



On the *binary* PIN: A protein interacting network (PIN) is regarded as a *binary* network in which the elements of the interaction matrix take the values of 0 for absence and 1 for presence of the undirected and unweighted protein-protein interactions, as exemplified in a four-node, four-edge PIN above. The diagonal elements of the matrix are 0 as all self-interactions are omitted. The term “binary” for protein-protein interactions had also been applied in other references such as (1-5):

1. J. F. Rual *et al.*, Towards a proteome-scale map of the human protein-protein interaction network. *Nature* **437**, 1173-1178 (2005).
2. S. V. Rajagopala *et al.*, The binary protein-protein interaction landscape of Escherichia coli. *Nature biotechnology* **32**, 285 (2014).
3. T. Rolland *et al.*, A proteome-scale map of the human interactome network. *Cell* **159**, 1212-1226 (2014).
4. T. V. Vo *et al.*, A Proteome-wide Fission Yeast Interactome Reveals Network Evolution Principles from Yeasts to Human. *Cell* **164**, 310-323 (2016).
5. M. A. Ghadie, J. Coulombe-Huntington, Y. Xia, Interactome evolution: insights from genome-wide analyses of protein-protein interactions. *Curr Opin Struct Biol* **50**, 42-48 (2018).