

**Letter to Editor****Is the failure of expression of recombinant protein due to qiRNA?**

A fast growing field, RNAi technology keeps on exploring new frontiers in the orbit of gene silencing (Since 1999). In the order of discoveries, there is a new daughter DNA which has been added very recently in the siRNA family and named as qiRNA because of their interaction with QDE-2 protein molecule in the filamentous fungus *Neurospora crassa* [1]. Lee *et al* have reported the activation of QDE-2 expression followed by the damage of DNA, which is mediated by the production of endogenous dsRNA. Initially the dsRNA synthesis is catalyzed by QDE-1, later the same protein catalyses the synthesis of aberrant RNAs (aRNAs) or pre siRNAs. [1] These observations denote that the QDE-1 acts like DNA dependent RNA Polymerase (DdRP) and RNA dependent RNA Polymerase (RdRP) in the first and second stages, respectively. Furthermore, they ascertained that qiRNAs not only originate from the region corresponding to the mature rRNAs, but many derive from the external and internal transcribed spacer regions (ETS, ITS1 and ITS2) and also from the intergenic spacer regions. They have confirmed that the qiRNAs are not amplification products of primary small RNAs. The qiRNAs associate with QDE-2 to form the active RNA-induced silencing complex (RISC). The newly formed qiRNA blocks the translation of damaged DNA, it's a kind of natural protection to prevent the synthesis of unwanted proteins from the

damaged DNA. They cloned and sequenced 184 individual qiRNAs, pointed out its average length as 20–21 nucleotides. The researches highlighted that the possibility of spontaneous DNA damage during recombination or transposition could be a trigger to induce the production of small RNAs like qiRNA. This qiRNA may block the expression of protein of interest after recombination. Researchers should be aware to check the presence of small RNAs after recombination to confirm the failure in recombinant protein expression because of the new qiRNA.

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**Reference**

1. Lee HC, Chang SS, Choudhary S, Aalto AP, Maiti M, Bamford DH, Liu Y. qiRNA is a new type of small interfering RNA induced by DNA damage, *Nature*, 2009; 459, 274 -277.  
<http://www.nature.com/nature/journal/v459/n7244/full/nature08041.html>.