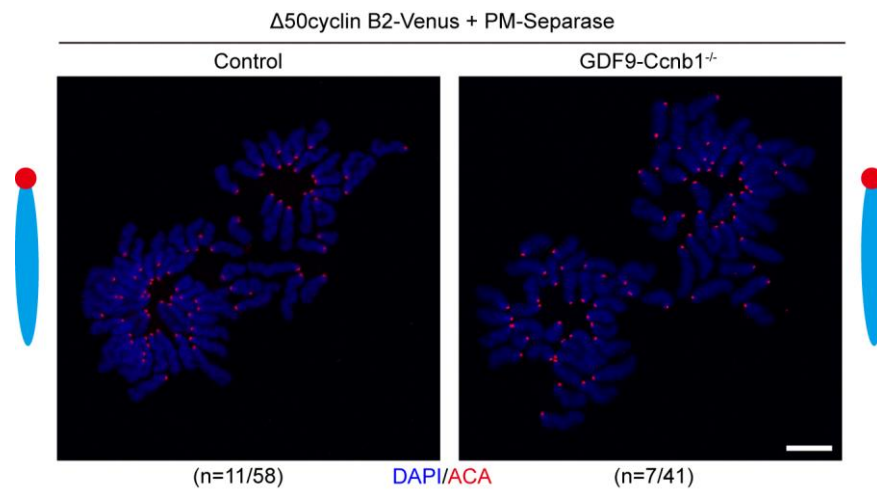


## Supplementary Information

### Supplementary figures



**Figure S1. Non-phosphorylatable separase could also induce separation of sister chromatids in the stable cyclin B2-arrested oocytes.** Bar represents 10  $\mu$ m. ACA, anti-centromeric antibodies. The numbers of oocytes used (n) are shown.

## Supplementary movies



**Movie 1. Live imaging for cyclin B2-Venus in the control oocytes.** The control oocytes expressing cyclin B2-Venus (Red) with time shown (h:min:s) relative to the release from IBMX. Bar, 30  $\mu$ m.



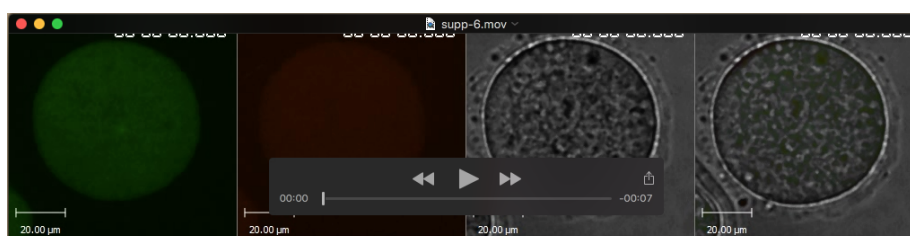
**Movie 2. Live imaging for cyclin B2-Venus in the *GDF9-Ccnb1*<sup>-/-</sup> oocytes.** The *GDF9-Ccnb1*<sup>-/-</sup> oocytes expressing cyclin B2-Venus (Red) with time shown (h:min:s) relative to the release from IBMX. Bar, 30  $\mu$ m.



**Movie 3. Live imaging for  $\Delta$ 50cyclin B2-Venus in the control oocytes.** The control oocytes expressing  $\Delta$ 50cyclin B2-Venus (Red) with time shown (h:min:s) relative to the release from IBMX. Bar, 30  $\mu$ m.



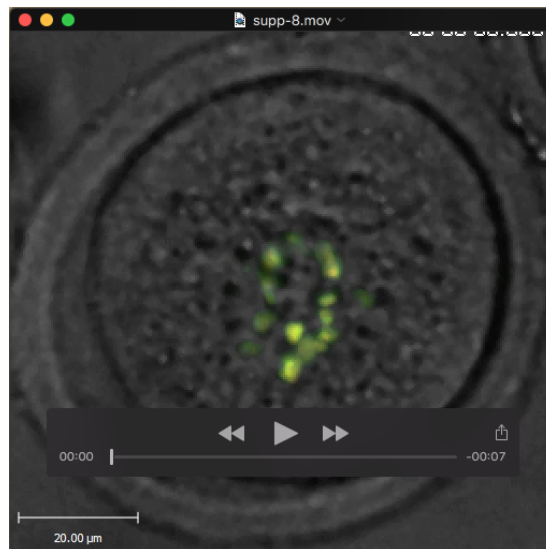
**Movie 4. Live imaging for  $\Delta 50$ cyclin B2-Venus in the *GDF9-Ccnb1*<sup>-/-</sup> oocytes.** The *GDF9-Ccnb1*<sup>-/-</sup> oocytes expressing  $\Delta 50$ cyclin B2-Venus (Red) with time shown (h:min:s) relative to the release from IBMX. Bar, 30  $\mu$ m.



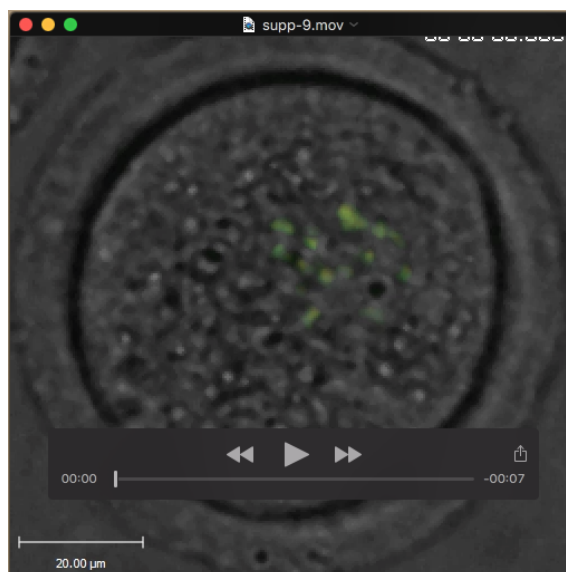
**Movie 5. Live imaging for  $\Delta 50$ cyclin B2-Venus and mCherry-securin in the control oocytes.** The control oocytes expressing  $\Delta 50$ cyclin B2-Venus (Green) and mCherry-securin (Cherry-red) with time shown (h:min:s) relative to the release from IBMX. Bar, 20  $\mu$ m.



**Movie 6. Live imaging for  $\Delta 50$ cyclin B2-Venus and mCherry-securin in the *GDF9-Ccnb1*<sup>-/-</sup> oocytes.** The *GDF9-Ccnb1*<sup>-/-</sup> oocytes expressing  $\Delta 50$ cyclin B2-Venus (Green) and mCherry-securin (Cherry-red) with time shown (h:min:s) relative to the release from IBMX. Bar, 20  $\mu$ m.



**Movie 7.** Live imaging for separase sensor in the *GDF9-Ccnb1*<sup>-/-</sup> oocytes. The *GDF9-Ccnb1*<sup>-/-</sup> oocytes expressing separase sensor with time shown (h:min:s) relative to GVBD. Bar, 20 μm.



**Movie 8.** Live imaging for separase sensor in the stable cyclin B2 expressed *GDF9-Ccnb1*<sup>-/-</sup> oocytes. The *GDF9-Ccnb1*<sup>-/-</sup> oocytes expressing separase sensor and Myc-Δ50cyclin B2 with time shown (h:min:s) relative to GVBD. Bar, 20 μm.