Yeast systems biology to unravel the network of life.

Yeast systems biology to unravel the network of life. Systems biology focuses on obtaining a quantitative description of complete biological systems, even complete cellular function. In this way, it will be possible to perform computer-guided design of novel drugs, advanced therapies for treatment of complex diseases, and to perform in silico design of advanced cell factories for production of fuels, chemicals, food ingredients and pharmaceuticals. The yeast Saccharomyces cerevisiae represents an excellent model system; the density of biological information available on this organism allows it to serve as a eukaryotic model for studying human diseases. Furthermore, it serves as an industrial workhorse for production of a wide range of chemicals and pharmaceuticals. Systems biology involves the combination of novel experimental techniques from different disciplines as well as functional genomics, bioinformatics and mathematical modelling, and hence no single laboratory has access to all the necessary competences. For this reason the Yeast Systems Biology Network (YSBN) has been established. YSBN will coordinate research efforts, in yeast systems biology and, through the recently obtained EU funding for a Coordination Action, it will be possible to set appropriate guidelines, establish an appropriate infrastructure for the network and organize courses, meetings and conferences that will consolidate the network and promote systems biology. This paper discusses the impacts of systems biology and how YSBN may play a role in the future development of the field. Copyright (C) 2006 John Wiley & Sons, Ltd.

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