combine-announce@mbine.org

Subscribers are the general forums of the different participating COMBINE formats and associated efforts

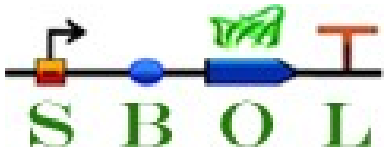
combine-discuss@mbine.org

Open to all. To discuss “what”, “when”, “how” about COMBINE

combine-support@mbine.org

To report problems with co.mbine.org

What is common to all those formats?



PSI-MI

FieldML

NuML

Representation formats

for systems to systems communication

What about systems to users?

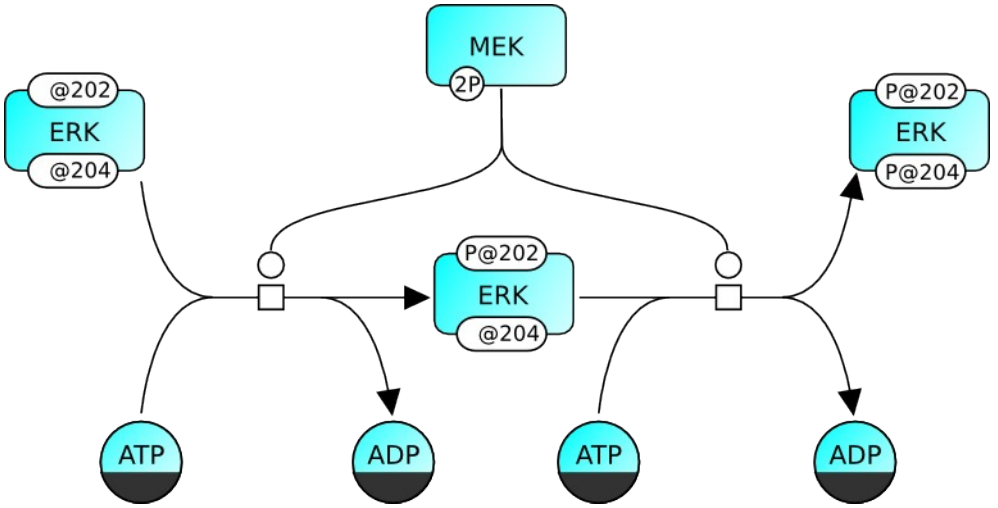
Systems Biology Graphical Notation

- An unambiguous way of graphically describing and interpreting biochemical and cellular events
- Limited amount of symbols
  Re-use existing symbols
  ☞ Smooth learning curve
- Can represent logical or mechanistic models, biochemical pathways, at different levels of granularity
- Detailed technical specification, precise data-models and growing software support
- Developed over four years by a diverse community, including biologists, modellers, computer scientists etc.

Le Novère et al (2009) *Nat Biotechnol*, 27: 735-741

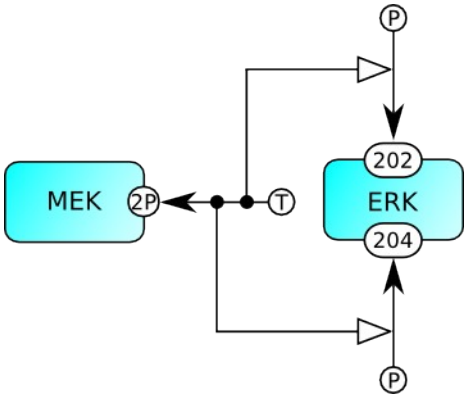
Graph trinity: three languages in one notation

Process Descriptions



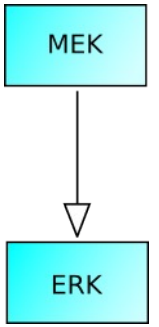
- Unambiguous
- Mechanistic
- Sequential
- Combinatorial explosion

