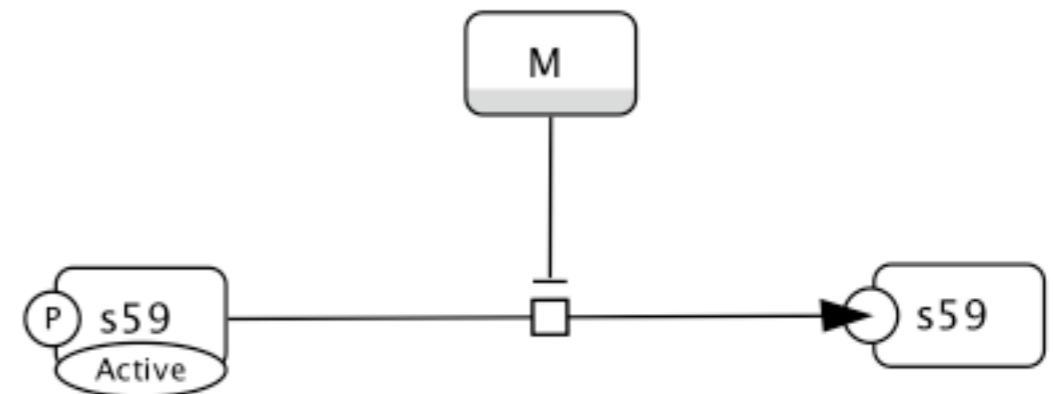
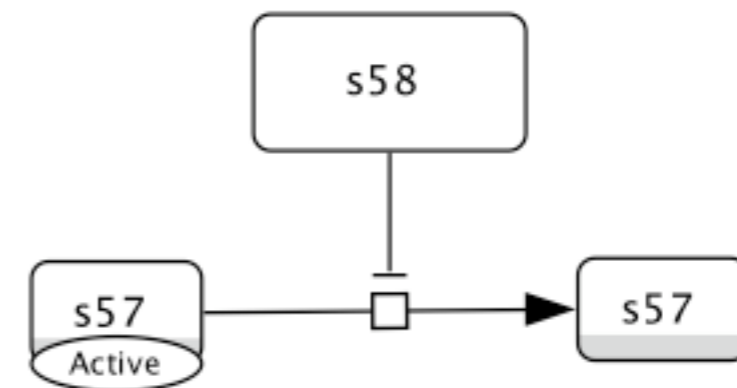
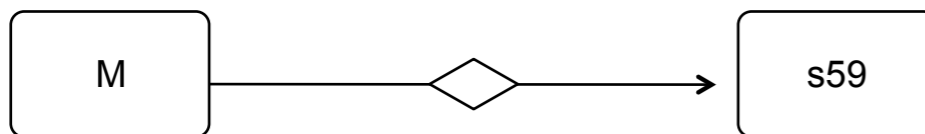
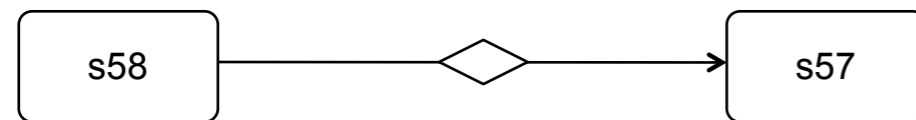
- If reactant is inactive, and product is active, and the modification is catalysis, stimulation, modulation, use activation.
State and modification will not be illustrated in activity flow diagram



