

With Genes like that who needs an Environment? Postgenomics' argument for the 'Ontogeny of Information'

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Abstract

The linear sequence specification of a gene product is not provided by the target DNA sequence alone but by the mechanisms of gene expressions. The main actors of these mechanisms, proteins and functional RNAs, relay environmental information to the genome with important consequences to sequence selection and processing. This ' postgenomic' reality has implications for our understandings of development not as predetermined by genes but as an epigenetic process. Critics of genetic determinism have long argued that the activity of ' genes' and hence their contribution to the phenotype depends on intra- and extra-organismal ' environmental' elements. As will be shown here, even the mere physical existence of a ' gene' is dependent on its phenotypic context.

Keywords: genetic information, sequence specification, gene expression, regulatory network. non-coding RNAs, environmental information

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