Entity Relationships



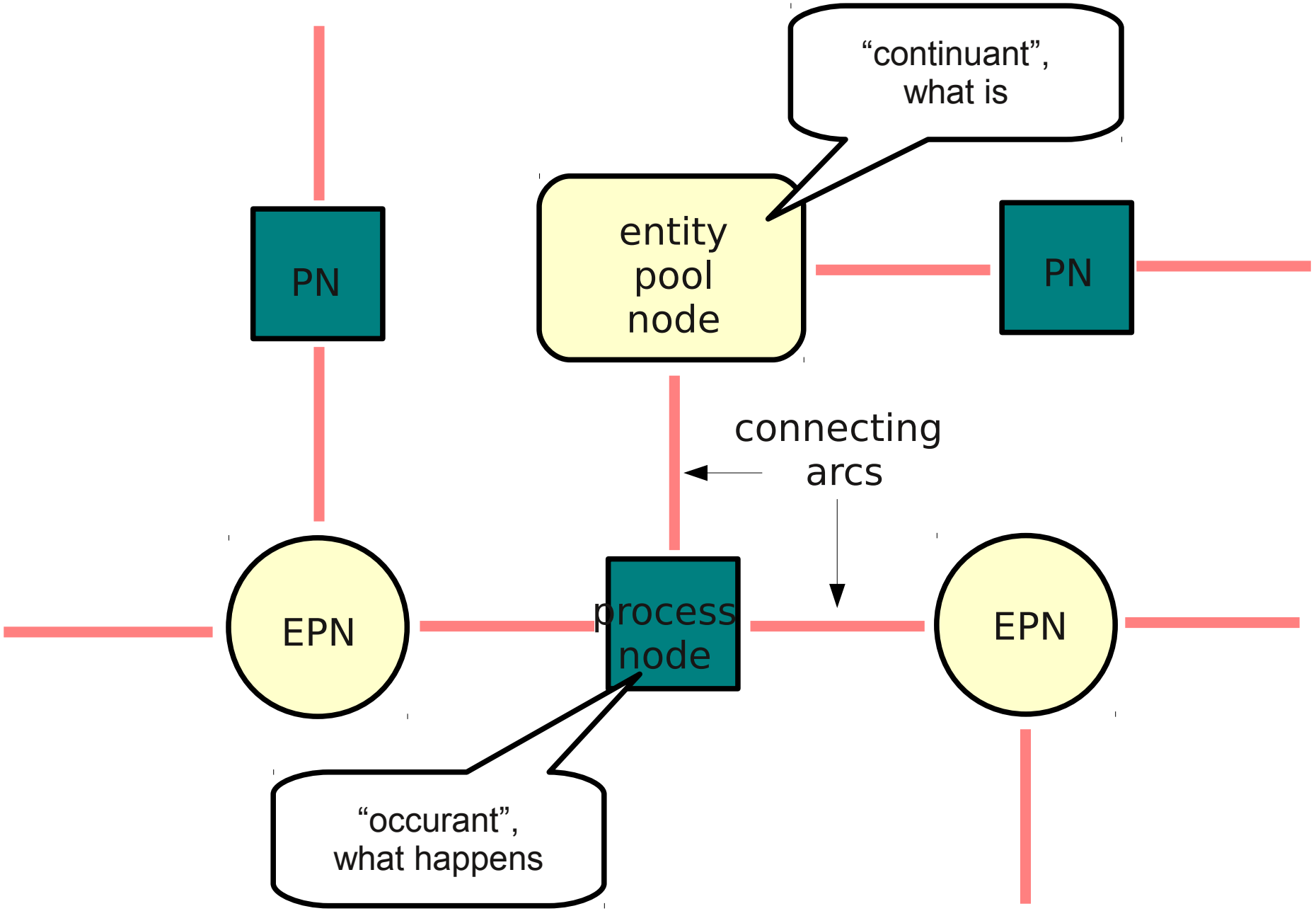
- Unambiguous
- Mechanistic
- Non-sequential
- Independence of relationships

