Generics and Identity gate

Generics

- Incomplete and partially defined pools
- Group of molecules

- Inconsistencies of the knowledge
- Combinatorial binding
- Polymers

Generics

- **Truly Generic Participants**:
  These are groupings of participants that are formed often through polymerization or random aberrations. Their instances can not be (feasibly) enumerated.
- **Name**: Glycogen

Emek Demir. http://archive.biopaxwiki.org/GenericParticipants

Generics

- **Homologies**:
  These are groupings of similar molecules, often belonging to different but evolutionarily homologous entities.
- Name: ErbB receptor

Emek Demir. http://archive.biopaxwiki.org/GenericParticipants

Generics

- **Analogies**:
- Name: **dNTP**
- **Semi-quantitative Modifications**
  These participants have multiple phosphorlyation sites, often found as repeats, to provide a quantitative measure

- **Sufficient Modifications**
  For these participants to participate in a reaction, a certain number of variables are sufficient.

Emek Demir. http://archive.biopaxwiki.org/GenericParticipants

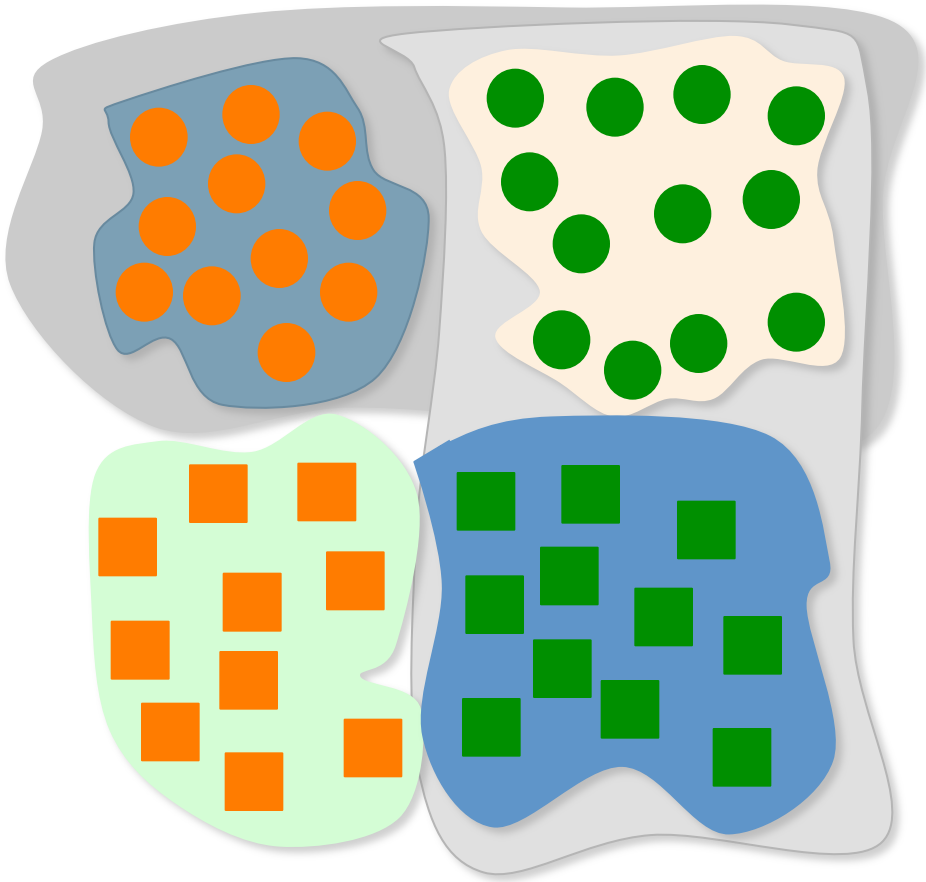
Generics

- **Generic Complexes**
  Generic participants can form complexes in such a manner that they create combinatorially many species, even though species of participants themselves can feasibly be enumerated.

