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## A novel data-driven identification and activity scoring of functional modules: The case of a cell differentiation process and a minimal graphical language (bStyle) to model and simulate biological processes

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High dimensional analysis of the complex processes involved in cellular processes focus on unbiased methods to identify pathways. However, many bioinformatics tools generate lists of pathways with p-values but do not score the pathways relative to each other or to other interacting parts of the system. I present a newly developed computational method Network Activity Score finder (NAS Finder) to identify tissue-specific, omics-determined sub-networks and the connections with their main upstream regulator receptors to obtain a systems view of the differentiation of human adipocytes. After module identification we usually move to dynamic simulation of their behavior. Many graphical languages have been designed to model and simulate biological systems. Many of them are ambiguous and do not allow a smooth mapping to computational models and many of them suffer the syndrome of a new symbol for a new case. I present a minimal and not ambiguous language and a supporting tool for it.

### Biography

Corrado Priami is the Professor of Computer Science at the University of Trento. The results of his PhD thesis on stochastic pi-calculus were the basis for the foundation of the Microsoft Research-University of Trento Centre for Computational and Systems Biology (COSBI), of which he is the President and CEO. His research covers programming languages and computational methods for the modeling, analysis and simulation of biological processes in the fields of systems nutrition and systems pharmacology. He has published over 180 scientific papers, gave more than 60 invited talks and lectures at conferences and universities around the world. He has also participated in many program committees for international conferences (also as chair), regularly serves in Advisory and Scientific Boards and Reviewing Panels for many international funding agencies and institutions.

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