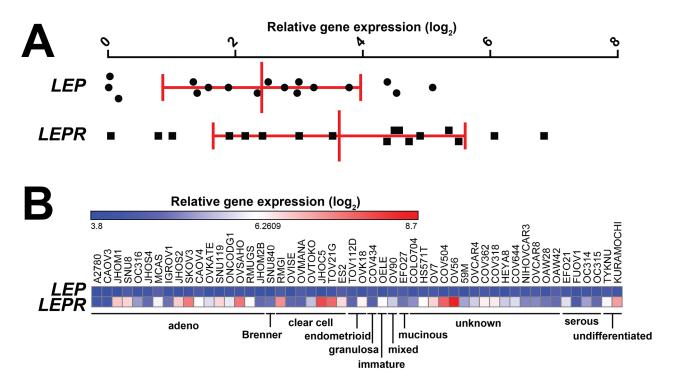
## Leptin receptor signaling via Janus kinase 2/Signal transducer and activator of transcription 3 impacts on ovarian cancer cell phenotypes

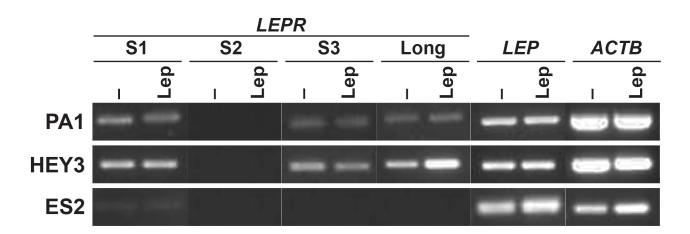
## SUPPLEMENTARY MATERIALS



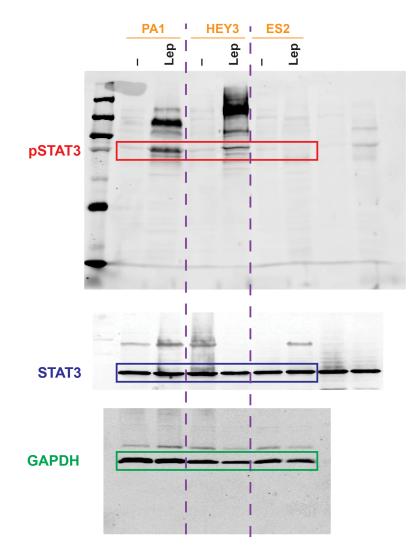
**Supplementary Figure 1: Expression of leptin/LEPR in ovarian cancer. (A)** Relative gene expression of *LEP* and *LEPR* in Grade 3 ovarian carcinoma samples was analyzed by qRT-PCR and normalized relative to *ACTB*, as indicated, showing mean and SEM. **(B)** Relative gene expression of *LEP* and *LEPR* in 52 ovarian cancer cell lines, which are shown along with their subtype designation. This is presented as a 'heat map' with the range of expression levels indicated in the key.

Re	lative gene	expression	log <sub>2</sub> )												
2.8618		giobal 5	7.1556												
TCGA-20-0987 TCGA-20-0987 TCGA-20-0979	TCGAA28-1021 TCGAA28-1021 TCGAA28-1029 TCGAA28-1012 TCGAA28-1012 TCGAA28-1012 TCGAA28-1012 TCGAA28-1018 TCGAA28-1018 TCGAA28-1018 TCGAA28-1018	TCGA-22-1028 TCGA-22-1028 TCGA-22-1109 TCGA-23-1109 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120 TCGA-23-1120	C00A04-1331 TC00A04-1343 TC0A023-1023 TC0A023-1028 TC0A023-1122 TC0A023-1122 TC0A023-1122 TC0A023-1122 TC0A023-1123 TC0A023-1123 TC0A023-1123 TC0A023-1123 TC0A023-1123	TCG&A24 1937 TCG&A24 1027 TCG&A24 1017 TCG&A24 1116 TCG&A24 1126 TCGAA24 1238 TCGAA24 1238 TCGAA24 1238 TCGAA24 1238 TCGAA24 1238 TCGAA24 1238	100A28-1585 100A28-1585 100A28-1585 100A28-1585 100A28-1585 100A28-1585 100A28-1585 100A28-1554 100A28	TCGA.24 1562 TCGA.24 1562 TCGA.24 1563 TCGA.24 1563 TCGA.25 0759 TCGA.13 0759 TCGA.13 0725 TCGA.13 0725 TCGA.13 0795 TCGA.13 0795 TCGA.13 0795 TCGA.13 0795 TCGA.13 0795 TCGA.13 0795	TCGA-13-0791 TCGA-13-0791 TCGA-03-0361 TCGA-03-0725 TCGA-03-0725 TCGA-13-0725 TCGA-13-0735 TCGA-13-0737 TCGA-13-0737 TCGA-13-0737 TCGA-03-0397 TCGA-03-0727 TCGA-	TCGA-13-0794 TCGA-13-0794 TCGA-13-0713 TCGA-13-0713 TCGA-13-0795 TCGA-13-0795 TCGA-13-0765 TCGA-13-0765 TCGA-13-0765 TCGA-13-0765 TCGA-13-0765 TCGA-13-0765 TCGA-13-0755 TCGA-13-0755	TCGAP 30799 TCGAP 30799 TCGAP 30799 TCGAP 30791 TCGAP 