Activation

-Rule 2

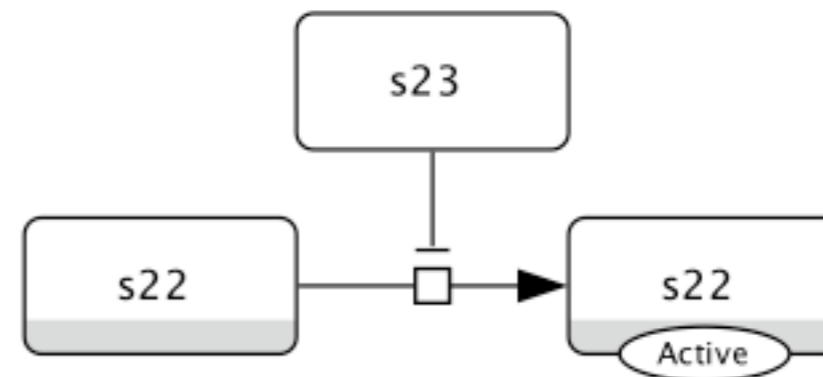
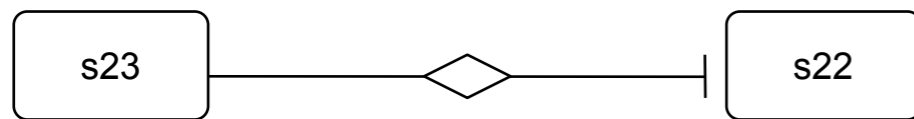
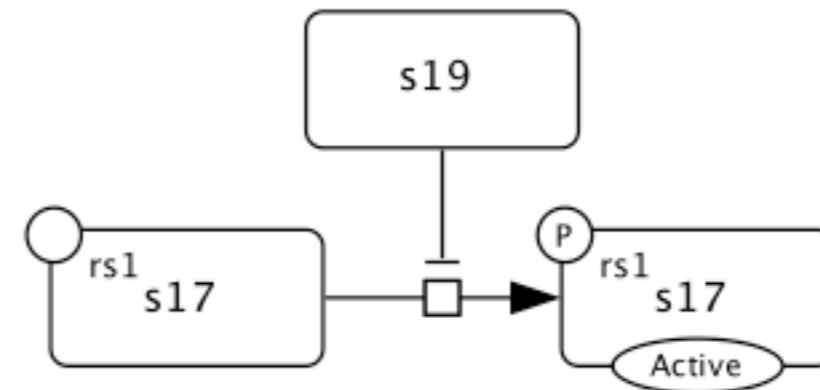
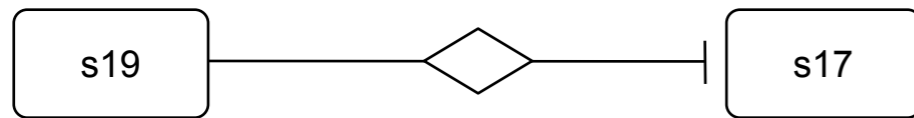
- If the reactant is active, the product is inactive, and the modification is inhibition, use activation.
State and modification will not be illustrated in activity flow diagram



Inactivation

-Rule I

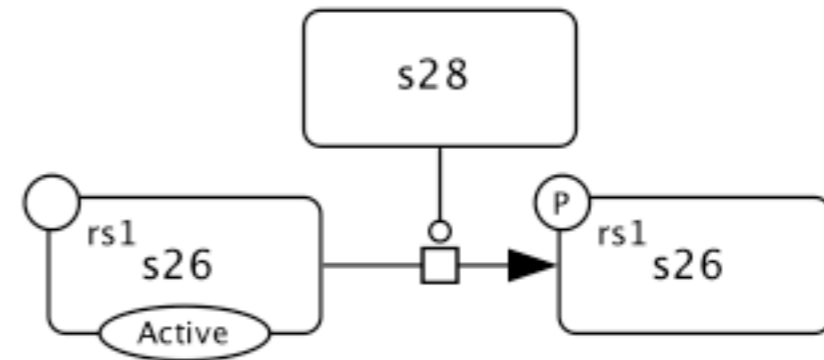
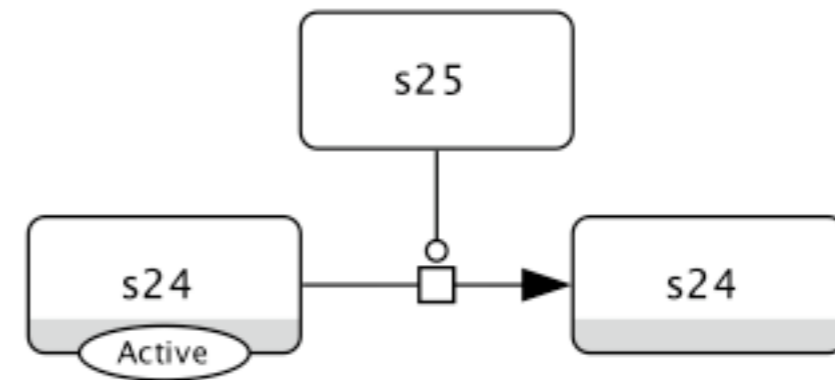
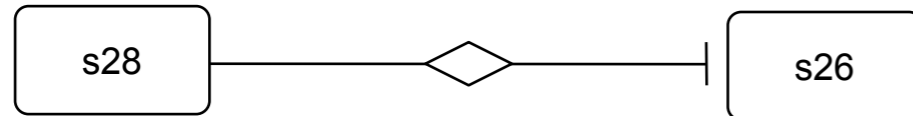
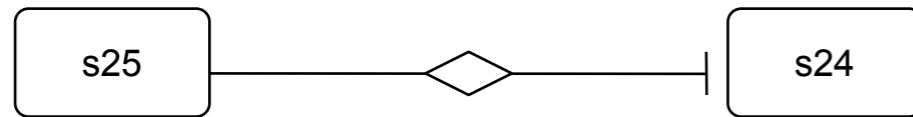
- If reactant is inactive, the product is active, and modification is inhibition, use inhibition State and modification will not be illustrated



