NRDG1-ERG, A Novel Fusion Protein in Prostate Cancer

Published date: July 25, 2012

Technology description

It is now well-established that the majority of prostate cancers harbor gene fusions involving the erythroblast transformation specific (ETS) family of transcription factors. Further, both molecular and clinical data suggest that cancers exhibiting such a translocation represent a distinct molecular subclass that is characterized by an aggressive natural history. The most common such gene fusion links the promoter of the androgen-regulated transmembrane protease, serine 2 gene (TMPRSS2) and the ETS transcription factor ERG. The androgen-regulated promoter of the SCL45A3 gene has also been identified as an ERG fusion partner in prostate cancer.

Mark A Rubin and colleagues at Weill Cornell Medical College have now identified another novel gene fusion involving ERG. This fusion, between the androgen-inducible tumor suppressor NRDG1 (on chromosome 8) and ERG (on chromosome 21), leads to the overexpression of the fusion transcript whose quantification from urine samples, like the other ERG fusion products, can be diagnostically and prognostically useful for prostate cancer management.

In addition, this fusion, leads to the production of a novel chimeric fusion protein, providing a drug target for cancers with this translocation. The other known ERG fusions in prostate cancer generate a non-targetable truncated protein.

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