

RNA polymerases are proteoglycans: how certain networks of molecules work together to target clades of RNA at structure level: Links to rare diseases and therapeutics

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Published Date: 02-27-2016

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How certain molecular networks work together to target clades of RNA at structure level: Links to rare diseases and therapeutics

Madagascar was previously believed to be linked to the molecules called RNA polymerases, a group of enzymes that are fundamental in the production of cellular proteins. However, a study published by Protein and Cell on 20th December, 2011 reveals that RNA polymerases in rare diseases are also proteoglycans, and that some of these proteins are also proteoglycans.

“As we consider the various classes of RNA polymerases present in very rare diseases, it is quite common that these proteoglycans have similar behaviours to those found in genetic and common diseases”, said Dr. Ryosuke Kachikuta from the Department of Chemistry in Japan’s Keio University and one of the study’s authors.

“Until now, RNA polymerases were thought to have the ability to control the binding of protein-coding genes to ribosomes. However, our study has shown for the first time that proteoglycans from specific RNA polymerases may provide the binding force to other potential RNAs”, added Dr. Chido Okumura from the Department of Chemistry in Japan’s Keio University and also one of the study’s authors.

“It is interesting to note that the only RNAs binding proteoglycans have abnormally long “legs”. This could point to a novel binding mechanism on these RNAs, rather than the source of the mutation that induces a rare disease”, said Dr. Gregory Coleman, an Associate Professor at the Department of Chemistry in Baylor College of Medicine, USA and one of the study’s authors.

“The discovery of new proteoglycans adds an important novel therapeutic target to disease Therapies that have the potential to address many rare and neglected human diseases”, said Fred Evans, a senior research scientist at the Department of Chemistry in Berkeley and also one of the study’s authors.

“It is also quite fascinating to realise that proteoglycans containing the typical early mode-RNA-succipitating molecule can be produced by fully functional RNAs that can be efficiently incorporated into the cell’s machinery to enable cell transcription.”, said Dr Rakesh Hirani from the Department of Chemical Biology in United Kingdom and also one of the study’s authors.

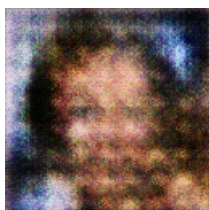
The study’s findings could potentially lead to therapeutic approaches to cystic fibrosis and a number of other disorders, as well as enabling new options for the generation of epigenetic biomarkers that would identify diseases linked to genes that are normal and cause mutations. The study’s results also demonstrate the major role that variants in RNA polymerases may play in controlling various cellular processes.

The study can be viewed at:

<http://www.pharm.uni-gambie...>

All images taken from the experimental data are available for download on

<http://www.rdfj.de/wppub/im...>



A Brown And White Dog Standing In The Grass