

# **BioPAX Generics : Open Issues for Level 4**

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# Generics

- Set of entity pools that behave equivalently within the context of at least one process.
- They are everywhere :
  - by homology
  - by unknown features
  - by structural similarity

the ring

two



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**PICTURES**

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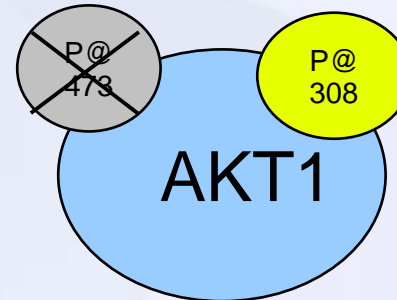
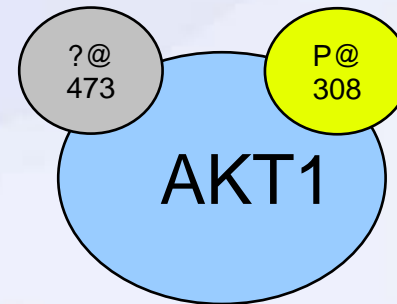
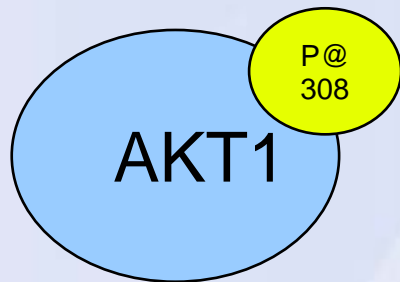
— Fear comes full circle.

[www.thering2-themovie.com](http://www.thering2-themovie.com)

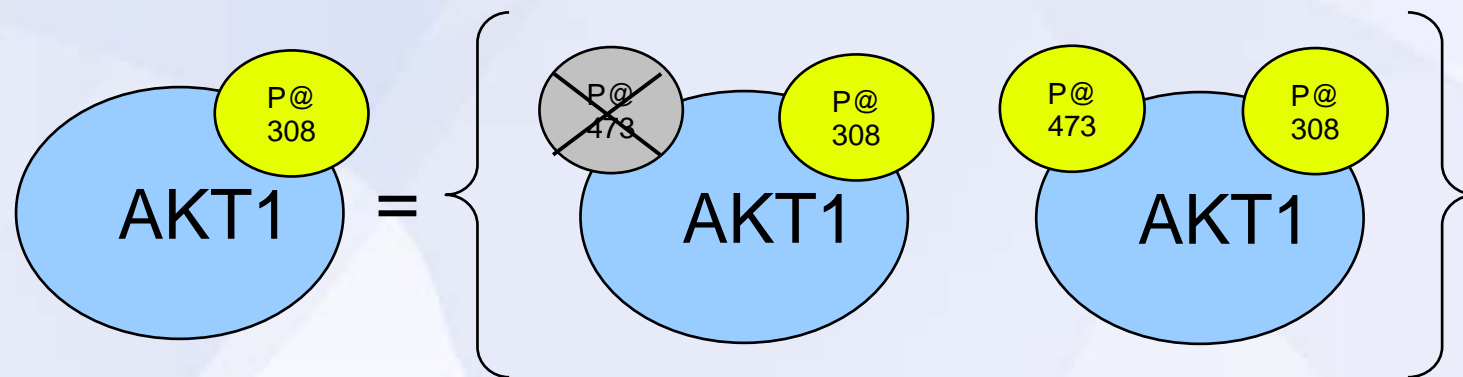
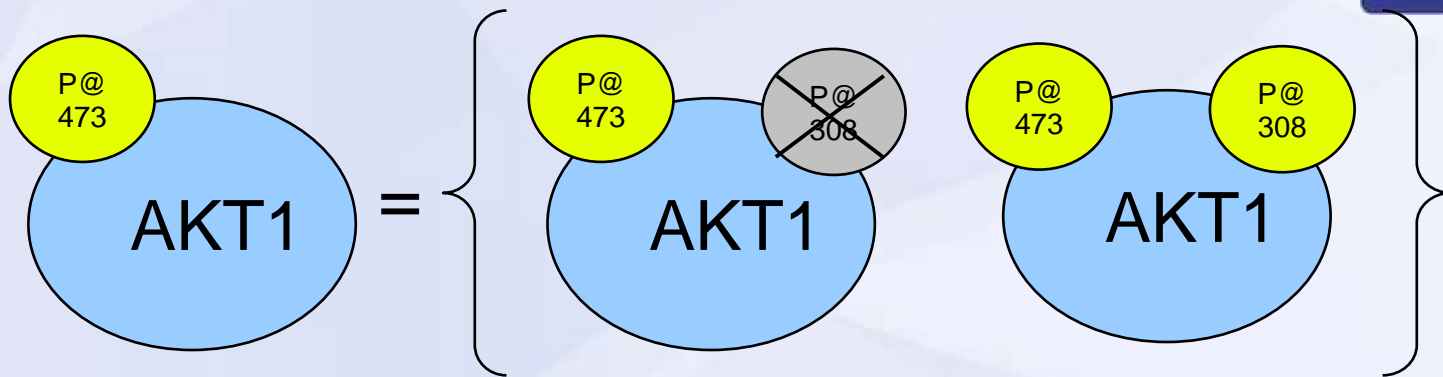
# Specifying Generics

