

Reviewer 1

The authors' manuscript details the changes in gene expression during Human Oogenesis/Folliculogenesis, and also relates many environmental factors in a logically rigorous and narratively coherent manner.

Manuscripts with such high vertical depth are of great significance in our understanding of the whole process of oogenesis and maturation, but there are still areas that could be improved.

We thank Reviewer 1 for those positive comments.

The authors mention in the Materials and Methods section that patients were used as the object of data analysis, but the specific results don't seem to be seen too much, and I think they could have been compared more in connection with the discussion section later in the manuscript.

We thank Reviewer 1 for highlighting this element. It is true that differences between patients could exist due to characteristics (age, cause of infertility, ...) as we discussed in the Discussion section. The Table 1 in the Results displays the characteristics of the population included in each study, which could have influenced the overall analysis. We added a sentence in the Results section to refer to this parameter for the folliculogenesis analysis : "The patients included in this study were notably healthy or suffering from reproductive pathologies of varying degrees of severity" (end of section 3.1). We also stated in line 33 that "the parameters likely to influence biological effects" of oocyte final maturation are "age or health condition" and provided information on the number of oocytes and ages of patients included in the meta-analysis : "In total, the six datasets included 87 fully grown GV and 70 MII oocytes, collected from patients ranging from young to advanced maternal ages (18-44yo)." (section 3.2).

On page 20, line 130, the manuscript introduces gene up- and down-regulation. The connections between amino acids as well as enzyme proteins are refreshing and appropriately laid out in the previous paragraph.

We thank Reviewer 1 for those positive comments.

All in all, the authors' study is very meaningful and a major positive advancement for the cognitive observation of oogenesis, and the conjecture mentioned by the authors on page 21, line 173, is also very meaningful, and I very much look forward to the authors' next research.

We are also looking forward to exploring this topic further, thanks to the discoveries detailed in this paper. We are planning several experimental studies, which we hope will enable advances in *in vitro* maturation techniques.