

Presentation title: Introduction to systems biology

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Abstract

The goal of systems biology is to derive working models of how individual components that make up a cell or organism interact to give rise to certain phenotypes, including the presence of disease. In recognition of how diverse and dynamic human beings are, to be truly informative, our models must be predictive and personalisable. The completion of the Human Genome Project gave us a working list of the “parts” which make up the genetic component of human biological systems, and now the challenge that systems biology seeks to meet, is to integrate this information to derive the aforementioned working models. Just as techniques developed for sequencing and transcriptional assays were instrumental in helping us elucidate what this “parts” list looks like, methods from statistics, high performance computing, graph theory and many other topics covered in this School, will be critical in unlocking the information required to understand how biological systems work.