- Intensional: Easy but combinatorial
- Extensional: Semantically difficult, exceptions

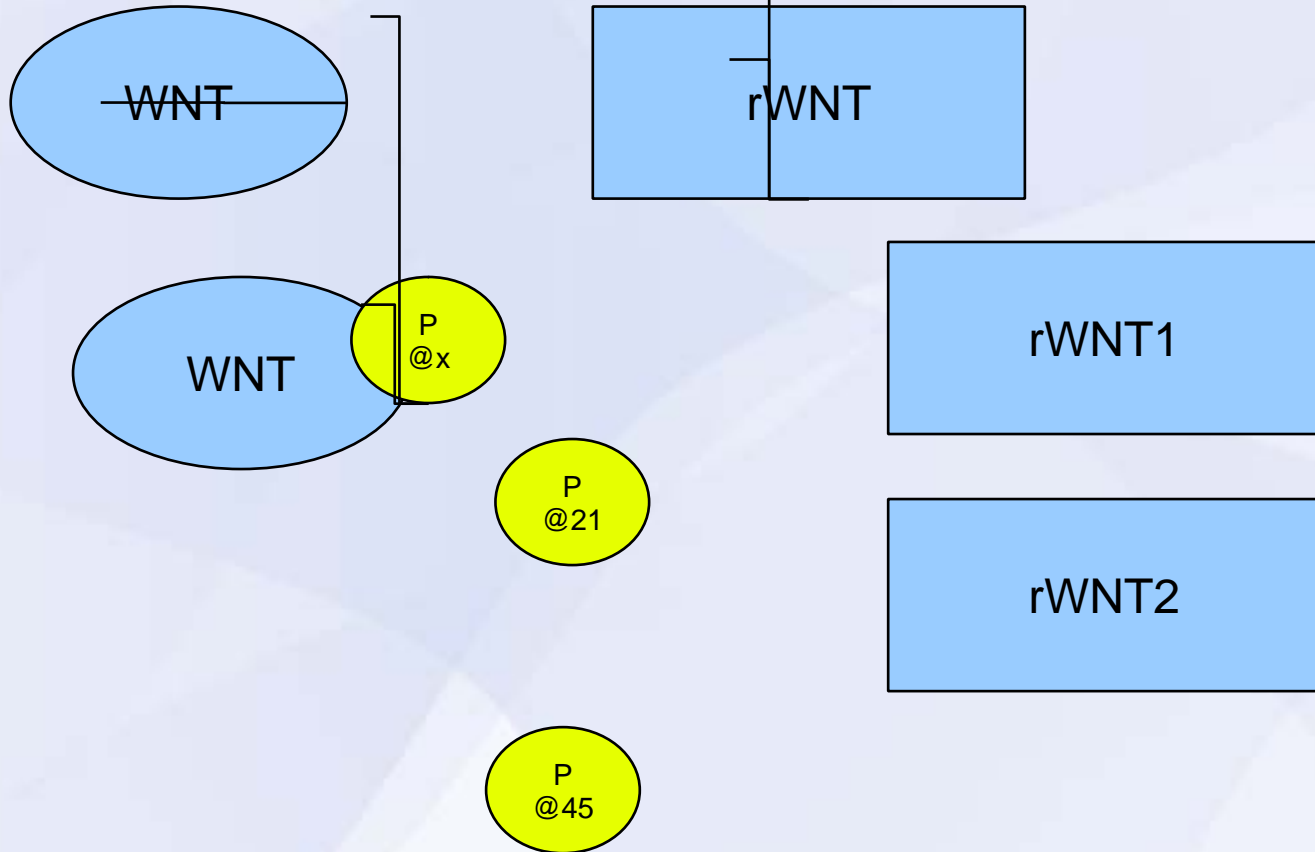
# Unknown Features (extensional)