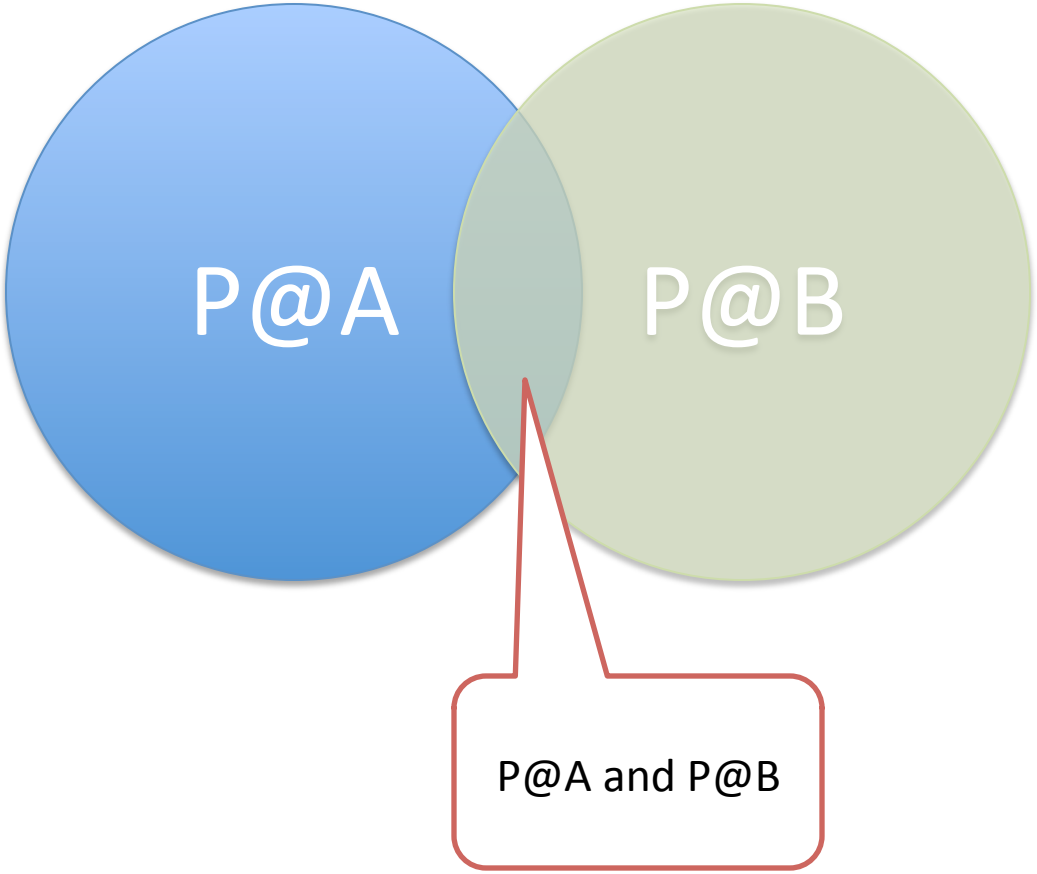
Emek Demir. http://archive.biopaxwiki.org/GenericParticipants

