

Eukaryotic mRNA Sequencing for Medical Species

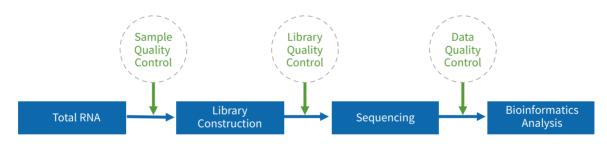
Eukaryotic mRNA sequencing of medical species is a unique service that targets human and mouse species (*Homo Sapiens* and *Mus Musculus*) to provide precise gene expression profiles among samples for disease research, drug response research, pharmacokinetics, and more. This specialized Novogene service also provides multiple analysis options, i.e. quantification analysis, standard analysis, and advanced PDX analysis, making it an affordable alternative in the research of gene expression, gene structure and function, and more.

The Novogene Advantage

- Extensive experience with 200, 000+ samples sequenced
- ✓ Industry leading data quality exceeding Illumina benchmarks
- Free in-house software to visualize data flexibly per project needs



Project Workflow

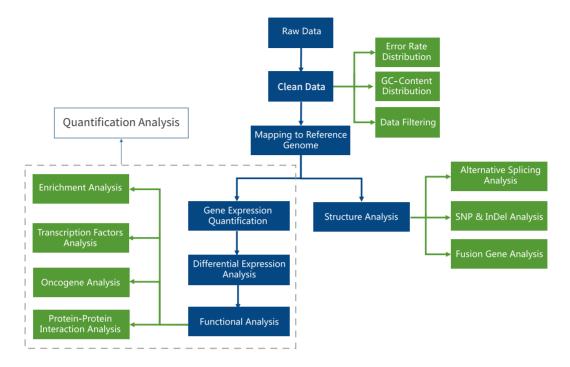


Service Highlights





Analysis Pipeline



Novogene Powered Literature

▶ *Pold3* is required for genomic stability and telomere integrity in embryonic stem cells and meiosis

Background

Effective DNA repair, genomic stability and telomere maintenance are essential for unlimited self-renewal and clinical therapy of embryonic stem cells (ESCs). Further understanding of how ESCs activate DNA damage response and repair and maintain genomic stability would benefit potential use of ESs in stem cell therapy. Besides, whether *Pold3* has a specific role in spermatogenesis remains elusive.

Results

RNA-seq reveals aberrant cell cycle and defective DNA repair induced by loss of *Pold3*. Clustering analysis reveals that gene expression profile was similar in *Pold3* iKO ESCs between P1 and P2, but genes were differentially expressed at P2 compared with P0 (Figure 1A). Venn diagrams also show that a large proportion of genes are shared by P1 versus P0 and P2 versus P0 (Figure 1B). Most upregulated genes at P1 and P2 are enriched in p53 signaling pathway (Figure 1C).

Conclusion

This study shows that *Pold3* plays important roles in DSB repair, telomere maintenance and genomic stability of both ESCs and spermatocytes, in which the RNA-seq was used to reveal the aberrant cell cycle and defective DNA repair can be induced by the loss of *Pold3*.

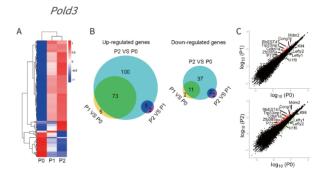


Figure 1. (A) Heatmap cluster analysis of differentially regulated genes by RNA-seq analysis of *Pold3* iKO ESCs. (B) Venn diagram depicting the overlap of up- and downregulated genes among ESCs at P0, P1 and P2. (C) Scatterplot showing differentially expressed genes.

Reference: Zhou ZC, Wang LL, Ge FX et al. Pold3 is required for genomic stability and telomere integrity in embryonic stem cells and meiosis[J]. Nucleic Acids Research, 2018, 46: 3468–3486.

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