30791 TCGAP 3079 TCGAP 301 TCGAP	CG6A-04-1382 CG6A-03-1399 CGA-13-9999 CGA-25-13-9999 CGA-25-13-9999 CGA-04-1349 CGA-04-1349 CGA-04-1349 CGA-04-1349 CGA-04-1345 CGA-04-135	TCGA-15-1410 TCGA-25-1218 TCGA-26-1237 TCGA-04-1397 TCGA-04-1397 TCGA-13-1404 TCGA-13-1404 TCGA-13-1404 TCGA-13000 TCGA-13000 TCGA-1300 TCGA-13000 TCGA-13000 TCGA-130	TCGAA25-1224 TCGAA05-1224 TCGAA05-1397 TCGAA05-1397 TCGAA05-1317 TCGAA05-1317 TCGAA25-1317 TCGAA25-1317 TCGAA05-1317 TCGAA05-1316 TCGAA05-1317 TCGAA05-1318 TCGAA	TCGA.15.2800 TCGA.15.2800 TCGA.25.2802 TCGA.25.2892 TCGA.25.2892 TCGA.25.2893 TCGA.	TCGA.25.2396 TCGA.25.2398 TCGA.25.2394 TCGA.95.2948 TCGA.95.2948 TCGA.95.2348 TCGA.95.2348 TCGA.95.2349 TCGA.95.2349 TCGA.95.2349 TCGA.95.2349 TCGA.24.2398 TCGA.25.2388 TCGA.	TCGA282-3225 TCGA282-3256 TCGA282-3265 TCGA282-3287 TCGA282-3287 TCGA282-3287 TCGA282-2289 TCGA282-2285 TCGA282-285 TC
LEP LEPR															
TCGA-25-2401 TCGA-69-2348 TCGA-09-2053	TCGA-81-2002 TCGA-81-2002 TCGA-81-2002 TCGA-81-2002 TCGA-81-2005 TCGA-81-2005 TCGA-81-2009 TCGA-81-2009 TCGA-81-2009 TCGA-61-2008	TCGA-28,2024 TCGA-38,2024 TCGA-81,2022 TCGA-81,2022 TCGA-81,2022 TCGA-81,2022 TCGA-81,2022 TCGA-28,2012 TCGA-28,2013 TCGA-28,2013 TCGA-28,2013 TCGA-28,2013 TCGA-28,2013 TCGA-28,2013 TCGA-28,2013	TCGA461:2012 TCGA461:2012 TCGA451:2019 TCGA451:2019 TCGA451:2019 TCGA451:1055 TCGA451:1055 TCGA451:2016 TCGA451:2016 TCGA451:2010 TCGA451:2010 TCGA451:2010 TCGA451:2010 TCGA451:2010	TCGAR-91203/ TCGAR-91203 TCGAR-29208 TCGAR-91203 TCGAR	TCGA-31-1951 TCGA-81-1721 TCGA-81-1721 TCGA-81-1223 TCGA-31-1853 TCGA-31-1853 TCGA-31-1853 TCGA-31-1853 TCGA-31-1853 TCGA-31-1853 TCGA-31-1823 TCGA-31-1823 TCGA-31-1823 TCGA-31-1823 TCGA-31-1823 TCGA-31-1827	TCGA.24-2027 TCGA.24-2027 TCGA.24-2027 TCGA.20-1959 TCGA.51-1959 TCGA.51-1959 TCGA.51-1959 TCGA.51-1959 TCGA.21-1959 TCGA.30-1951 TCGA.30-1852 TCGA.30-1852	CGGA-61-1917 CGGA-61-1917 CGGA-25-1820 TCGGA-31-1944 TCGGA-51-1918 TCGA-51-1918 TCGA-51-1918 TCGA-51-1918 TCGA-51-1918 TCGA-51-1918 TCGA-51-1918	TCGA-25-1877 TCGA-27-1877 TCGA-57-1894 TCGA-57-1894 TCGA-58-1894 TCGA-58-1594 TCGA-28-1571 TCGA-28-1571 TCGA-25-1674 TCGA-25-1628 TCGA-25-1628 TCGA-25-1628 