

EP 04.14 The Changing Landscape of Embryo Transfer Outcomes: PGT-A and Mosaic Embryo Transfer at iVF Riga, Latvia

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Introduction

Despite substantial evidence supporting a strong relationship between PGT-A findings and pregnancy rates, its optimal clinical application continues to be widely debated. Our aim was to assess the effectiveness of newly introduced IVF technologies, with a particular focus on PGT-A, and their impact on embryo transfer outcomes and family-building.

Method

We present retrospective data from iVF Riga on the implementation of PGT-A for day 5 embryos. Its use expanded to selective transfer of mosaic embryos after genetic counseling. PGT-A was subsequently offered to all IVF couples. Embryo transfer outcomes from 2021–2025 for euploid, mosaic, and non-tested embryos are summarized. The testing was performed using full genome sequencing EmbryoMap protocol and Illumina MiSeq platform. This method detects imbalanced aberrations of autosomes 1-22 and X, Y sex chromosomes in preimplantation embryos. Low level mosaicism, uniparental disomy, 69XXX variants and aberrations under 20 Mb cannot be detected. Testing for genetic changes at nucleotide level is not possible with this method. Overall group differences and pairwise comparisons were considered statistically significant at $p < 0.05$.

Results

A small number of fully aneuploid embryo transfers were performed and, as predicted by PGT-A results, resulted in failed implantation or early miscarriage. Among euploid embryo transfers, biochemical and clinical pregnancy rates were 67% and 57%, respectively (n=2163).

A total of 2,515 embryo transfers were included: 2,163 euploid, 189 mosaic, and 163 untested embryos. Positive β -hCG was achieved in 67.0% of euploid, 50.8% of mosaic, and 52.1% of untested embryo transfers. Biochemical pregnancy rates were significantly higher following euploid embryo transfer compared with both mosaic and untested embryos (both $p < 0.001$), whereas no difference was observed between mosaic and untested embryos ($p = 0.80$). Clinical pregnancy occurred in 57.0%, 33.9%, and 41.7% of euploid, mosaic, and untested embryo transfers, respectively. Clinical pregnancy rates were significantly higher after euploid embryo transfer than after mosaic or untested embryo transfer (both $p < 0.001$), while the difference between mosaic and untested embryos was not statistically significant ($p = 0.13$).

Conclusion

Although PGT-A may not improve cumulative live birth rates, our data suggest that it improves outcomes per ET and reduces miscarriage risk. This may be clinically relevant, as recurrent pregnancy loss imposes a substantial physical and emotional burden and may contribute to IVF discontinuation. Our findings support the role of PGT-A in optimizing ET strategy, while emphasizing the need for careful interpretation in the context of patient selection and baseline demographic differences.

