

Fertility NEWS

DNA damage from CRISPER “Seriously Underestimated”

CRISPR/Cas9 genome editing may cause greater genetic damage to cells than previously believed, according to a new study. Researchers from the Wellcome Sanger Institute in Cambridge concluded that the use of CRISPR/Cas9 in either mouse or human cells can lead to unintended deletions of large sections of DNA, as well as complex rearrangements in genetic structure.

What is CRISPR/Cas9?: The CRISPR/Cas9 approach uses a bacterial enzyme called Cas9 to bind double-stranded DNA and cut it, allowing new DNA to be inserted. The system is dependent on 'guide RNA', a genetic sequence that informs Cas9 which site in the DNA it should cut. This was previously thought to prevent Cas9 from cutting at random sites in the genome, which could lead to unintended modifications. The new findings from Cambridge throw doubt on this theory.

Expert opinion: Dr Francesca Forzano, a consultant in genetics at Guy's & St Thomas' NHS Foundation Trust, who was not involved in the study commented: 'This work represents a milestone in the gene editing field, and signpost that more caution should be exerted in the application of this technique.' 'This is the first systematic assessment of unexpected events resulting from CRISPR/Cas9 editing in therapeutically relevant cells, and we found that changes in the DNA have been seriously underestimated before now,' said Professor Allan Bradley, corresponding author on the study. 'It is important that anyone thinking of using this technology for gene therapy proceeds with caution, and looks very carefully to check for possible harmful effects'.

References:

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