



**Supplementary information Fig. S2 Organoids cultured in the 8C condition survive in an *in vitro* irradiation model**

**a**, Representative images of intestinal organoids cultured under the indicated conditions with or without 6 Gy  $\gamma$ -irradiation. Scale bars, 100  $\mu$ m.

**b**, qPCR analyses of intestinal lineage markers in Hyper-organoids cultured under the indicated conditions (n = 2 wells).

**c**, Quantification of organoid number under the indicated culture conditions (n = 4 wells).

**d**, Representative images of intestinal organoids cultured under the indicated conditions with or without 6 Gy  $\gamma$ -irradiation using the lineage tracing system. Scale bars, 100  $\mu$ m.

e, Quantification of tdTomato<sup>+</sup> organoids under the indicated conditions (n = 4 wells).

*P* values were determined using one-way ANOVA.

\*\*\**P* < 0.001; \*\**P* < 0.01; \**P* < 0.05; ns, not significant (*P* > 0.05). All experiments were independently replicated at least twice with similar results.