Activity Flows

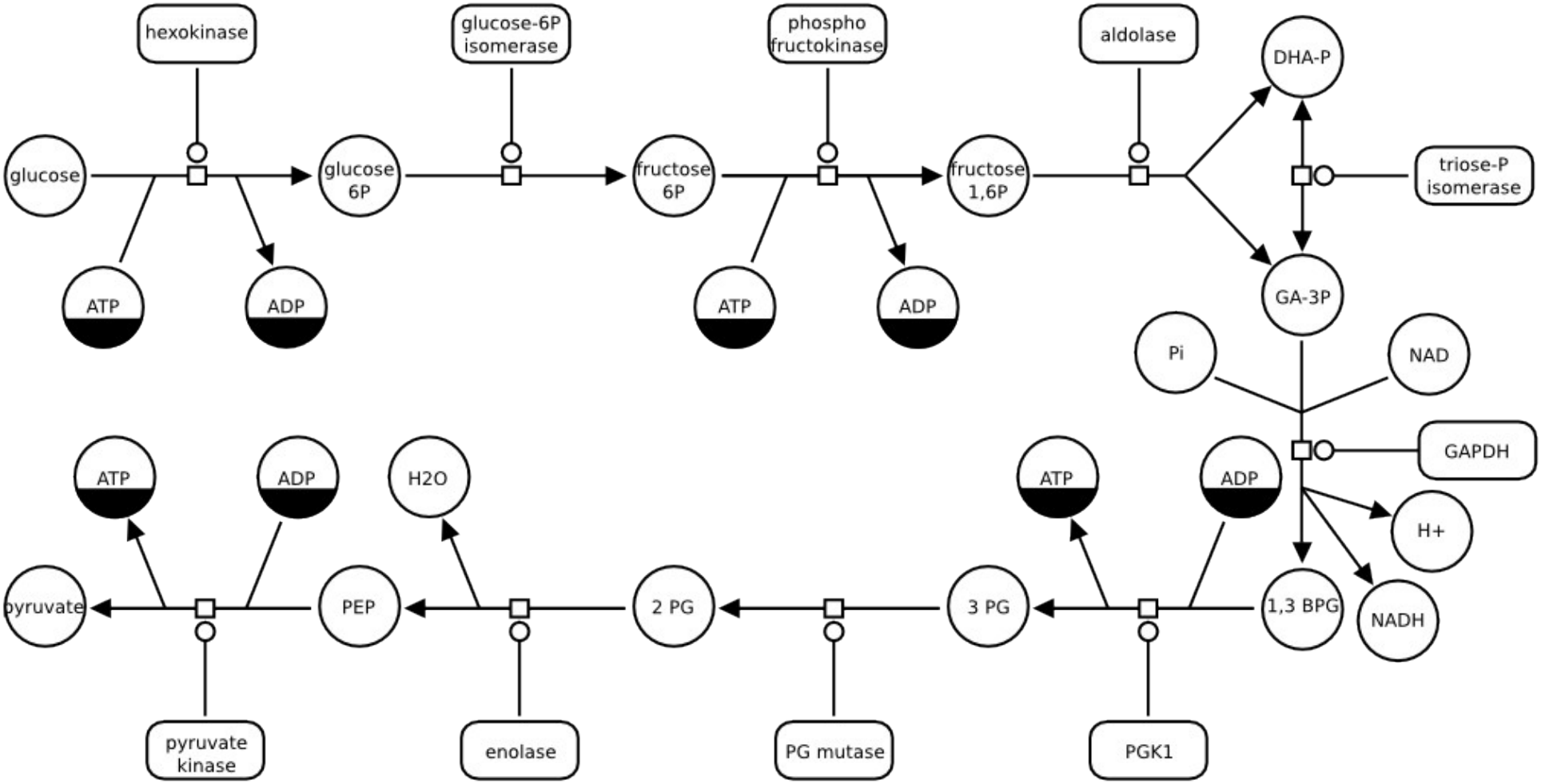


- Ambiguous
- Conceptual
- Sequential

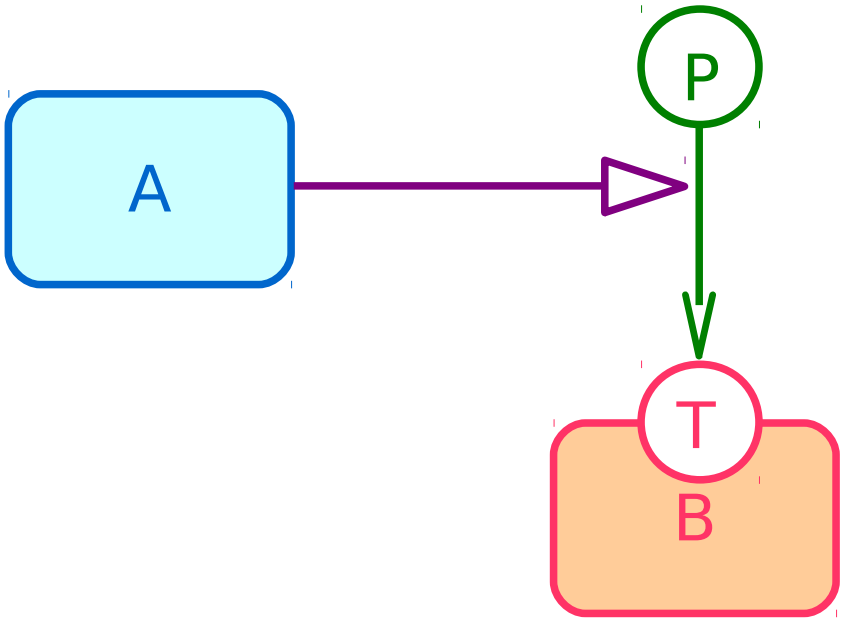
Process Descriptions are bipartite graphs



