

RiboSys

Systems Biology of RNA Metabolism in Yeast

RiboSys, a European research project which will improve our understanding of RNA metabolism in cells, began in January, 2006. Co-ordinated by Professor Jean Beggs of Edinburgh University, a consortium of European scientists from six countries will work for three years on this project funded by 2.4 million Euros from the European Commission through the Sixth Framework Programme: Life Sciences, Genomics and Biotechnology for Health. The consortium includes scientists from both academic institutions and small biotechnology companies. Researchers from the University of Edinburgh, Warsaw University, the University of Zürich and CNRS in France will perform the experimental biology. Two biotechnology companies, Compugen in Israel and ISB/SPb in Russia, will work on the computer modelling. Researchers in the different institutions will contribute complementary skills and knowledge thereby allowing a more complete analysis and more progress to be achieved.

RNA comes in several forms and is a copy of a DNA strand. The function of RNA is to convert the genetic information held in DNA into the proteins required to build cells and carry out the chemical reactions required in cells. The complex processes that modify the RNA molecule and enable it to fulfil its function are described as RNA metabolism. Systems biology is the study of the interaction of the different metabolic processes and pathways.

Two computer models of RNA metabolism in yeast will be developed and researchers will optimise standardised operating protocols to provide quantitative data to test and refine the models. By using yeast mutants with well characterised metabolic changes it will be possible to measure and test the effect caused by blockages in the pathway in the same way that it is possible to see the effects on surrounding streets caused by closing a road. The movement of RNA molecules within cells will be studied using novel microscopic techniques which will allow visualisation of the production and migration of RNA molecules in living yeast cells.

Although yeast is a simple organism, RNA metabolism in yeast shares many similarities with human RNA metabolism. This project will improve our understanding of normal RNA metabolism and the consequences of defects at specific points in the network of processes, making it possible to identify the events that lead to human disease.

Website address: www.RiboSys.org

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