

RNomics of Noncoding RNAs in *Escherichia coli*

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Recent findings suggest that numerous noncoding RNAs (ncRNAs) are involved in a variety of cellular functions from bacteria to mammals although many of them remain to be elucidated. ncRNA-encoding genes have been hard to detect by classical genetics due to the small target size for mutagenesis, and the failure of gene inactivation by single nucleotide changes. Recently bioinformatics-based searches for novel ncRNA genes have identified many new ncRNAs in *E. coli*, but these screening methods are too limited to saturate the identification of these RNA molecules. Therefore, a shot-gun cloning approach (RNomics) needs to be used to identify more ncRNAs. We found new species of ncRNAs by using his approach. Some of them locate in the intergenic region or in the antisense orientation, therefore, they were not predictable by bioinformatics-based approaches. In addition, candidates of novel ncRNA, which were induced during cold shock, were obtained. Our data imply that ncRNAs could be involved in the cellular response to cold shock. We also analyzed biogenesis of some ncRNAs and their cellular functions in order to establish concepts governing regulation of cellular metabolism with ncRNAs.