Scale-spaces from protein networks
how diffusion profiles reveal functional information in physical interaction topologies

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Summary
Understanding the living cell as a system of interconnected components is one of the key contemporary challenges. This is a complex problem, in which different types of functional interactions play a role, each operating across multiple distinct scales.

How do functional interactions emerge from the topology of the physical interaction network?
To investigate this we explore scale independent descriptions of the topology of the physical protein-protein and protein-DNA interaction networks in yeast.

Classification results

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Diffusion profiles capture topological features that distinguish between three classes of functional interaction
To differentiate between different classes of functional interactions features from both PPI and PDI networks and features across a range of scales are required.

Diffusion profiles capture biologically meaningful features by exploiting, across multiple scales, graph topology in readily available physical interaction data.