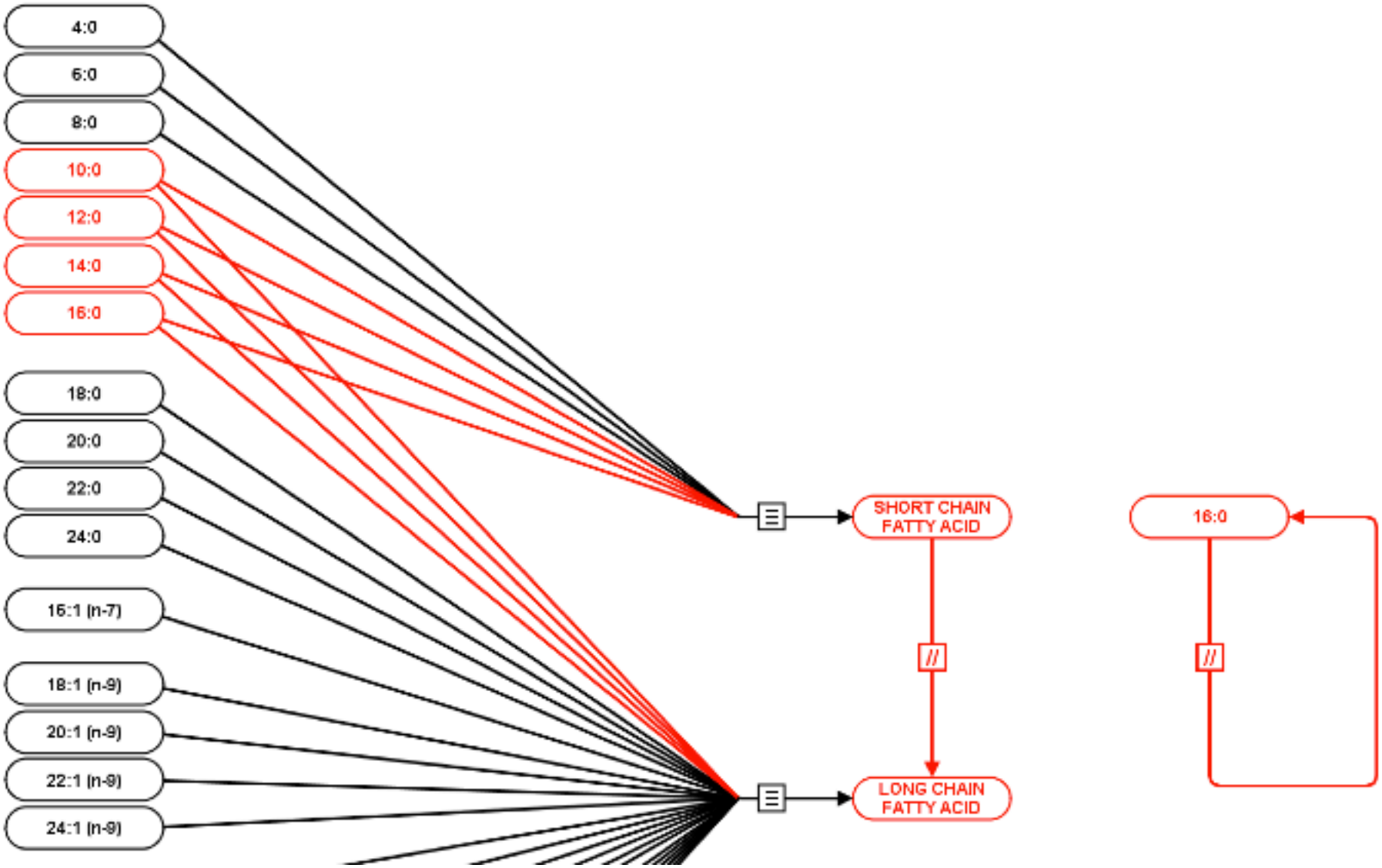
Pools of entities

- Collection of molecules indistinguishable in some sense
- Non-overlapping
- Characterized by concentration



