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Supplementary Text: Micronuclei formation mechanisms.

Mitotic missegregation of DNA results in micronuclei, a source of cytoplasm chromatin aggregates. Micronuclei are discrete nuclei formed during mitosis when whole or fragmented chromosomes are excluded from daughter nuclei due to a failure to segregate appropriately during anaphase[1,2]. Subsequent nuclear envelope encapsulation during telophase results in small nuclei which are distinct from the main nucleus of the cell[2]. Micronuclei are a recognised feature of genome instability associated with exogenous DNA damaging agents such as radiation and defects in DNA replication and repair[2]. Mechanisms of micronuclei formation include:-

- DNA breakage – acentric chromosome fragments resulting from exogenous or endogenous DNA damage are unable to attach to mitotic spindles thus fail to segregate appropriately during anaphase. Nuclear envelope formation during telophase generates a micronucleus in the daughter cell.
- A consequence of anaphase bridge formation – DNA damage and defects in DNA repair can cause telomeres of sister chromatids to fuse together. During anaphase this can lead to DNA fragmentation and subsequent micronuclei formation.
- Defective mitotic spindle formation – occurring endogenously or pharmacologically induced by agents such as nocodazole, loss of effective mitotic spindles causes whole chromosomes to fail to segregate appropriately during anaphase. These can then be incorporated into a micronucleus during telophase.

1 Fenech, M. *et al.* Molecular mechanisms of micronucleus, nucleoplasmic bridge and nuclear bud formation in mammalian and human cells. *Mutagenesis* **26**, 125-132, (2011).

2 Leibowitz, M. L., Zhang, C. Z. & Pellman, D. Chromothripsis: A New Mechanism for Rapid Karyotype Evolution. *Annual review of genetics* **49**, 183-211, (2015).

Supplementary Table I Quantitative RT-qPCR primer sequences

Name	Forward sequence	Reverse sequence
Mouse IFIT1	TCTAAACAGGGCCTTGCAG	GCAGAGCCCTTTTTGATAATGT
Mouse IFIT3	TGAACTGCTCAGCCCACA	TCCCGGTTGACCTCACTC
Mouse CXCL10	ATGACGGGCCAGTGAGAATG	ATTCCGGATTCAGACATCTCT
Mouse OAS1A	GCTGCCAGCCTTTGATGT	TGGCATAGATTCTGGGATCA
Mouse ISG15	GGAACGAAAGGGGCCACAGCA	CCTCCATGGGCCTTCCCTCGA
Mouse HPRT	CTGGTGAAAAGGACCTCTCG	CAAGGGCATATCCAACAACA

Supplementary Figure - Gel source data