

Pattern Recognition in Protein Bioinformatics

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With the development of advanced sequencing technology and concerted genome projects, new annotated biological data are rapidly accumulated. Bioinformatics has played important role in dealing with the large-scale biological data. Considering the importance and the complexity of biological data, it's extremely important to develop proper automated pattern recognition methods to understand and annotate generated huge biological data, and predict the unknown domain with knowledge mined from the available data. In this course, I will introduce how to design the problem-driven biomolecular pattern recognition algorithms and apply them for understanding the protein sequence and bio-image data.

Talk I: Protein function prediction: features and applications

Talk II: Protein structure prediction from pattern recognition point of view

Talk III: Protein interaction network

Talk IV: Bioimage pattern recognition

Talk V: Optimize bioinformatics model

Reference:

Yang, J., et.al, *Bioinformatics*, 2015, btv459, 1-9.

Yu, D.J., et.al, *IEEE Transactions on NanoBioscience*, 2015, 14: 44-57.

Sun, H.P. et.al, *PROTEINS: Structure, Function, and Bioinformatics*, 2015, 83: 485-496.

Xu, Y.Y., et.al, *Bioinformatics*, 2015, 31: 1111-1119.

Cheung, N.J. et.al, *Journal of Molecular Graphics and Modelling*, 2014, 54: 114-122.

Yang, J. et.al, *Bioinformatics*, 2013, 29: 2579-2587.

Xu, Y.Y. et.al, *Bioinformatics*, 2013, 29: 2032-2040.