



Australian  
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## Director's Seminar Series: The hidden layer of RNA regulation in human development

Tuesday 28 May 2013, 4 - 5pm

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**Professor John S. Mattick**, Garvan Institute of Medical Research, Sydney

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**R.N. Robertson Theatre**, R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU



It appears that the genetic programming of humans and other complex organisms has been misunderstood for the past 50 years, because of the assumption that most genetic information is transacted by proteins. Surprisingly, the human genome contains only about 20,000 protein-coding genes, similar in number and with largely orthologous functions as those in nematodes. On the other hand, the extent of non-protein-coding DNA increases with increasing complexity, reaching 98.8% in humans. Moreover, the majority of these sequences are dynamically transcribed, to produce enormous numbers of long and short non-protein-coding RNAs (ncRNAs) that exhibit dynamic and extraordinarily precise tissue- and cell-specific expression patterns. The emerging evidence indicates that these RNAs form a massive network of regulatory information required to orchestrate the complex patterns of gene expression during differentiation and development, including the site-specificity of the chromatin-modifying complexes that control epigenetic memory. It is also evident that animals, particularly primates, have superimposed plasticity on these regulatory systems by RNA editing, and that this is the basis of the environment-epigenome interactions that underpin long-term physiological adaptations and brain function.

Presented by

Research School of  
Biology

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This lecture is free and open to the public

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<http://biology.anu.edu.au/News/events.php>

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