Inactivation

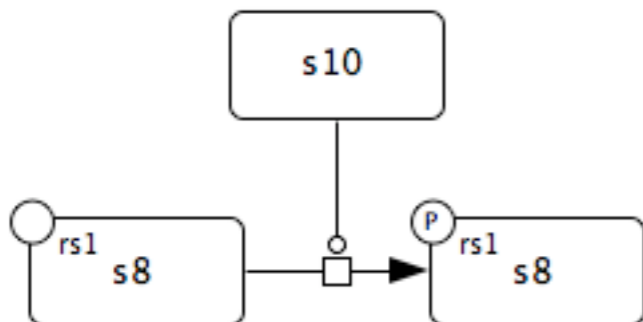
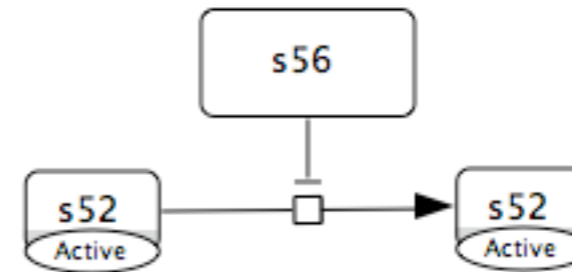
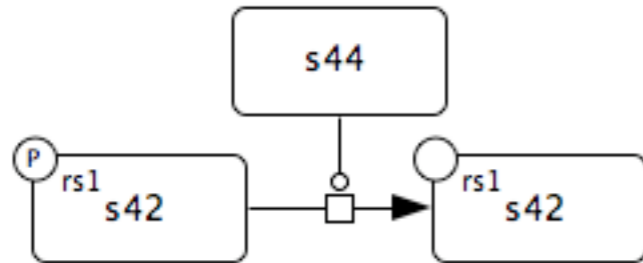
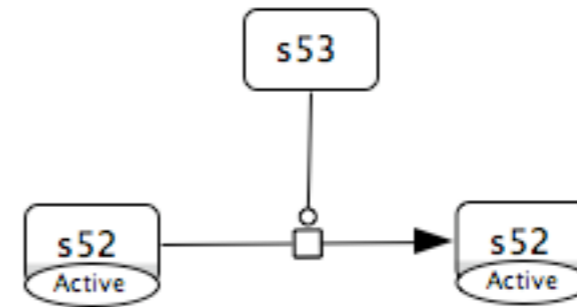
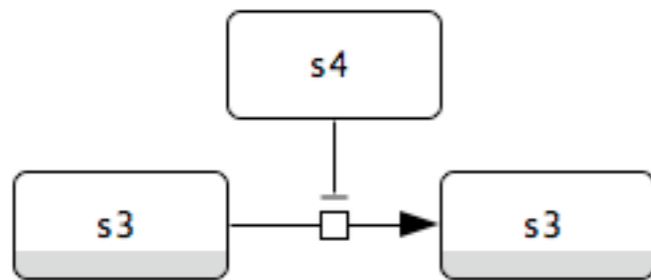
-Rule 2

- If the reactant is active, product is inactive, and the modification is catalysis, modulation or stimulation, use inhibition. State and modification will not be illustrated.



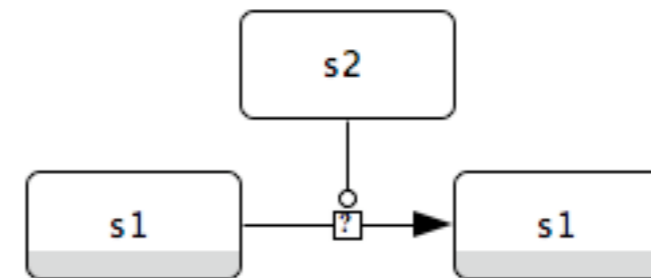
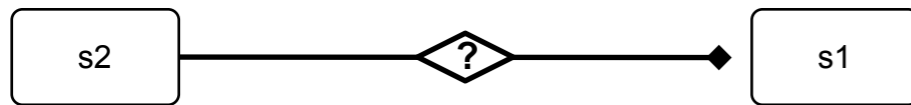
Neutral

- If reactant and product have the same active state, use neutral. State and modification will be not illustrated in activity flow diagram.



