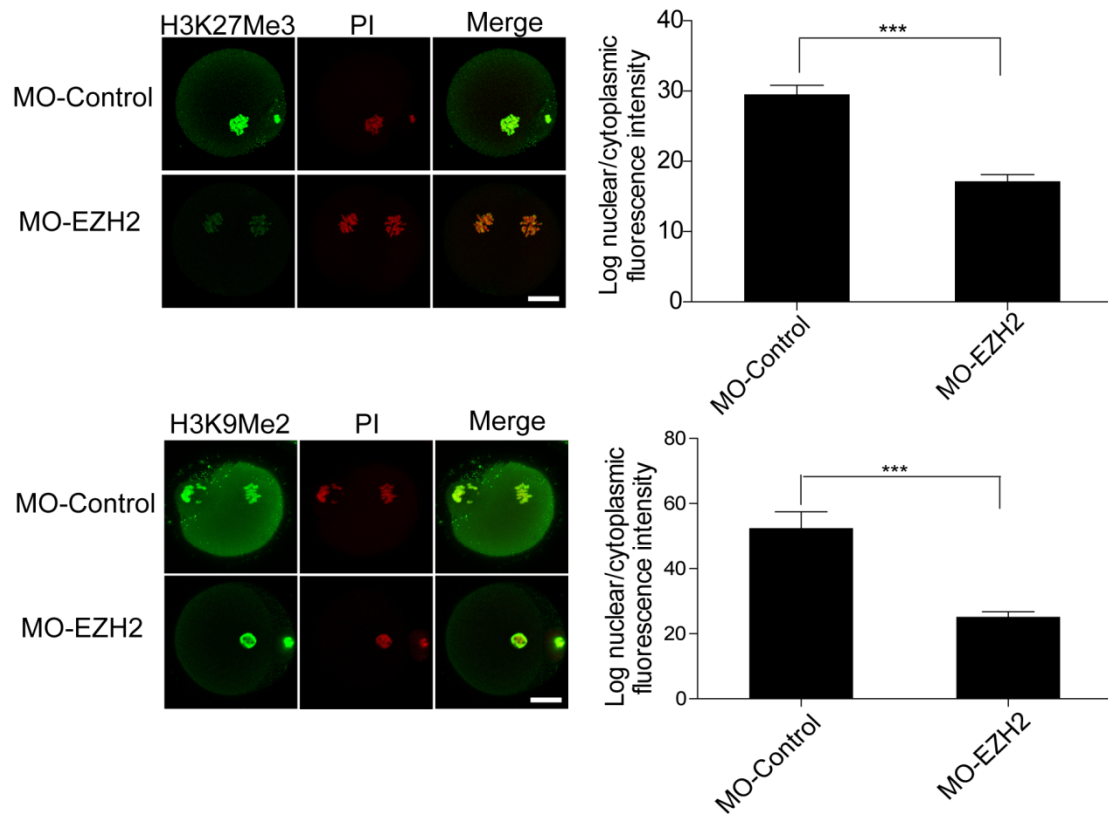


## Supplementary Materials

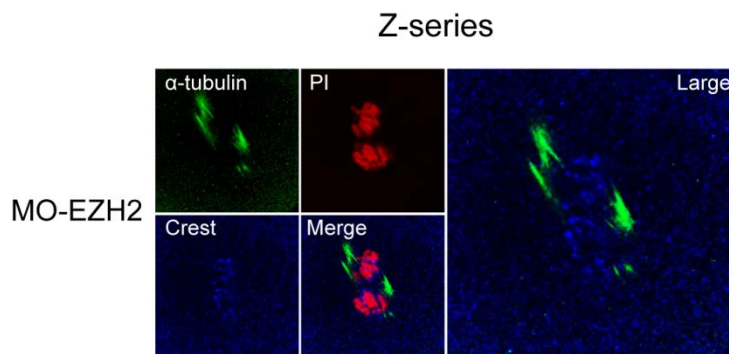
Qu et al, Supplementary figure S1



### Supplementary figure S1:

After depletion of EZH2, the levels of H3K27me3 and H3K9me2 were greatly inhibited in the oocytes. Data were shown as mean  $\pm$  SEM from three independent experiments,  $p < 0.01$ .

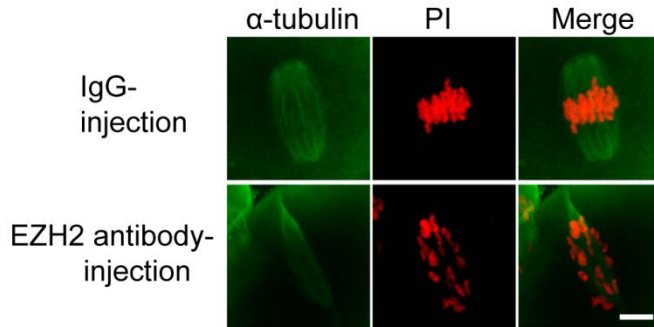
Qu et al, Supplementary figure S2



### Supplementary figure S2:

The series of z-slices for visualizing K-MT attachments after cold treatment. Green:  $\alpha$ -tubulin; Blue: Crest; Red: DNA.

