

# Unravelling the function of small RNAs

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Small non-coding RNAs (ncRNAs) play a hitherto unrecognised role in regulation of gene expression. To broaden knowledge on the function and evolution of these molecules, a EU project investigated various classes of regulatory RNAs in different kingdoms.

Regulatory RNAs include microRNAs, small nucleolar RNAs, and bacterial small RNAs: Their role in regulation and modulation of gene expression is just beginning to be realised. The past 10 years have seen an unprecedented accumulation of evidence presenting RNAs as ubiquitous regulators rather than merely passive [transmitters](#) of [genetic information](#).

Biologically, this implies that small RNAs are involved in the control of [physiological responses](#), developmental checkpoints, disease-associated genes and [virulence](#) traits. To advance existing knowledge of the regulatory properties of small RNAs and explore potential applications in the prevention or cure of diseases, the EU-funded ‘Function of small RNAs across kingdoms’ (Fosrak) project examined evolutionary aspects of these RNAs.

The experimental work carried out by project partners was geared toward an in-depth understanding of RNA-mediated regulation in a variety of chosen model organisms. The evolutionary origin of these regulatory molecules was investigated, and a comparative analysis was made that should reveal critical differences and similarities in structure, interaction and protein requirements.

Fosrak was successful in identifying and experimentally validating predicted targets and associated proteins of small RNAs. Bacterial proteins and enzymes implicated in RNA metabolism and regulation were also strong points of investigation.

Overall, the project findings provided important insight into how regulatory RNAs are integrated into the general network of gene expression. This data is a challenge our prior perception of the roles of small RNAs in health and disease, and is expected to open up new avenues of designing treatment strategies.

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