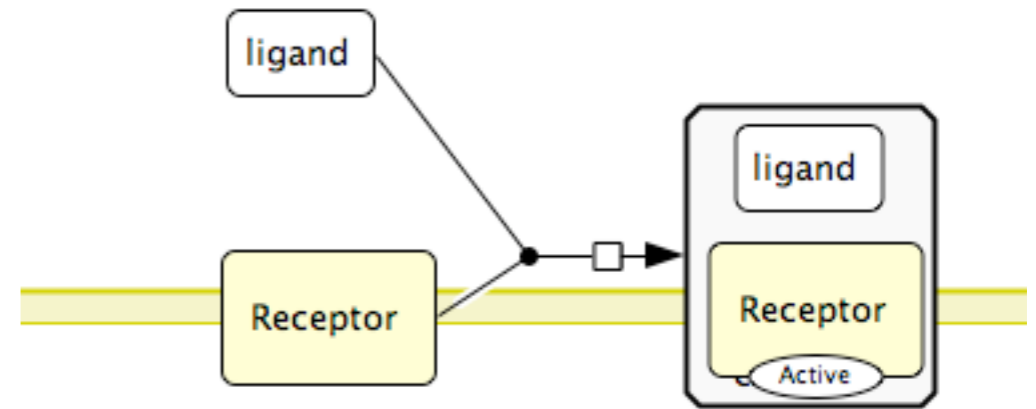
Unknown

- If transition is unknown in PD, use unknown. State and modification will not be illustrated.



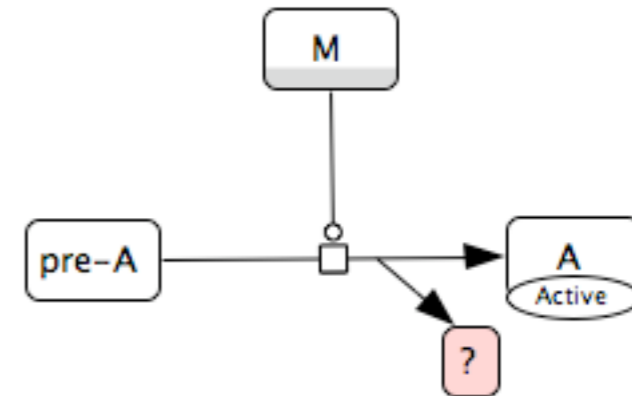
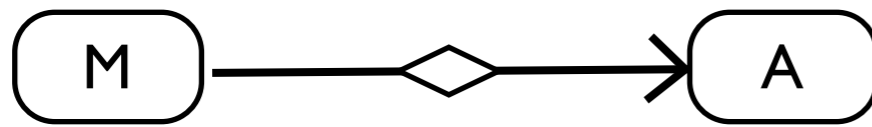
Special cases

- Receptor binding



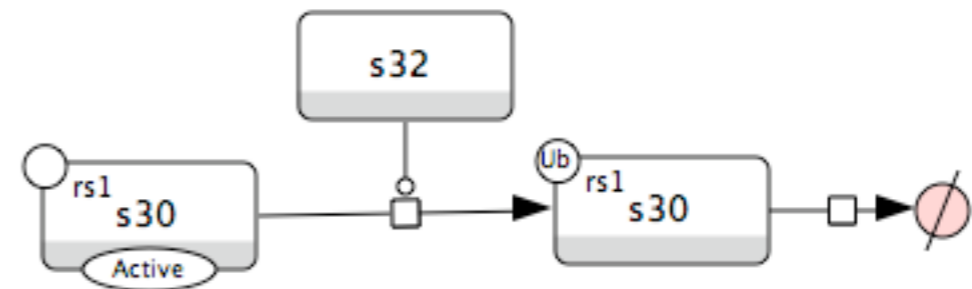
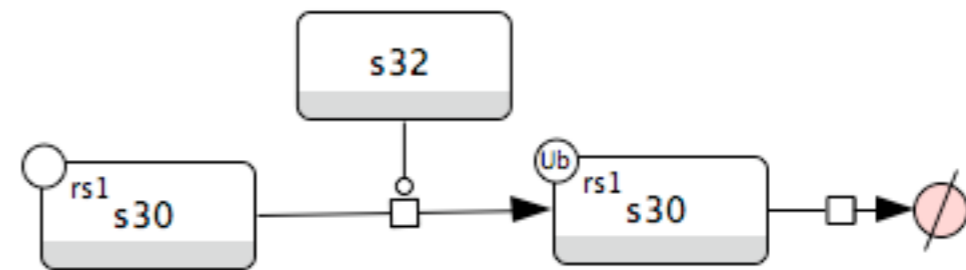
Special cases