TCGA-25-1628 TCGA-24-1557	TCGA-09-169-100-00-100-100-100-100-100-100-100-100	CICGA-04-1519 CICGA-04-1519 CICGA-28-1520 CICGA-28-1524 CICGA-28-1524 CICGA-28-1524 CICGA-28-1524 CICGA-28-1525 CICGA-28-1525 CICGA-28-1525 CICGA-28-1525 CICGA-28-1525 CICGA-28-1525 CICGA-28-15555 CICGA-28-15555 CICGA-28-15555 CICGA-28-15555 CICGA-28-15555 CICGA-28-15555 CICGA-28-15555 CICGA-28-155555 CICGA-28-155555 CICGA-28-1555555 CICGA-28-1555555	TCGA-05-1040 TCGA-05-1620 TCGA-25-1620 TCGA-25-1500 TCGA-25-1500 TCGA-25-1500 TCGA-25-1500 TCGA-25-1500 TCGA-25-1500 TCGA-	TCGA-04-130 TCGA-04-2500 TCGA-13-2607 TCGA-13-2607 TCGA-13-2607 TCGA-04-2560 TCGA-04-1560 TCGA-04-2560 TCGA-0	TCGA-02.2503 TCGA-02.2503 TCGA-259.2613 TCGA-259.2513 TCGA-259.2513 TCGA-251.1614 TCGA-2512513 TCGA-252551 TCGA-252551 TCGA-252551 TCGA-222551 TCGA-12.2551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22551 TCGA-22512 TCGA-225222 TCGA-22522 TCGA-225222 TCGA-22522 TCGA-225222 TCGA-22522 TCGA-22522 TCGA-22522 TCGA-2	CGA-92-2530 100A-92-2592 100A-92-2592 100A-92-2592 100A-92-2593 100A-92-2592 100A-92-2522 100A-9	TCGA-2554 TCGA-2554 TCGA-12-2595 TCGA-12-2595 TCGA-12-2595 TCGA-12-259 TCGA-12-259 TCGA-12-251 TCGA-12-251 TCGA-12-251 TCGA-12-251 TCGA-12-251 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-1261 TCGA-22-2561 TCGA-
LEP LEPR															
	TCGA-29-1791 TCGA-29-1791 TCGA-29-1791 TCGA-29-1791 TCGA-29-1894 TCGA-20-1894 TCGA-29-1894 TCGA-29-1894 TCGA-29-1792	TCGA 09 1670 TCGA 20 1670 TCGA 20 1685 TCGA 20 1783 TCGA 20 1783 TCGA 20 1783 TCGA 20 1783 TCGA 20 1773 TCGA 20 1773 TCGA 20 1774 TCGA 20 1774	TCGA-03-1673 TCGA-03-1673 TCGA-23-1673 TCGA-23-1710 TCGA-23-1710 TCGA-23-1720 TCGA-23-1720 TCGA-23-1720 TCGA-23-1731 TCGA-23-1731 TCGA-23-1731 TCGA-23-1731 TCGA-23-1731 TCGA-23-1731	TCGAA239-1090 TCGAA239-1714 TCGAA239-1714 TCGAA239-1714 TCGAA231-1718 TCGAA21-1718 TCGAA31-1718 TCGAA31-1718 TCGAA31-1818 TCGAA31-1818	TCGA-23-1029 TCCA-23-1029 TCCA-23-1820 TCCA-23-1820 TCCA-23-1820 TCCA-23-1927 TCCA-23-1927 TCCA-23-1925 TCCA-	TCGA-01-189 TCGA-01-181 TCGA-01-181 TCGA-01-172 TCGA-01-172 TCGA-01-180 TCGA-01-180 TCGA-01-180 TCGA-01-180 TCGA-01-180 TCGA-01-180 TCGA-01-180	TCGA-81-1984 TCGA-81-1991 