# Tomography of functional organization in protein–protein interaction network

黃俊燕

Bioinformatics

Computer Science and Informatics

jyhuang@chu.edu.tw

## Abstract

In recent years, after high throuphput PPI data was available, studies have focused on unraveling how proteins organize their functionality from architecture of PPI network. We examine the functional organization of PPI network by dividing the network into layered structure around a protein according to shortest path length. We proposed an index, functional correlation, to assess the functional closeness of a specific protein with its $l$ layer neighbors, i.e. proteins having $l$ shortest path length from center protein. Our results showed that functional correlation decays exponentially with the number of layers within a characteristic length $l_c$, and it becomes uncorrelated outside such characteristic length. A simple model based on functional units structure was proposed to explain this exponential decay of functional correlation.

Keyword：protein-protein interaction(PPI) network Saccharomyces cerevisiae correlation  module