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## miR-26a promotes chromosomal instability and breast tumorigenesis



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Recently an increasing interest has developed around the therapeutic potential of miRNAs in the cancer clinic. Among several candidates, multiple reports have demonstrated that the use of mimic for the microRNA-26a (miR-26a) could be used for cancer treatment. In fact, transient overexpression of miR-26a has been shown to inhibit G1-S cell cycle progression and promote apoptosis, making it a promising candidate for therapeutic intervention. Remarkably, we demonstrate that miR-26a has a dual-role in breast cancer (BC), due to its ability to both promote and inhibit tumorigenesis. We show that miR-26a not only inhibits G1-S cell cycle phase and tumorigenic proliferation, as previously demonstrated, but also regulates mitosis and cytokinesis and consequently it induces tumorigenesis. Prolonged miR-26a expression acts in this way in both BC cell lines and mouse embryonic fibroblasts (MEFs) demonstrating an important and conserved role of miR-26a in regulating these pathways. To the best of our knowledge this dual-role of a miRNA in promoting/inhibiting the same cancer type has not been demonstrated previously and our findings create significant uncertainty as to the potential use of specific miRNAs as therapeutic targets in cancer.

### Biography

Leandro Castellano is senior lecturer in Biochemistry at the University of Sussex in Brighton and honorary senior lecturer at Imperial College London (UK). He obtained a PhD in 2007 at the University "La Sapienza", Rome, working on the role of microRNAs in solid and liquid cancers. He then moved to Imperial College the same year where he identified for the first time, that microRNAs can be regulated by oestrogen receptor alpha (ER-alpha) in ER positive breast cancer which in turn modulates ER-alpha itself. This regulative miRNA-mRNA network forms a negative feedback loop crucial for breast cancer progression. His research interest focuses on the role of short and long non-coding RNAs in the progression of breast, pancreatic and other solid cancers. He published several articles reporting findings on the role of non-coding RNAs in these diseases using high-throughput sequencing technologies for global discoveries.

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