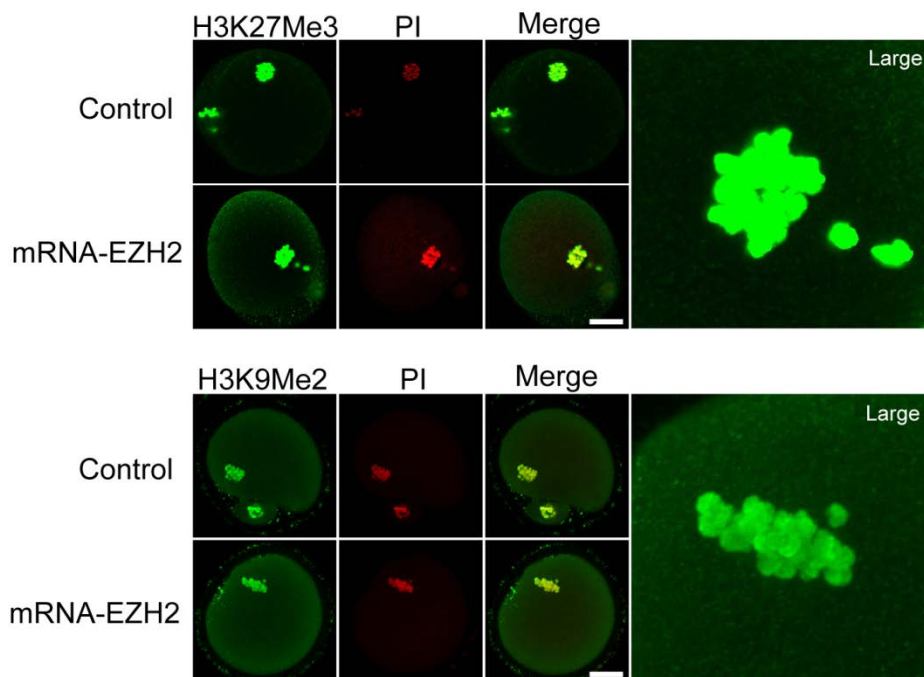
Qu et al, Supplementary figure S3



**Supplementary figure S3:**

An anti-EZH2 antibody was microinjected into the cytoplasm of oocytes at Pro-Met I stage followed by immunofluorescent staining. Green:  $\alpha$ -tubulin; Red: DNA. Scale bar = 4  $\mu$ m.

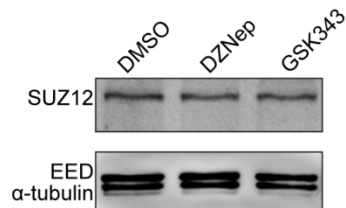
Qu et al, Supplementary figure S4



**Supplementary Figure S4:**

No obvious increase changes have been found in the levels of H3K27 me3 and H3K9me2 after overexpression of EZH2, even though the chromosome arrangement has been disordered.

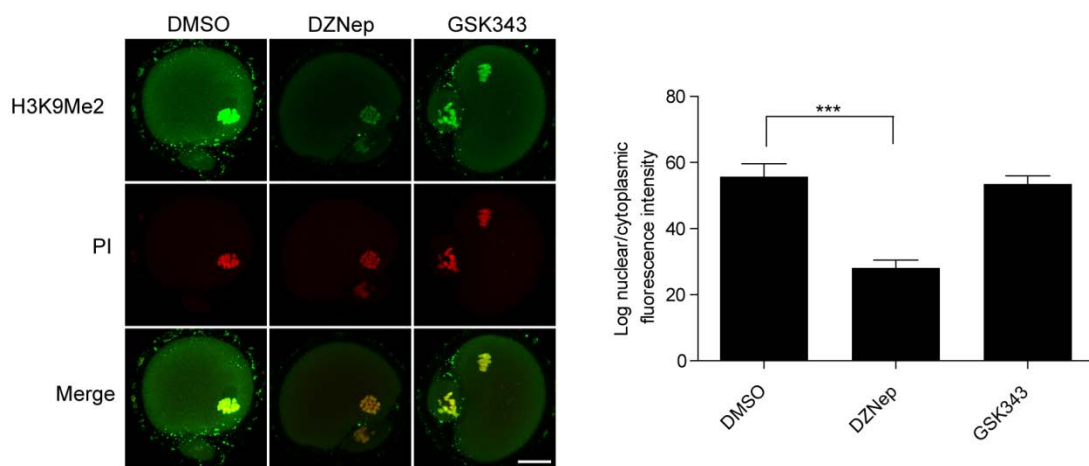
#### Qu et al, Supplementary figure S5



#### Supplementary figure S5:

The levels of other PRC2 components including SUZ12 and EED have been found no obvious variation with addition of EZH2 inhibitors including DZNep and GSK343, controlled by DMSO.

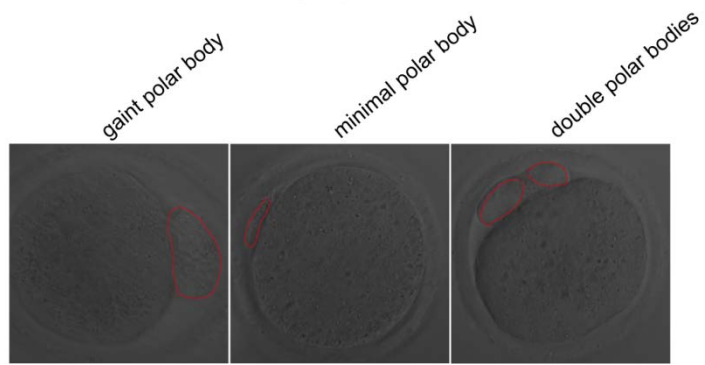
#### Qu et al, Supplementary figure S6



#### Supplementary figure S6:

DZNep, but not GSK343, could reduce the level of H3K9me2 detected by immunofluorescent staining.

Qu et al, Supplementary figure S7



**Supplementary Figure S7:**

After addition of EZH2 inhibitor GSK343 the oocytes were continued to culture in M2 medium for 14 h. Some of the oocytes were observed to extrude abnormal polar bodies with morphology of giant, small and double polar bodies (Polar bodies are circled).