Metabolic network in Process Description Language



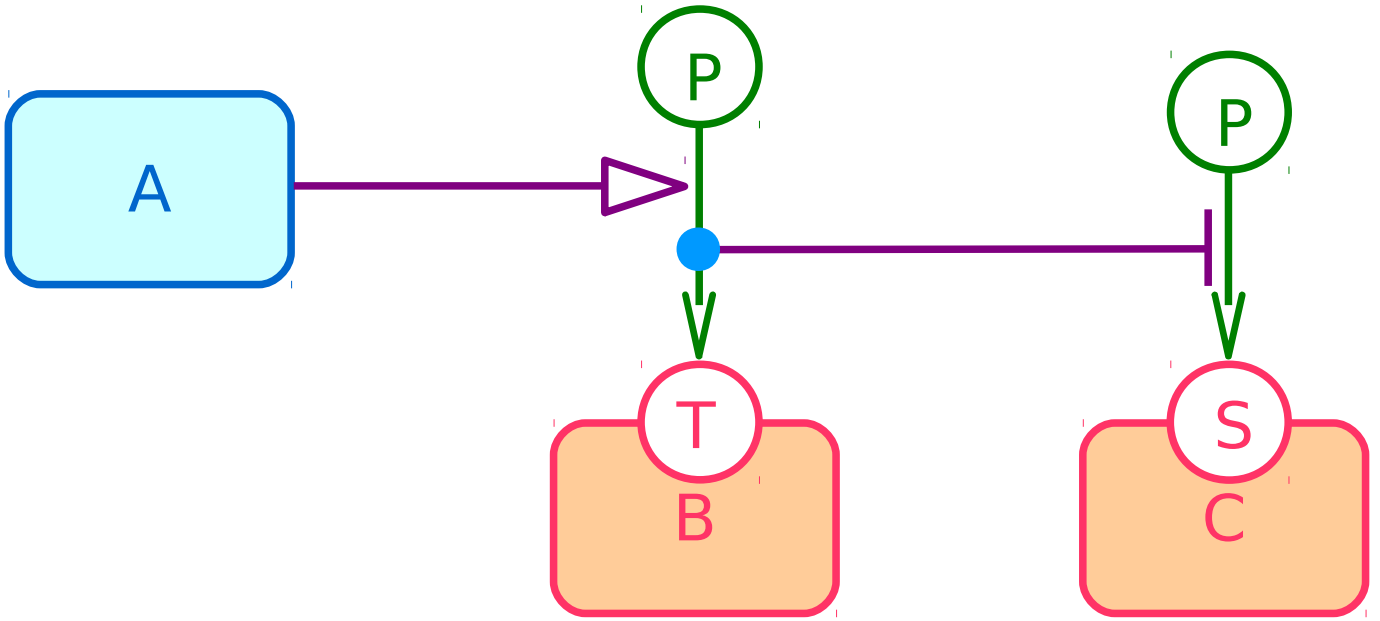
Entity Relationships can be viewed as rules



If A exists, the assignment of the value P to the state variable T of B is increased

(A stimulates the phosphorylation of B on the threonine)

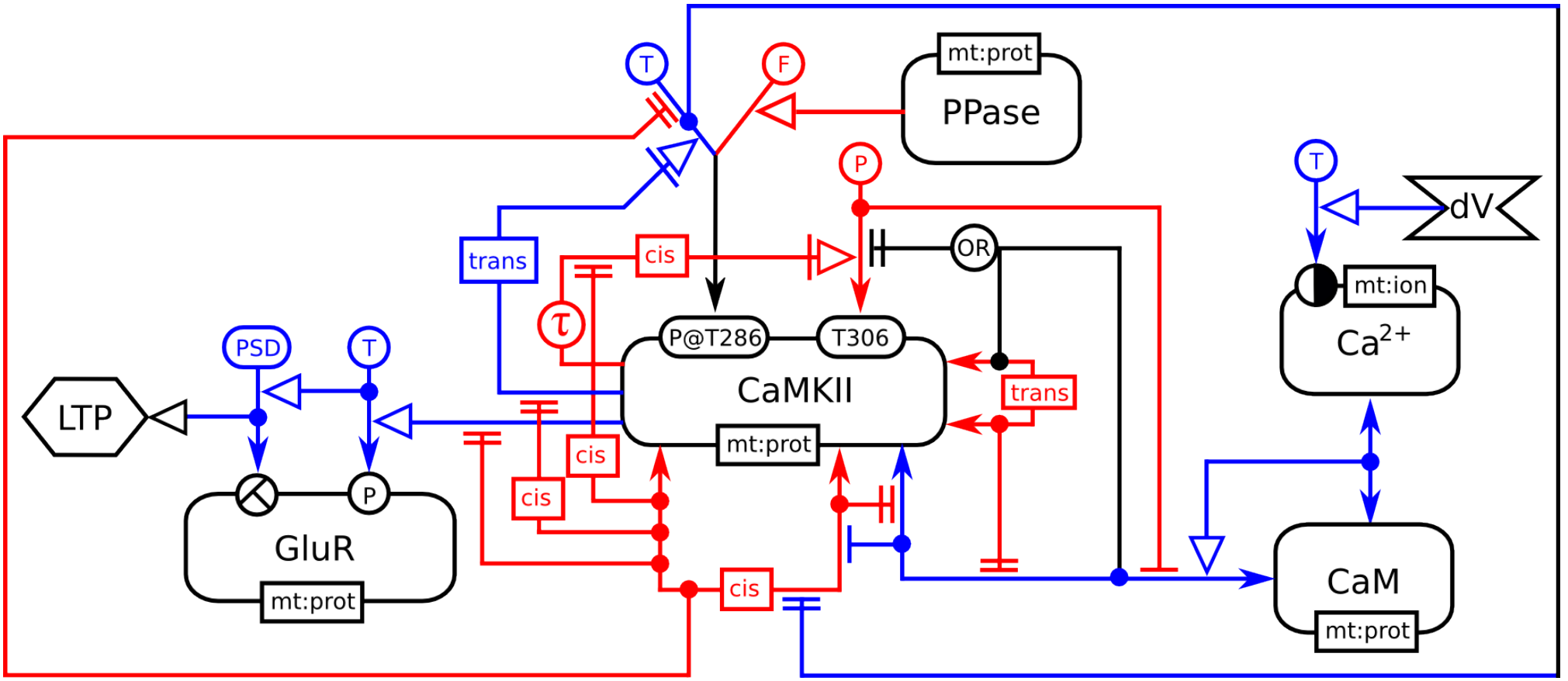
Entity Relationships can be viewed as rules



