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Exploring the role of Fragile X Mental Retardation Protein in melanoma progression and invasiveness-related pathways in melanoma cells

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The Fragile X Mental Retardation Protein (FMRP) is an RNA binding protein, involved in multiple steps of RNA metabolism in neurons [1]. FMRP is lacking or mutated in patients with the Fragile X syndrome (FXS), a form of inherited mental retardation. Recently it has been also demonstrated that FMRP modulates metastasis formation in breast cancer, regulating the metabolism of mRNAs involved in cancer progression [2]. But the role of this protein has never been investigated in other types of cancer. Considering the similarities existing in the embryological origin between neurons and melanocytic cells, the aim of the present study is to investigate the role of FMRP in melanoma progression. FMRP overexpression is found in melanomas characterized by high Breslow's thickness and high Clark level, suggesting an association between FMRP increased expression and metastatic phenotype in melanoma. Furthermore, a reduction of FMRP in metastatic melanoma cell lines affecting their migration, invasion and adhesion properties, is found. Next-generation sequencing in human melanoma cells revealed that FMRP regulates a large number of mRNAs involved in relevant processes of melanoma progression. These data clearly show that FMRP in melanoma, as in breast cancer, is associated with an invasive phenotype and potentially related with cancer progression, suggesting in this way possible future therapeutic targets in melanoma.

References

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Key words

Fragile X mental retardation protein, melanoma, tumoral invasion.