-Proteolysis



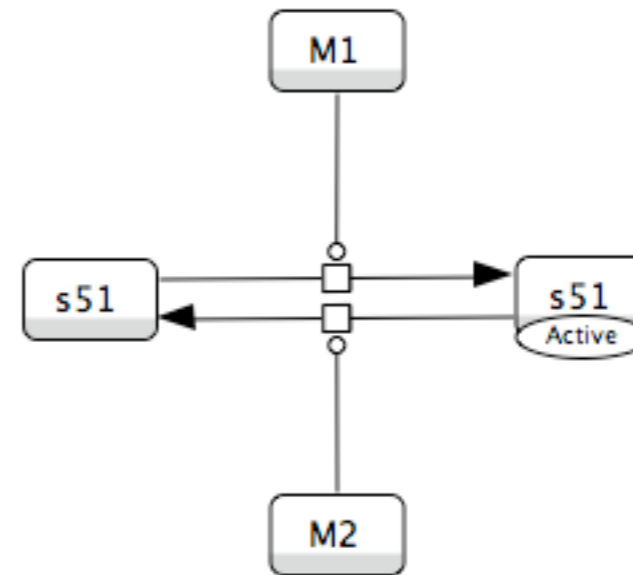
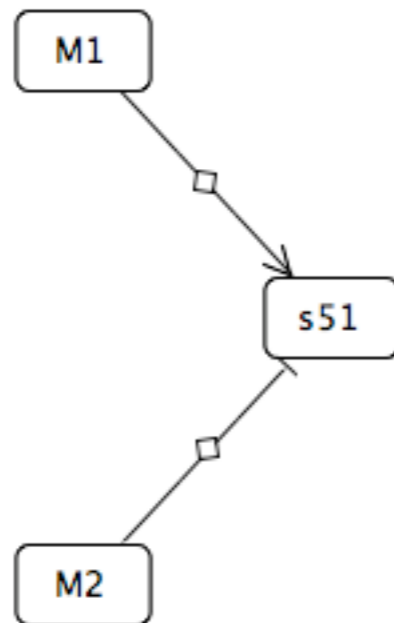
Special cases

-Degradation by ubiquitination



Special cases

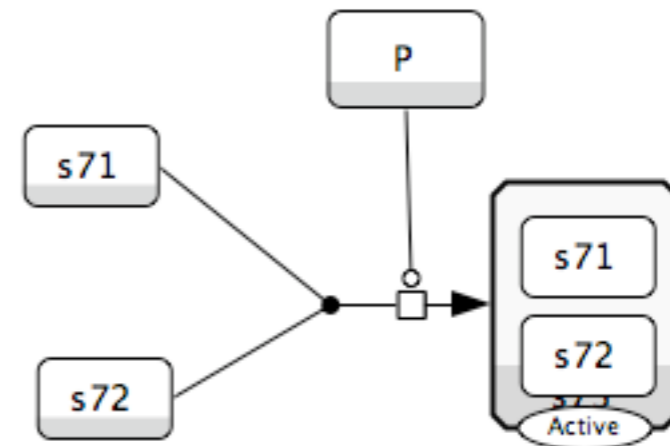
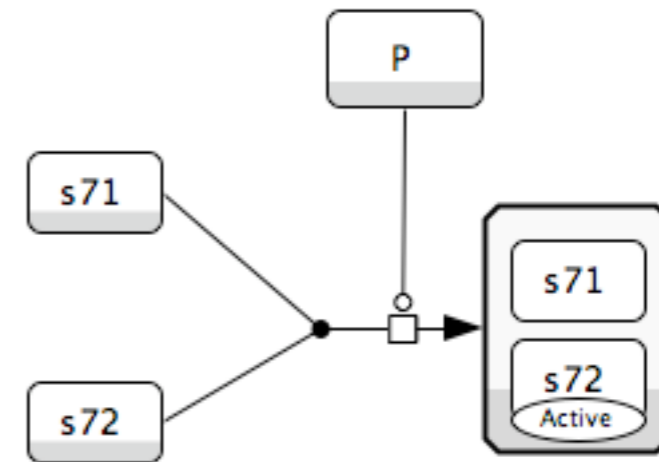
-Bidirectional reactions



Special cases

- Complex formation

Use logic gate



Special cases

-Sequential reaction

Use logic gate

