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## Article

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### Widespread transcription at neuronal activity-regulated enhancers.

Kim TK, Hemberg M, Gray JM, Costa AM, ..., Bito H, Worley PF, Kreiman G, Greenberg ME  
Nature. 2010 May 13; 465(7295):182-7

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## Evaluations

Classification Key

Evaluated by [Andrew D Sharrocks](#) 20 May 2010

### This paper reports the discovery of a new type of RNA, eRNA, which is transcribed from enhancer regions.

The authors investigate the mechanisms of transcriptional regulation in neuronal cells in response to membrane depolarisation and set out to identify enhancer regions. These enhancer regions are defined by a number of criteria, including histone modification, but importantly inducibly recruit the transcriptional co-activator CBP and RNA polymerase. The recruitment of RNA polymerase leads to bidirectional transcription from within the enhancer, generating short eRNAs which are not polyadenylated. Importantly, the generation of these eRNAs requires the presence of an intact promoter at the transcriptional start site, often tens of kilobases away. In support of this finding, eRNA transcription is correlated with transcription of the corresponding associated gene. Thus, this study identifies a new phenomenon, eRNAs, but raises important questions as to their function. Are they by-products (as suggested by their relatively low levels) or do they have specific functional roles? Future studies are required to assess the potential functional relevance of eRNAs.

Competing interests: None declared

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Evaluated by:  
[Andrew D Sharrocks](#)  
University of Manchester,  
UK  
[Cell Biology](#)  
20 May 2010

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