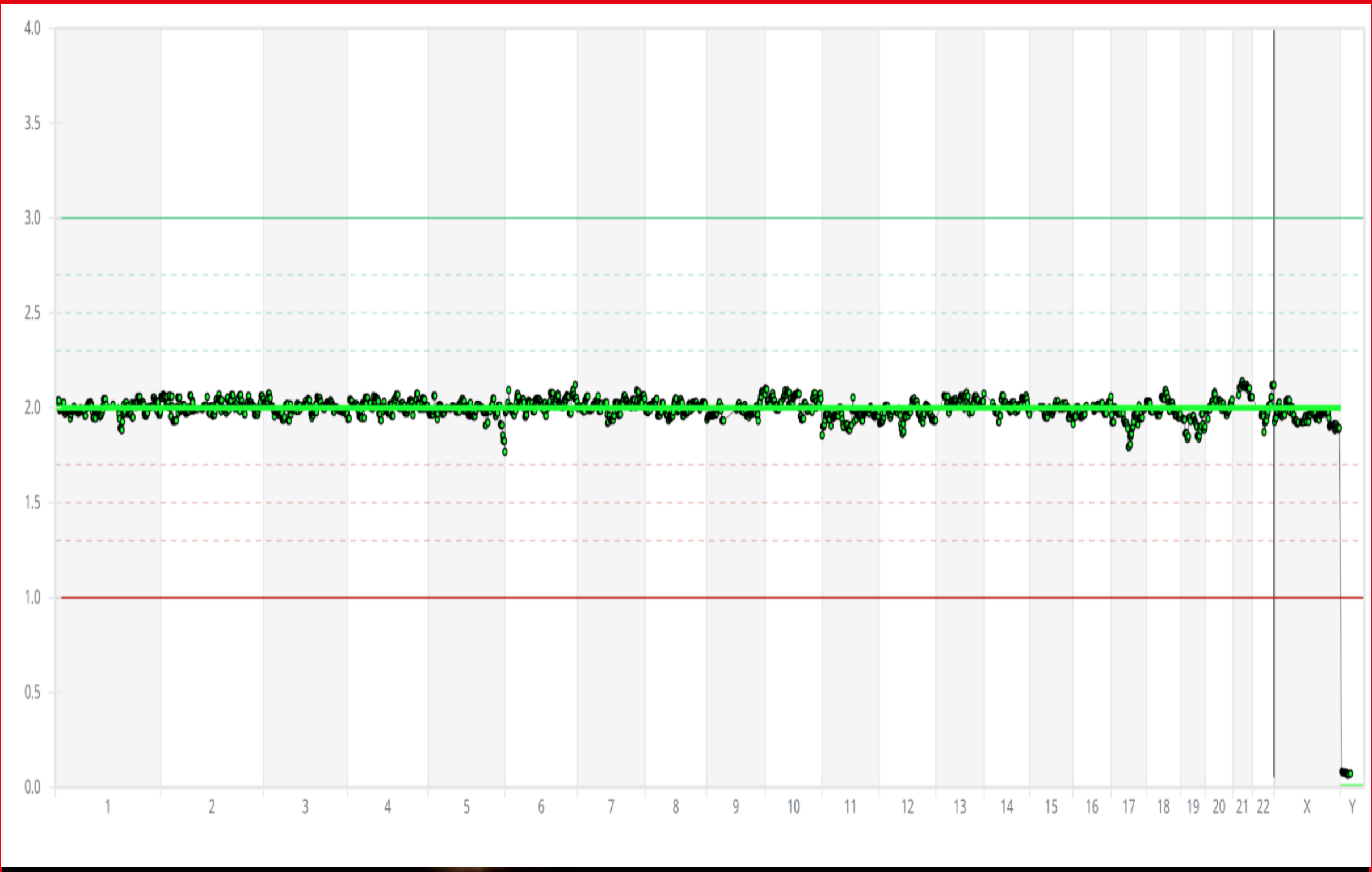


Figure 1. PGT-A result consistent with an euploid embryo result

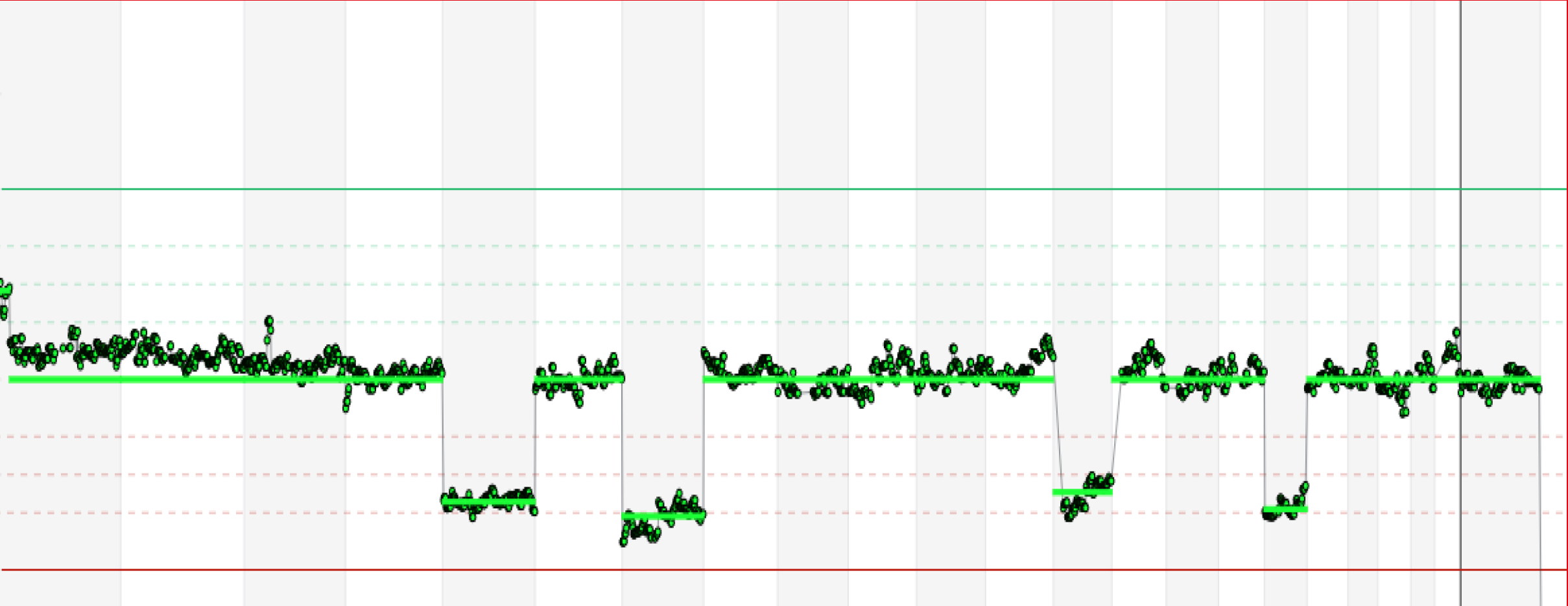


Figure 2. PGT-A result showing high level of mosaicism of chromosomes 5, 7, 13, and 17.

