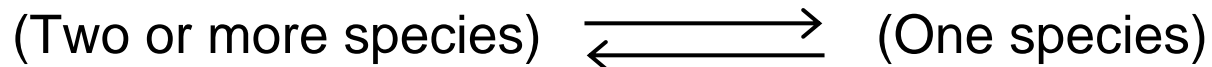# *Chemical Networks of Reversible Binding Reactions*

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(Two or more species) $\rightleftarrows$ (One species)

Assumptions (applicable to many networks in pharmacology)

- Notions of elementary and composite species, and of composition.
- Composition identifies species (☹ no isomers).
- Reactions preserve composition.
- Mass-action kinetics.
- Rate constants yield consistent cooperativity factors.

Results

- Nonnegative stoichiometric compatibility classes defined by chemically meaningful conservation equations.
- Each class contains a steady state which is unique, detailed-balanced and globally attractive.
- Steady state is solution of a "good looking" positive polynomial system. Partial result on convergent computation.
- Simple formula for deficiency. All nonnegative integers can occur.