

A

BP

regulation of attachment of spindle microtubules to kinetochore (GO:0051988)

microtubule cytoskeleton organization involved in mitosis (GO:1902850)

mitotic nuclear division (GO:0140014)

mitotic sister chromatid segregation (GO:0000070)

positive regulation of mitotic cell cycle phase transition (GO:1901992)

sister chromatid segregation (GO:0000819)

mitotic spindle organization (GO:0007052)

regulation of mitotic cell cycle phase transition (GO:1901990)

attachment of mitotic spindle microtubules to kinetochore (GO:0051315)

mitotic metaphase plate congression (GO:0007080)

B

CC

spindle (GO:0005819)

condensed nuclear chromosome kinetochore (GO:0000778)

microtubule cytoskeleton (GO:0015630)

mitotic spindle (GO:0072686)

microtubule organizing center (GO:0005815)

condensed chromosome kinetochore (GO:0000777)

kinesin complex (GO:0005871)

condensed nuclear chromosome, centromeric region (GO:0000780)

chromosome, centromeric region (GO:0000775)

nuclear chromosome part (GO:0044454)

C

MF

microtubule motor activity (GO:0003777)

histone kinase activity (GO:0035173)

3'-5' DNA helicase activity (GO:0043138)

motor activity (GO:0003774)

ATPase activity (GO:0016887)

microtubule binding (GO:0008017)

kinase binding (GO:0019900)

ATP-dependent microtubule motor activity, plus-end-directed (GO:0008574)

tubulin binding (GO:0015631)

patched binding (GO:0005113)

D

KEGG

Cell cycle

Oocyte meiosis

Pyrimidine metabolism

p53 signaling pathway

DNA replication

Cellular senescence

Human T-cell leukemia virus 1 infection

Progesterone-mediated oocyte maturation

Drug metabolism

Non-homologous end-joining

Figure S1. GO and KEGG functional annotation for module 1. (A) The top ten enriched biological process (BP) of the DEGs. (B) The top ten enriched molecular function (CC) of the DEGs. (C) The top ten enriched cellular component (MF) of the DEGs. (D) The top ten enriched KEGG pathways of the DEGs.