# Unknown Features



# Homology (extensional)



# Structural Similarity (intensional)

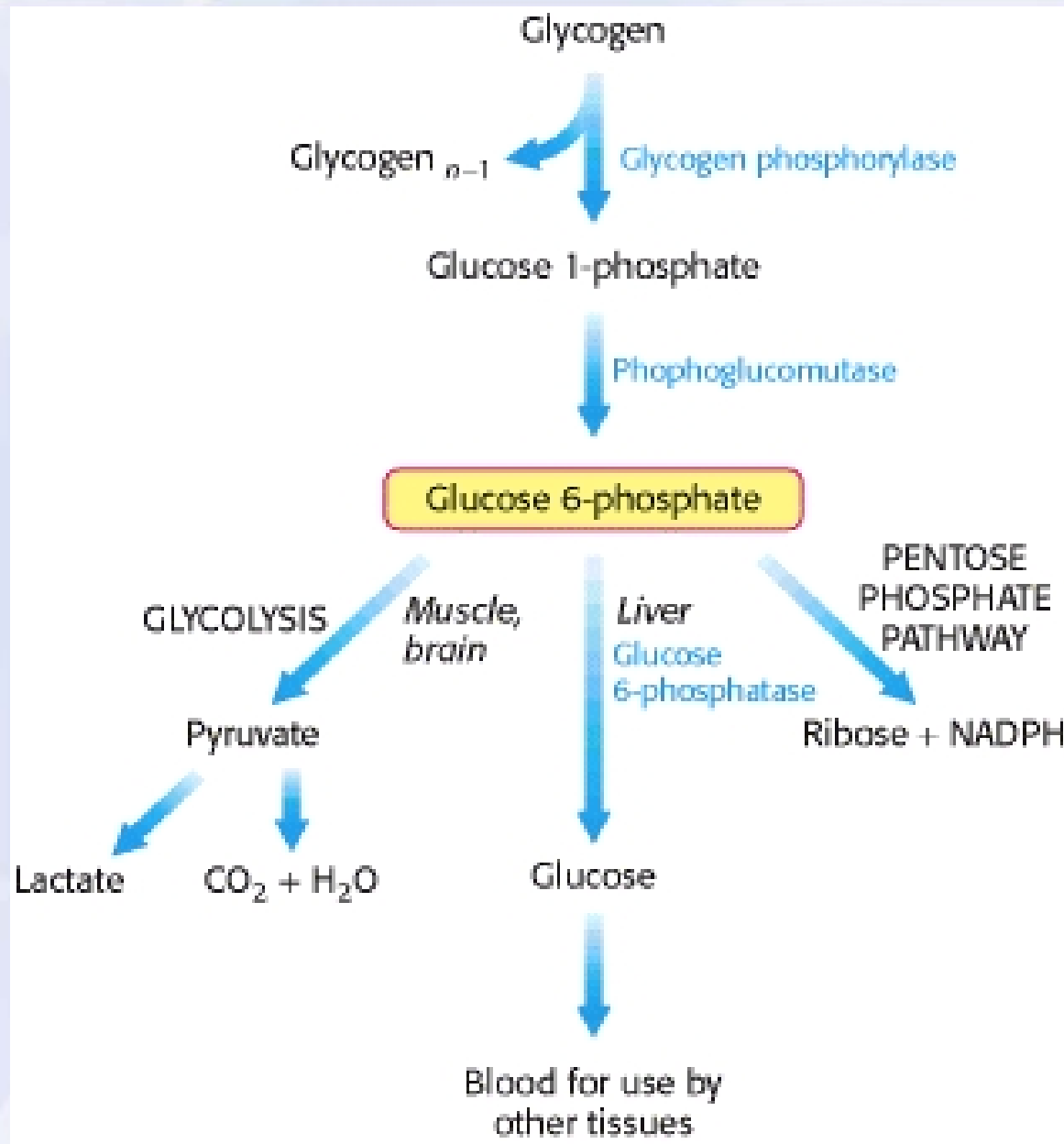
- Alcohol
- L/D- Glucose

## How to make it extensional?

- Need classes of groups/conformations etc.
- A cheminformatics problem → Delegate..?

# Polymerization (none!)

- Iterative definition :  $X(n) + X \rightarrow X(n+1)$
- Complicated by alternating and branching structures
- Can not be expressed intensionally
- Often expressed with n-stoichiometries (hack)



# Coordination

- Similar issues arise in SBGN, SBML, CellML(?)
- Need for clear semantics on all fronts is

**Critical!**