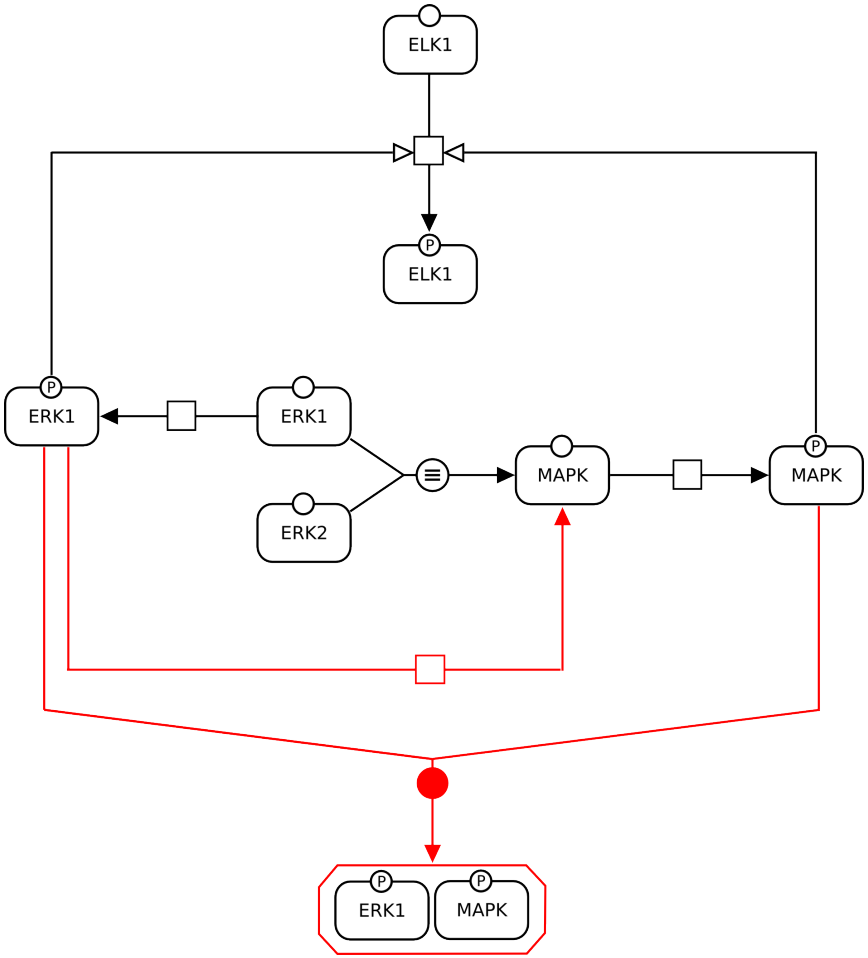
Overlapping pools





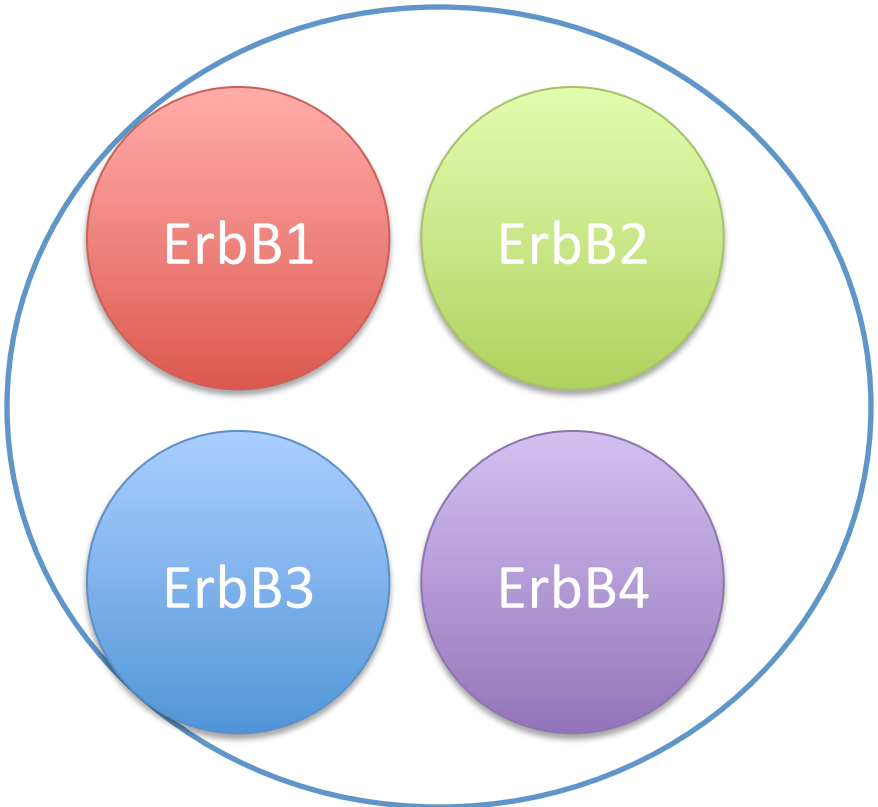
A. Mazein COMBINE 2011

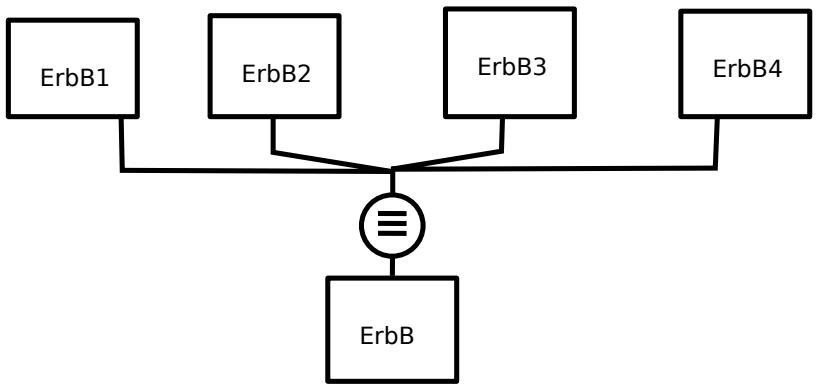
Overlapping pools



Generics

- Some types of generics could be treated by containment
  - Homologies, analogies, some Sufficient Modifications



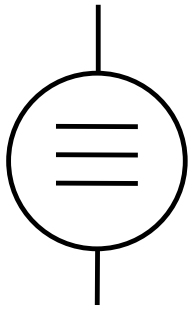


Identity gate

- Proposed semantics

"Identity gate defines containment relationship between set of specific pools and generic pool"

- Allow nesting containment
- Each specific pool could belong to the only one branch of the tree