If A exists, the assignment of the value P to the state variable T of B is increased

If P is assigned to the state variable T of B, the assignment of the value P to the state variable S of B is decreased

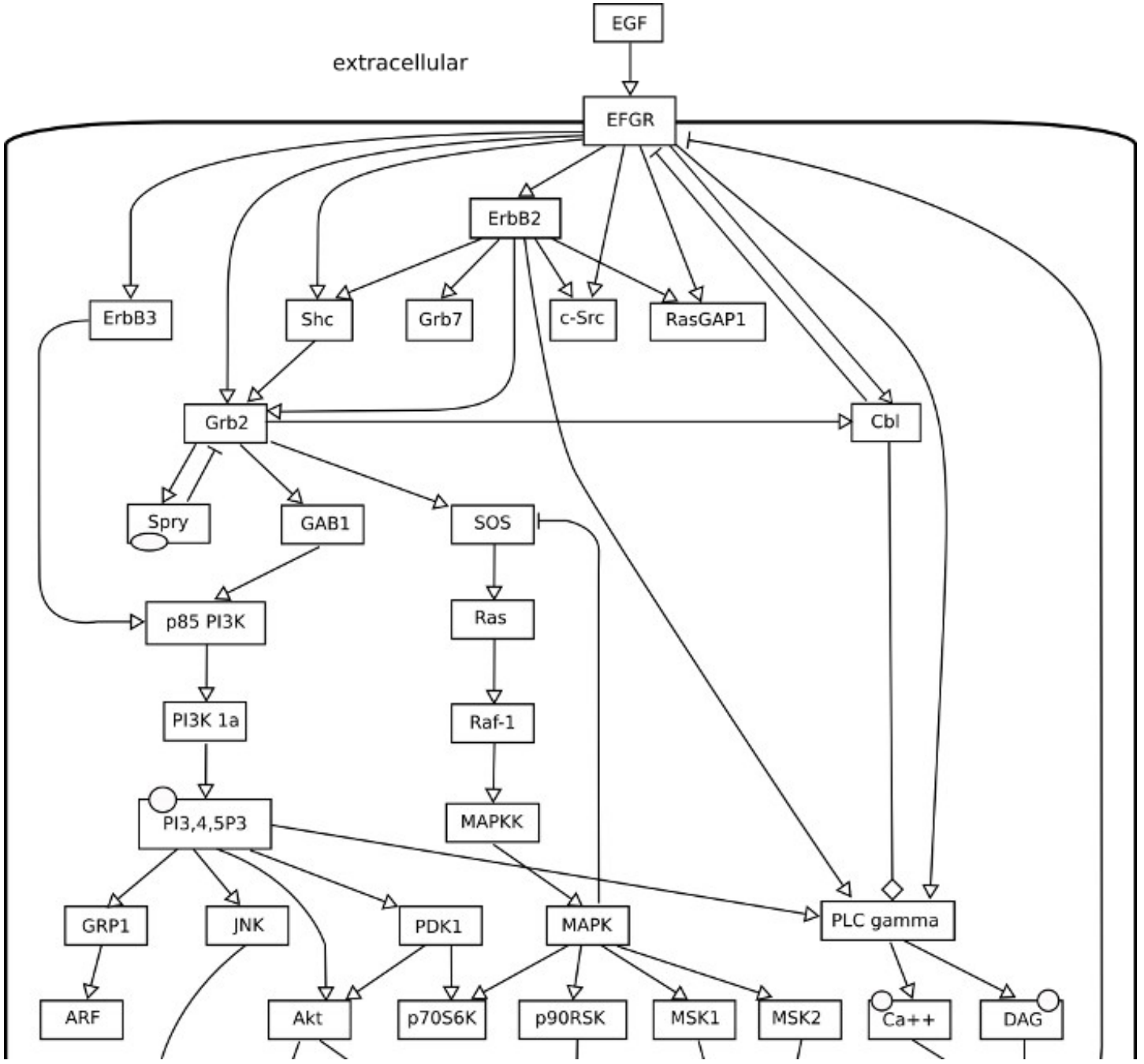
ER map of calcium-regulated synaptic plasticity