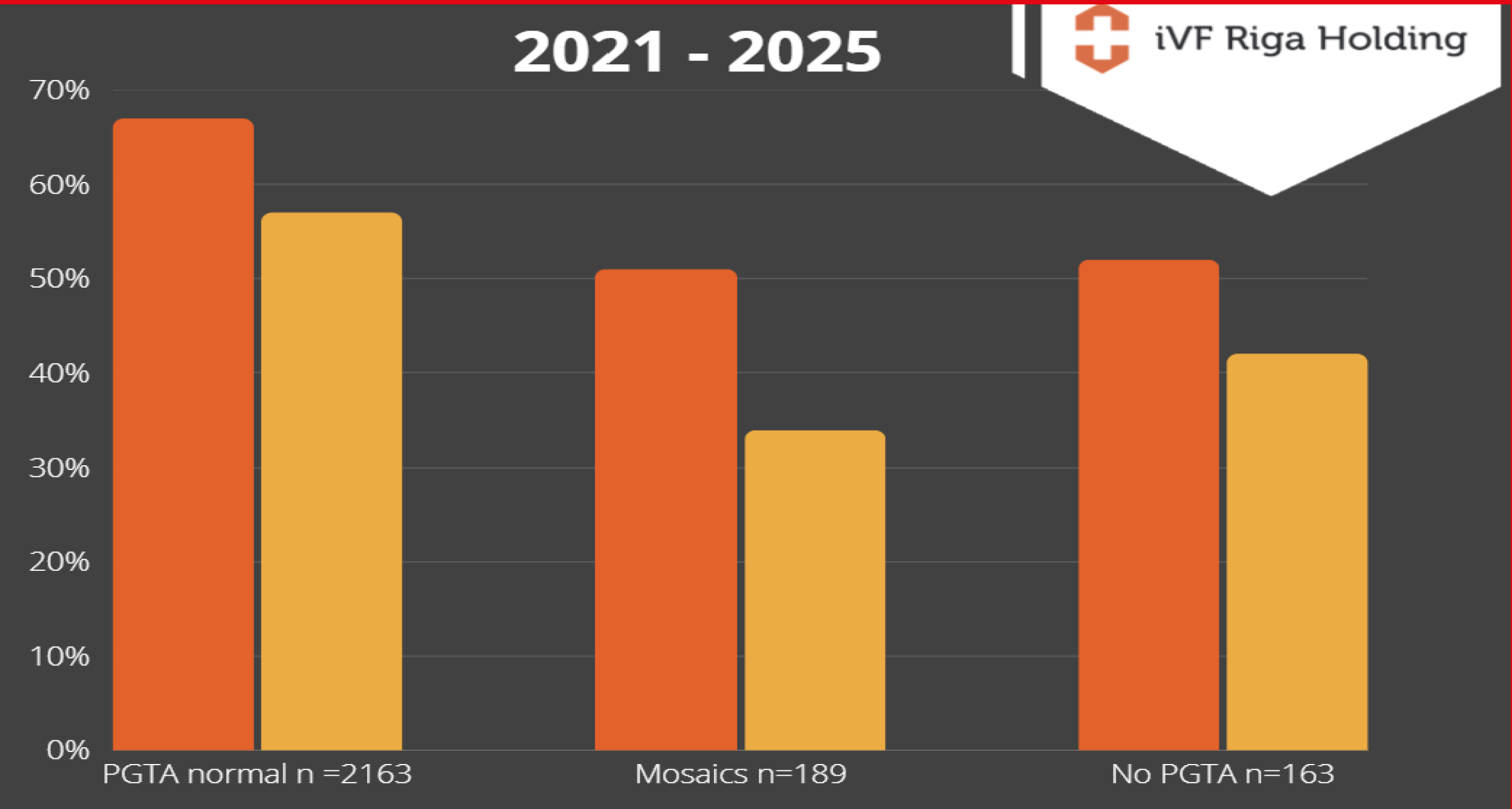


Figure 3. Outcomes : euploid, mosaic, and non-tested embryos (orange – biochemical pregnancy; yellow – clinical pregnancy).