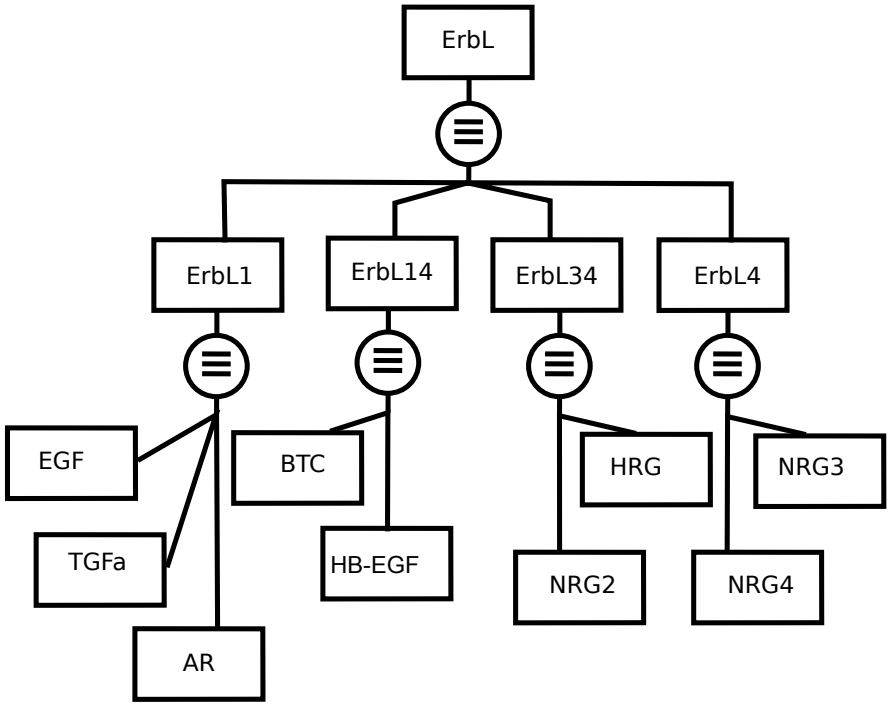


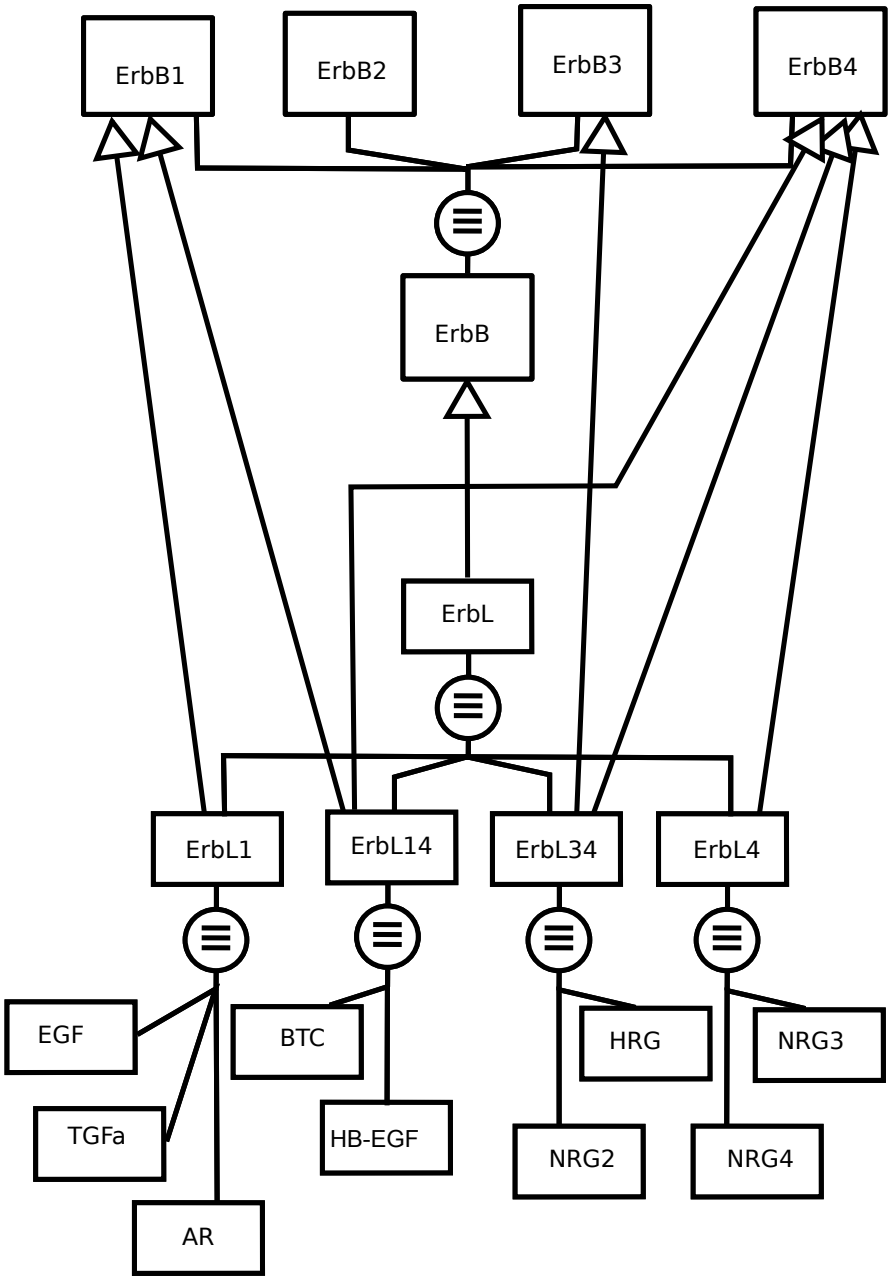
Containment

- Containment is similar to
  - Species in different compartments
  - Name prefixes “ErbB” in specific name
- Containment keeps track of containing species
- Useful for combinatorics
- Does not require clone marker
- Could be validated by analysis of the paths in the graph