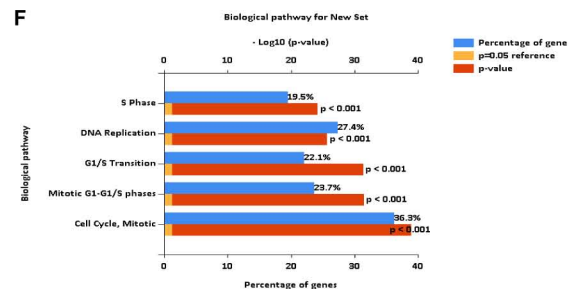
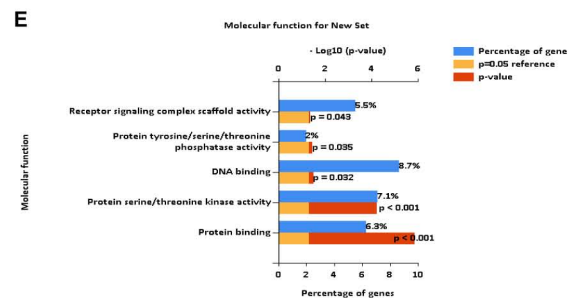
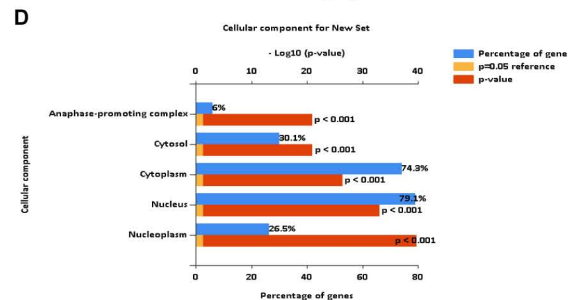
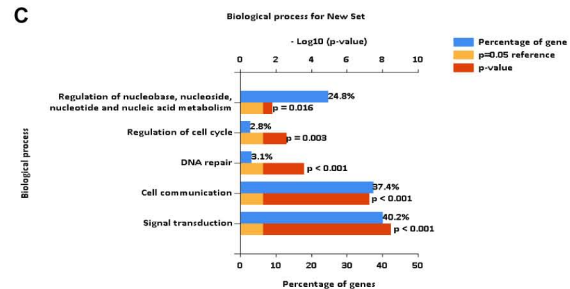
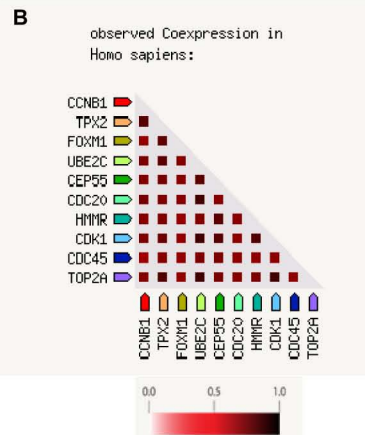
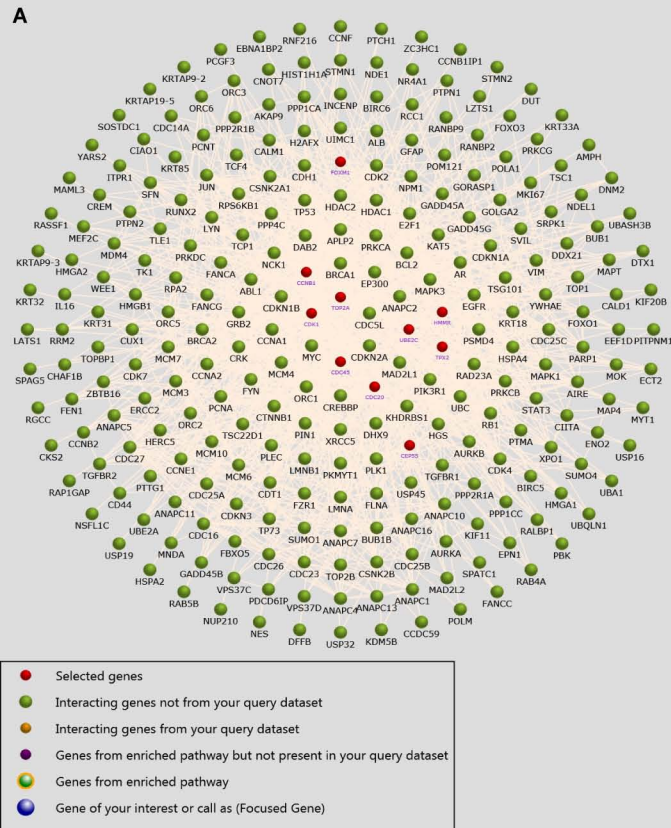


Figure S2. The interaction network of ten hub genes with their related genes and its biological function. (A) The interaction network of ten hub genes; (B) The co-expression analysis of 10 hub genes; (C-E) Top five enriched biological process (BP), molecular function (CC) and cellular component (MF) of the interaction network. (F) Top five enriched KEGG pathways of the interaction network.

A

Comparison of CCNB1 Across 4 Analyses

Over-expression

| Median Rank | p-Value | Gene | | | | |
|-------------|---------|-------|---|---|---|---|
| 20.5 | 2.55E-6 | CCNB1 | | | | |
| | | | 1 | 2 | 3 | 4 |

Legend

1. Ovarian Endometrioid Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
2. Ovarian Serous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
3. Ovarian Serous Surface Papillary Carcinoma vs. Normal
Welsh Overlan, Proc Natl Acad Sci U S A, 2001
4. Ovarian Serous Adenocarcinoma vs. Normal
Yoshihara Overlan, Cancer Sci, 2009



The rank for a gene is the median rank for that gene across each of the analyses.
The p-Value for a gene is its p-Value for the median-ranked analysis.

B

Comparison of CEP55 Across 4 Analyses

Over-expression

| Median Rank | p-Value | Gene | | | | |
|-------------|---------|-------|---|---|---|---|
| 149.5 | 7.23E-5 | CEP55 | | | | |
| | | | 1 | 2 | 3 | 4 |

Legend

1. Ovarian Endometrioid Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
2. Ovarian Mucinous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
3. Ovarian Serous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
4. Ovarian Serous Cystadenocarcinoma vs. Normal
TCGA Overlan, No Associated Paper, 2013



The rank for a gene is the median rank for that gene across each of the analyses.
The p-Value for a gene is its p-Value for the median-ranked analysis.