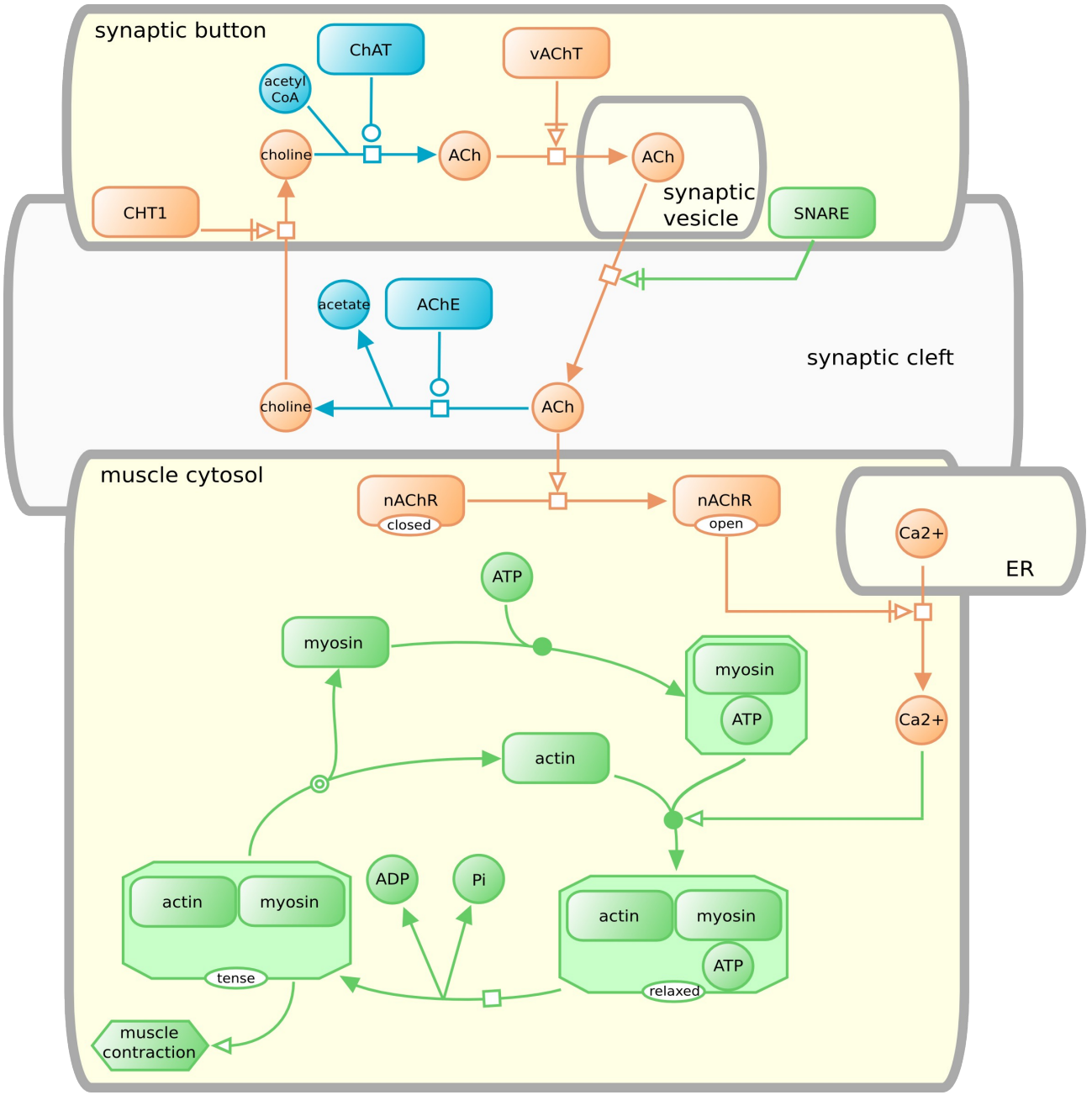
increases synaptic weight

decreases synaptic weight

Example of Activity Flow map



Linking SBGN maps to external information

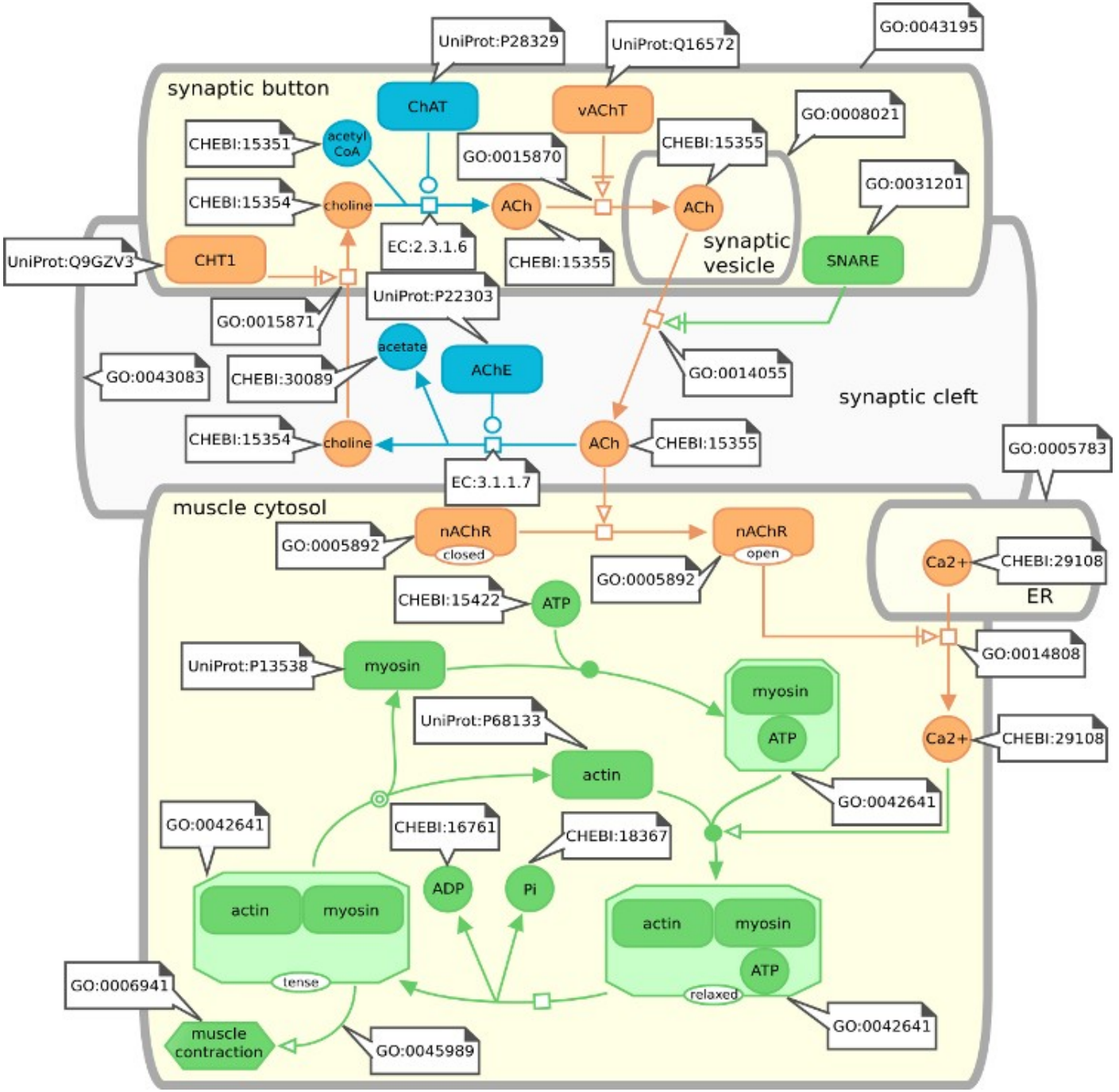


catalytic processes

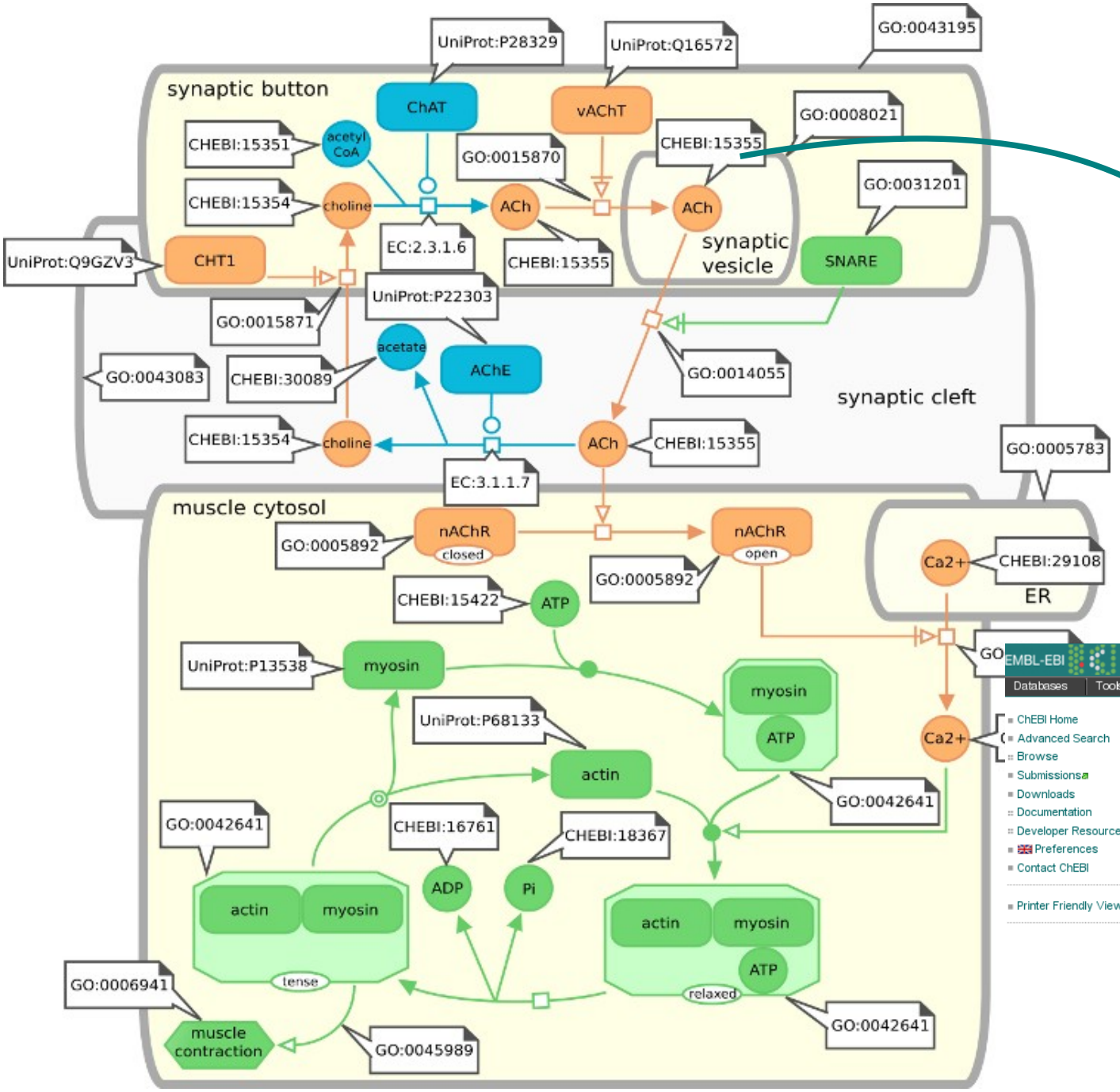
transport processes