Identity gate

- We going to deal with
  - Homologies
  - Generic Complexes
- Identity gate

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ErbB4
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ErbL
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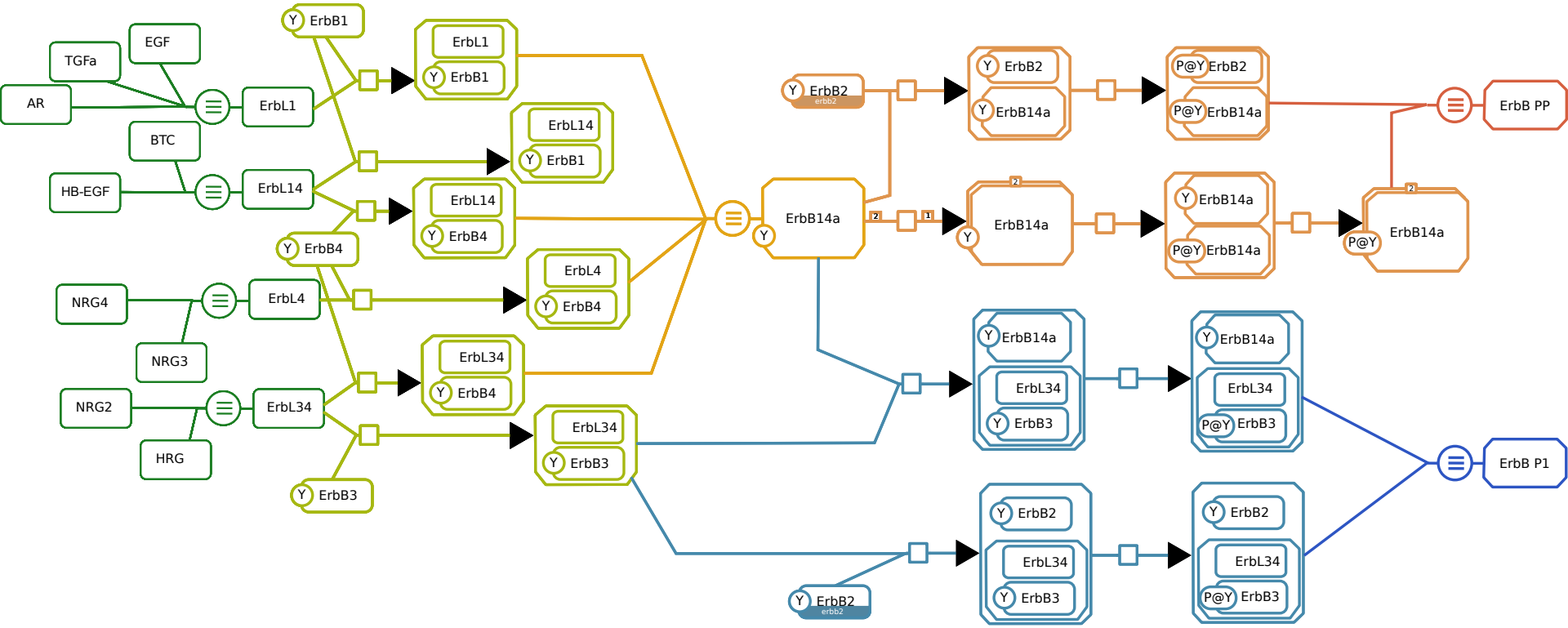