C

Comparison of CDK1 Across 4 Analyses

Over-expression

| Median Rank | p-Value | Gene | | | | |
|-------------|---------|------|---|---|---|---|
| 377.5 | 2.74E-7 | CDK1 | | | | |
| | | | 1 | 2 | 3 | 4 |

Legend

1. Ovarian Carcinoma vs. Normal
Bonome Overlan, Cancer Res, 2008
2. Ovarian Serous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
3. Ovarian Serous Cystadenocarcinoma vs. Normal
TCGA Overlan, No Associated Paper, 2013
4. Ovarian Serous Adenocarcinoma vs. Normal
Yoshihara Overlan, Cancer Sci, 2009



The rank for a gene is the median rank for that gene across each of the analyses.
The p-Value for a gene is its p-Value for the median-ranked analysis.

D

Comparison of UBE2C Across 6 Analyses

Over-expression

| Median Rank | p-Value | Gene | | | | | | |
|-------------|---------|-------|---|---|---|---|---|---|
| 133.0 | 7.14E-5 | UBE2C | | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 |

Legend

1. Ovarian Carcinoma vs. Normal
Bonome Overlan, Cancer Res, 2008
2. Ovarian Endometrioid Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
3. Ovarian Serous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
4. Ovarian Serous Cystadenocarcinoma vs. Normal
TCGA Overlan, No Associated Paper, 2013
5. Ovarian Serous Surface Papillary Carcinoma vs. Normal
Welsh Overlan, Proc Natl Acad Sci U S A, 2001
6. Ovarian Serous Adenocarcinoma vs. Normal
Yoshihara Overlan, Cancer Sci, 2009



The rank for a gene is the median rank for that gene across each of the analyses.
The p-Value for a gene is its p-Value for the median-ranked analysis.

E

Comparison of UBE2C Across 6 Analyses

Over-expression

| Median Rank | p-Value | Gene | | | | | | |
|-------------|---------|-------|---|---|---|---|---|---|
| 133.0 | 7.14E-5 | UBE2C | | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 |

Legend

1. Ovarian Carcinoma vs. Normal
Bonome Overlan, Cancer Res, 2008
2. Ovarian Endometrioid Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
3. Ovarian Serous Adenocarcinoma vs. Normal
Lu Overlan, Clin Cancer Res, 2004
4. Ovarian Serous Cystadenocarcinoma vs. Normal
TCGA Overlan, No Associated Paper, 2013
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6. Ovarian Serous Adenocarcinoma vs. Normal
Yoshihara Overlan, Cancer Sci, 2009



The rank for a gene is the median rank for that gene across each of the analyses.
The p-Value for a gene is its p-Value for the median-ranked analysis.

Figure S3. The expression condition of 5 hub OS-related genes reported from various researches in Oncomine database. (A) CCNB1; (B) CEP55; (C) CDK1; (D) FOXM1; (E) UBE2C.

