

***FMRI* research in oocyte donors and infertile females: lessons learned and future directions.**

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*FMRI* gene premutations have been implicated in fragile X-associated primary ovarian insufficiency. Recent reports have suggested the association of a low *FMRI* gene CGG repeat length (CGGs<26) with ovarian dysfunction, however this finding is still under discussion. We speculate that the AGG interspersions may be the key to those conflicting results. We developed a mathematical model that combines the AGG interspersion number and pattern, as well as the *FMRI* gene repeat length, named *allelic score*. By using this model, a different perspective of *FMRI* gene analysis is provided with a particular impact on female carriers. This new complexity-based categorization of the *FMRI* alleles is being used among females at reproductive age: potentially fertile and infertile females. Aiming to determine whether *FMRI allelic score* relates with X-chromosome inactivation (XCI) pattern in idiopathic infertile females, we evaluated the XCI pattern - resorting to the methylation status of *AR* locus (HUMARA) after *HhaI* digestion, in both cohorts. Although exploratory, our study suggests an association with *allelic score* in infertile females carrying a low *FMRI* gene CGG repeat length. This led us to speculate that this may result from a protective *FMRI*-related effect or an unknown X-chromosome linked anomaly that likely correlates with infertility.

**References:**

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