AR
BTC
HB-EGF
HRG
NRG2
NRG3
NRG4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ErbB1
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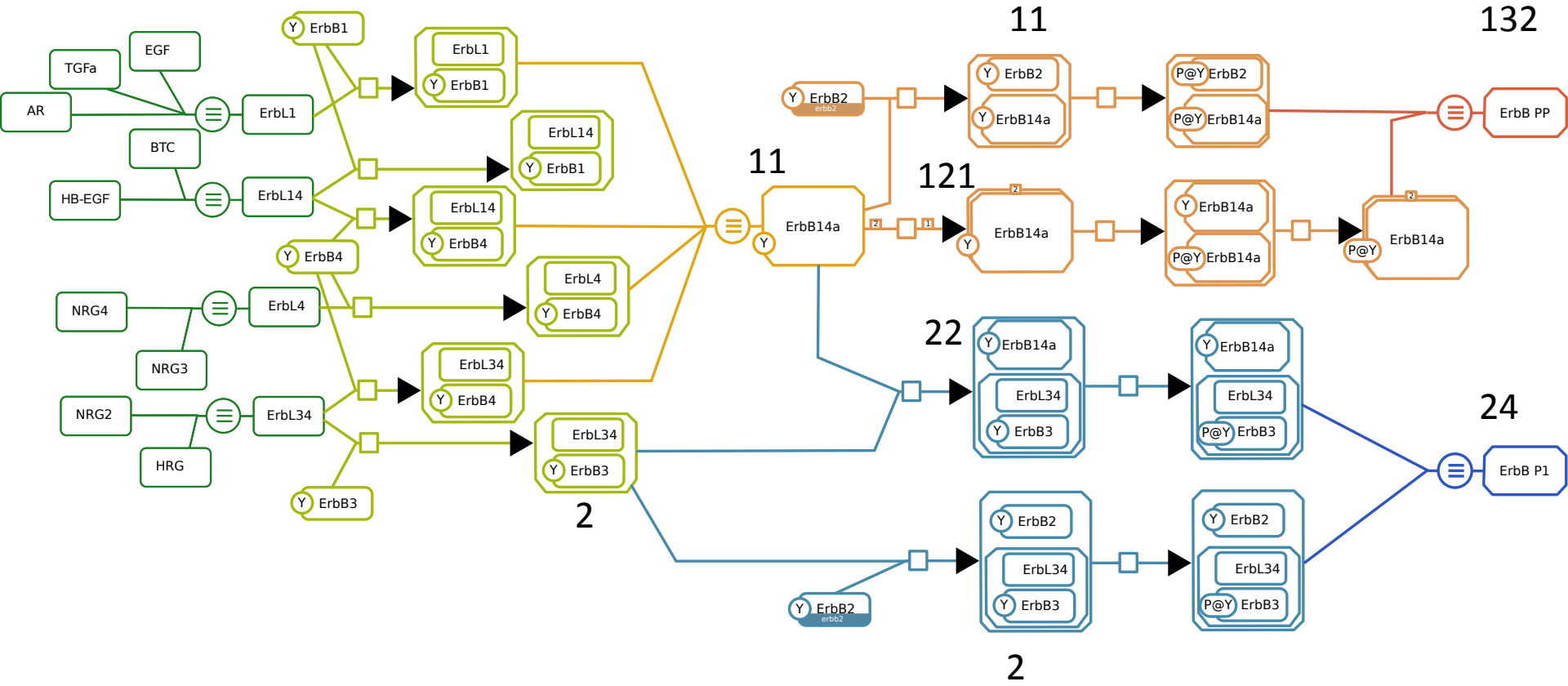
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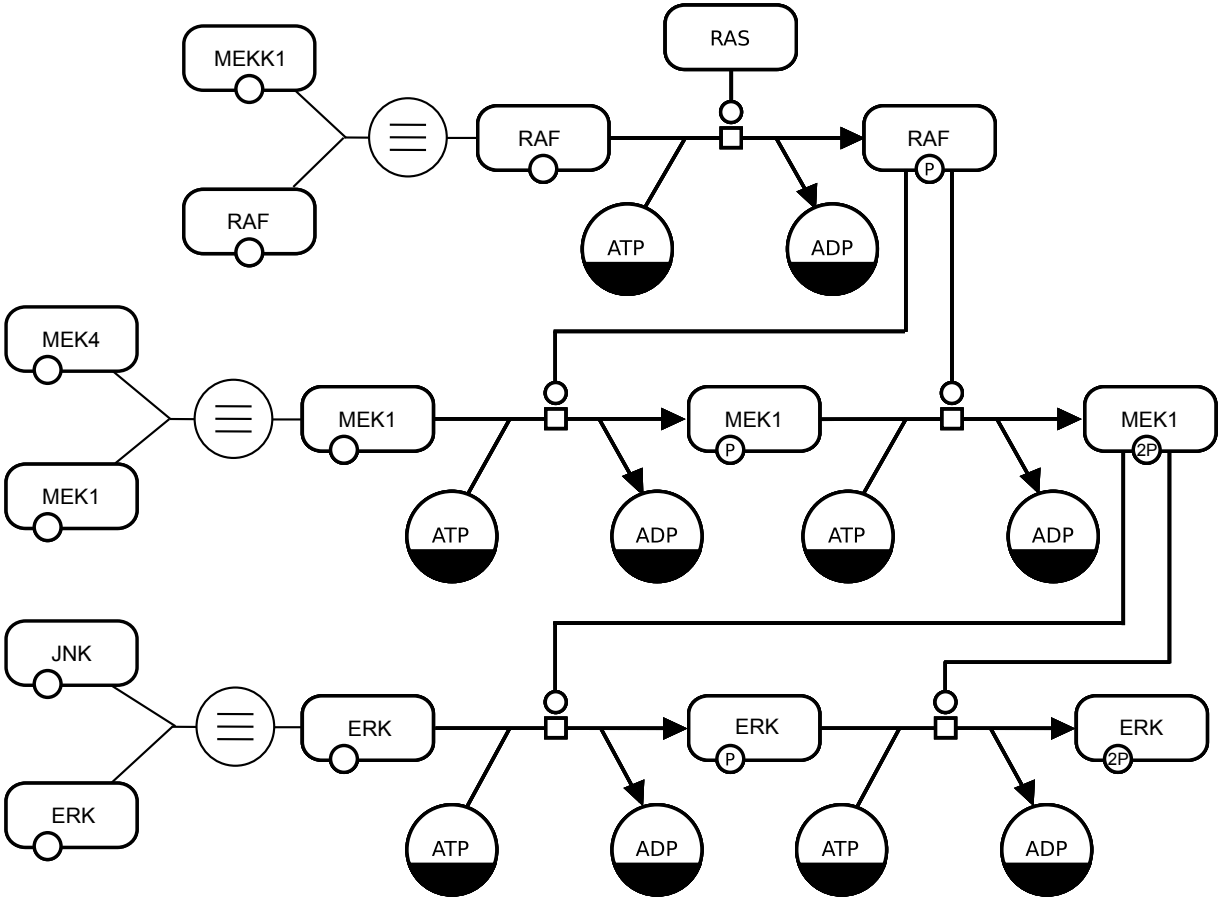
