# Supplementary Fig. 1-6

for

# Global characterization of extrachromosomal circular DNAs in advanced high grade serous ovarian cancer

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**Supplementary Fig. 1** EccDNA counts per MB from HGSOC-M tissues (red cross, n=4) and HGSOC tissues (green dot, n=4) per coding genes per MB.

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### Pathway analysis of up-regulated eccDNAs in HGSOC-M vs. HGSOC



# Biological process of up-regulated eccDNAs in HGSOC-M vs. HGSOC



Biological process of down-regulated

Synaptic transmission Cell development Regulation of signaling Localization Cellular component organization Regulation of membrane potential Locomotory behavior Establishment of localization Regulation of cell communication

#### Pathway analysis of down-regulated eccDNAs in HGSOC-M vs. HGSOC



Supplementary Fig. 2 A The biological process analysis of differentially expressed eccDNAs between HGSOC-M and HGSOC group. Upper, differentially up-regulated in HGSOC-M; Lower, differentially downregulated in HGSOC-M; B The enrichment pathway analysis of differentially expressed eccDNAs between HGSOC-M and HGSOC group. Upper, differentially up-regulated in HGSOC-M; Lower, differentially downregulated in HGSOC-M;

# GO Biological Process Classification of the up-regulated interactions in HGSOC-M vs. HGSOC



GO Biological Process Classification of the down-regulated interactions in HGSOC-M vs. HGSOC



**Supplementary Fig. 3** The classification of GO biological process of the overlap targets of Circle-Seq and RNA-Seq. Upper, differentially up-regulated in HGSOC-M; Lower, differentially down-regulated in HGSOC-M.

Pathway analysis of up-regulated interactions in HGSOC-M vs. HGSOC

P value

0.002

0.001

Selection

Counts

• 1.00

1.25

1.50

1 75

2 00

### Biological process of up-regulated interactions in HGSOC-M vs. HGSOC



B

Viral myocarditis

Renin secretion

Insulin secretion

Circadian rhythm

Shigellosis

Negative regulation of fat cell differentiation Circadian regulation of gene expression Response to oxygen levels Regulation of glucose metabolic process Regulation of circadian rhythm Regulation of fat cell differentiation Regulation of cellular carbohydrate metabolic Muscle system process Neural precursor cell proliferation Cerebellar Purkinje cell layer formation

Enrichment Score (-log10 (P value))

3

## Pathway Analysis of down-regulated interactions in HGSOC-M vs. HGSOC

5





Supplementary Fig. 4 (A) The biological process analysis of overlap targets of Circle-Seq and RNA-Seq. Upper, differentially up-regulated in HGSOC-M; Lower, differentially down-regulated in HGSOC-M; (B) The enrichment pathway analysis of the overlap targets of Circle-Seq and RNA-Seq. Upper, differentially up-regulated in HGSOC-M; Lower, differentially down-regulated in HGSOC-M;



**Supplementary Fig. 5** Gel electrophoresis analysis for a validated subset (n = 8) of eccDNAs by outward PCR using HGSOC1-4 tissues. EccDNAs were named according to gene content.



Supplementary Fig. 6 The DNMT1<sup>circle10302690-10302961</sup> expression of metastatic and primary tumors in 25 HGSOC patients who received NACT. The data were shown as mean  $\pm$  SD. \*\* P < 0.001, \*\*\*\* P < 0.0001.