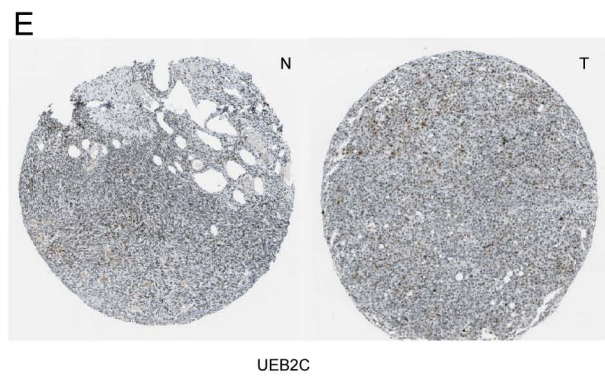
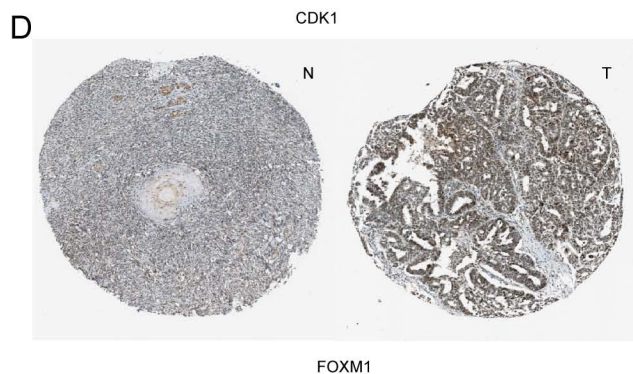
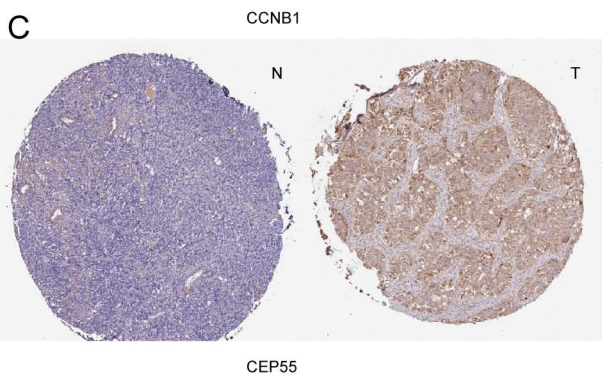
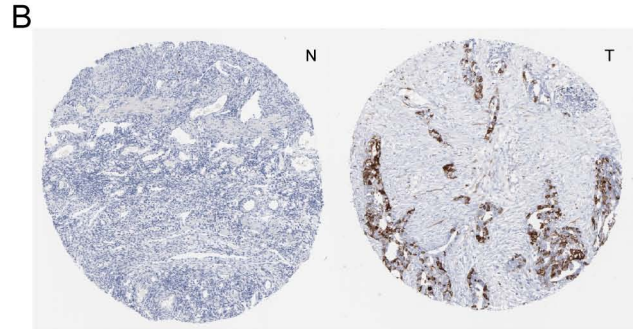
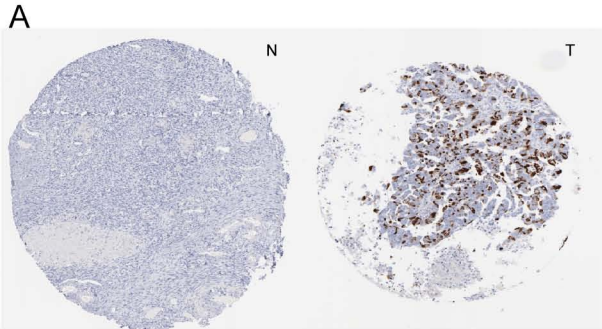
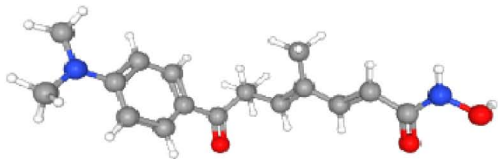
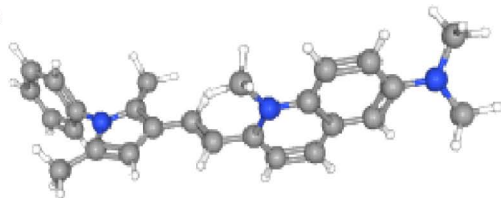


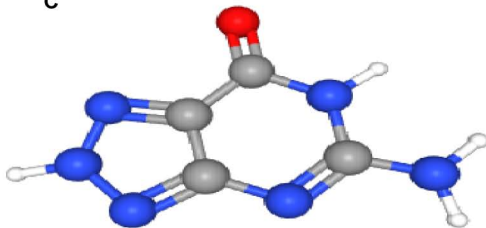
Figure S4. The immunohistochemistry of proteins translated from 5 hub OS-related genes between cancerous and normal ovary tissues in HPA database. (A) CCNB1; (B) CDK1; (C) CEP55; (D) FOXM1;(E) UBE2C. Abbreviation: N, normal; T, tumor; HPA, The Human Protein Atlas (HPA) database.

A

Trichostatin A

B

Pyrvinium

C

8-Azaguanine

Figure S5. The structures of three candidate molecular drugs from the Pubchem database (A) Trichostatin A; (B) pyrvinium; (C) 8-azaguanine.