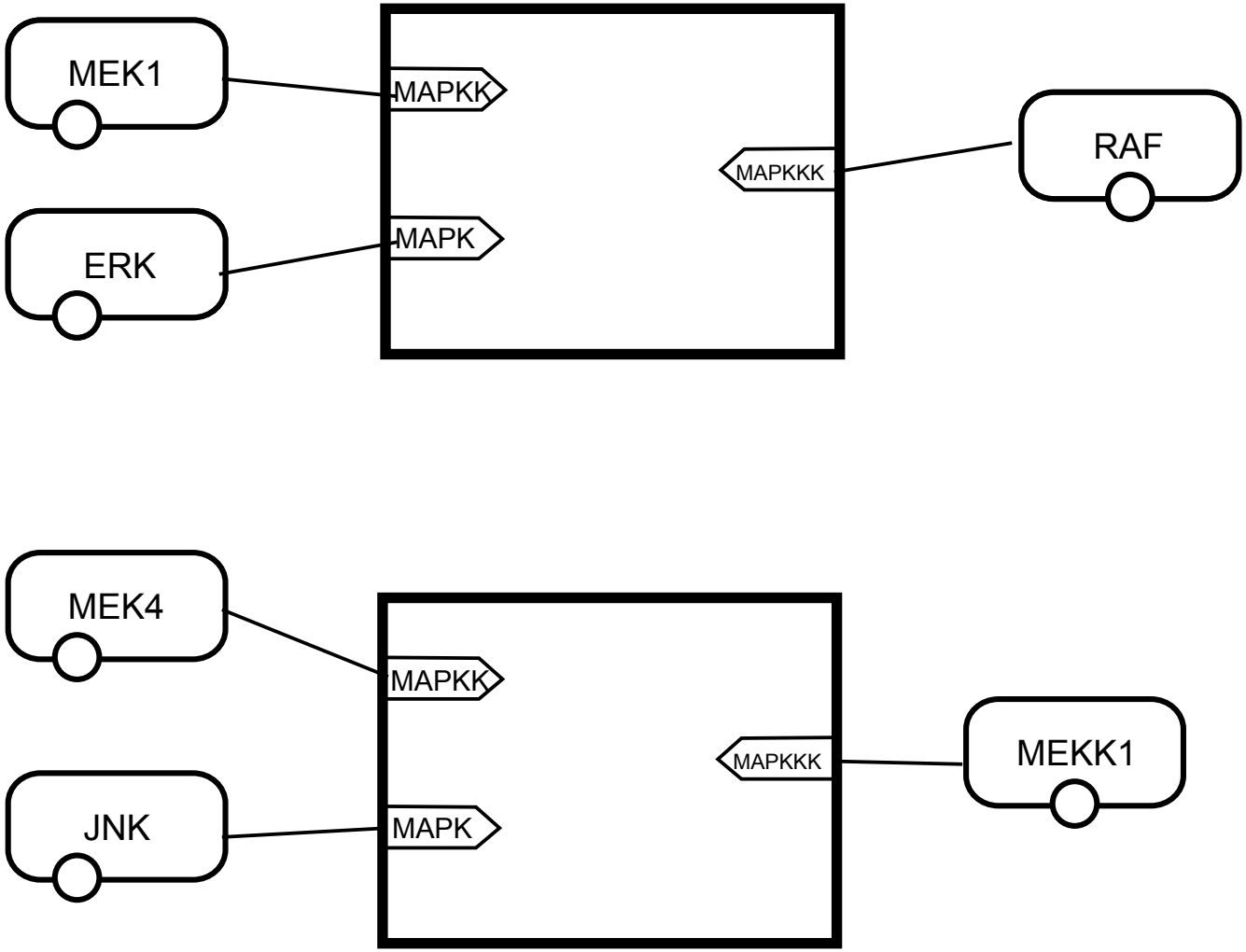
Module type generics

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MAPKK
MAPK
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MAPKK
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