

## Improt: A Cytoscape plugin to identify important protein targets

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Systems biology encompasses the system level understanding of the interactions of the biological molecules. It takes up new approaches to integrate the data within a molecular network of genes and proteins and other biomolecules like DNA and RNA to reveal their function and behavior which makes up a living organism. A biological network is a graphical representation of such genes, proteins, molecules and individual entities as nodes and their interactions as edges. Mainly these are protein interaction networks, metabolic networks, gene regulatory networks, and signal transduction networks. Recent advances in bioinformatics results in many efficient algorithms to analyze common pathways in these networks, which will contribute a lot to their understanding. Shortest path plays a great importance in network biology and it is the area of research for centuries in graph theory itself. Here, on the basis of the shortest pathway concept, we have developed a Cytoscape plugin called IMPROT which analyzes the biological network to find probable important molecules using modified shortest path algorithm. It gives a rank to proteins as IMPROT score using which the top ranked ones from the whole network can be studied further for therapeutic drug targeting. The improt scores were analyzed and verified with literature and the application of the plugin was bench marked with respect to the whole genome networks of *Mycoplasma genitalium*, *Escherichia coli* and *Helicobacter pylori*. The plugin can be used in future research in drug target identification and the future prospects of research in system biology can be envisioned.

### Biography

Amrit obtained his M. Tech. degrees in Bioinformatics from Karunya University, Coimbatore, India in 2012. He has been the recipient of the Canadian Commonwealth Scholarship for pursuing research currently at York University, Toronto, Canada.

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