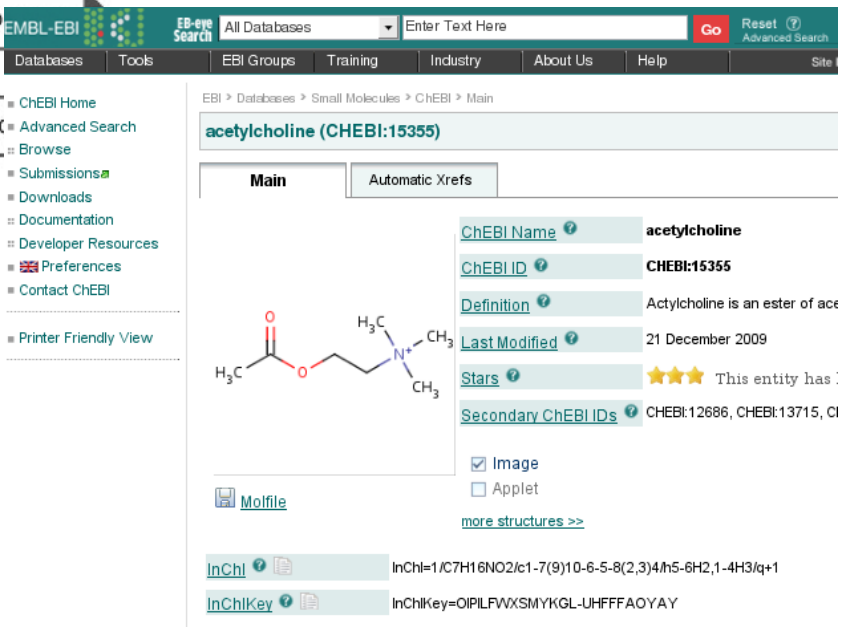
contractile proteins

Linking SBGN maps to external information



Linking SBGN maps to external information





Resources

- Main source of information: http://sbgn.org/
  - Specifications, templates, examples
  - Meeting discussions, votes and their results
- How to participate
  - Mailing list sbgn-discuss@caltech.edu
  - Bug tracker
- To implement support for SBML: LiSBGN and SBGNML
- Meetings
  - COMBINE, HARMONY, dedicated editor meetings

Governance

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All members of the SBGN community

BBSRC bioscience for the future

NEDO

EMBL