TCGA-81-1991 TCGA-81-1991 TCGA-81-1778 TCGA-81-1919 TCGA-81-1919 TCGA-81-1919 TCGA-81-1919 TCGA-81-1777 TCGA-81-1773 TCGA-81-1773	TCGA-61-1904 TCGA-13-0807 TCGA-13-0807 TCGA-13-0812 TCGA-13-0812 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823 TCGA-13-0823	TCGAP 10-0029 TCGAP 10-0029 TCGAP 10-0029 TCGAP 10-0029 TCGAP 10-0027 TCGAP 10-0027 TCGAP 10-0027 TCGAP 10-0027 TCGAP 10-0029 TCGAP 10-0029 TCGAP 10-0029 TCGAP 10-0029	TCGA+13-0906 TCGA+13-0906 TCGA+13-0906 TCGA+10-0906 TCGA+13-09910 TCGA+13-09910 TCGA+13-09910 TCGA+13-09910 TCGA+13-0920 TCGA+10-0920 TCGA+10-0920 TCGA+10-0920 TCGA+13-0900 TCGA+13-0900 TCGA+13-0900	TCGAx30+1441 TCGAx30+1427 TCGAx30+1427 TCGAx13+1424 TCGAx13+1424 TCGAx12+1428 TCGAx12+1429 TCGAx12+1429 TCGAx12+1429 TCGAx12+1429 TCGAx12+1429 TCGAx12+1429 TCGAx12+1429	TCGAN-241 4420 TCGAN-231 4467 TCGAN-134 1467 TCGAN-134 1467 TCGAN-134 1467 TCGAN-134 1419 TCGAN-134 1419 TCGAN-134 1419 TCGAN-134 1429 TCGAN-134 1429 TCGAN-134 1429 TCGAN-134 1429 TCGAN-134 1420	TCGA-13 1489 TCGA-13 1489 TCGA-13 1510 TCGA-13 1510 TCGA-13 1510 TCGA-13 1510 TCGA-13 1510 TCGA-13 1511 TCGA-13 1511 TCGA-13 1512 TCGA-13 1512 TCGA-13 1512 TCGA-13 1512 TCGA-13 1512	TCGM-13-1512 TCGM-13-1512 TCGM-13-1483 TCGM-13-1483 TCGM-13-1483 TCGM-13-1483 TCGM-13-1694 TCGM-13-1594 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-2005 TCGM-61-170 TCGM-61-17	TCGA-24 1982 TCGA-29 1792 TCGA-39 1792 TCGA-39 1982 TCGA-39 1982 TCGA-39 1982 TCGA-39 1982 TCGA-39 1982 TCGA-39 1798 TCGA-39 1798 TCGA-19 1812 TCGA-19 1812 TCGA-19 1812 TCGA-19 1812 TCGA-29 1705 TCGA-29 1705
LEP										والأعاد والمتعاد والتلوية					

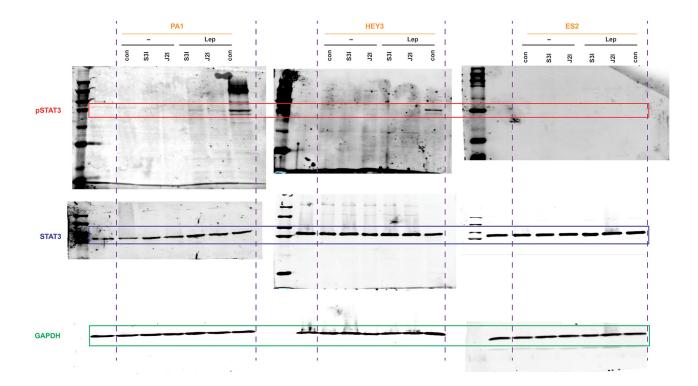
**Supplementary Figure 2: Expression of leptin/LEPR in ovarian cancer patients.** Relative gene expression of *LEP* and *LEPR* in 484 ovarian cancer samples, presented as a 'heat map' with the range of expression levels indicated in the key.



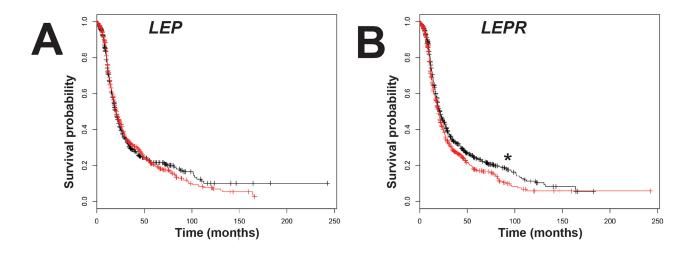
**Supplementary Figure 3: Expression of leptin and LEPR isoforms in ovarian cancer cells.** Expression of *LEP* and *LEPR* in ovarian cancer cell lines. Cells, either untreated (–) or treated with 100 ng/ml leptin (Lep), were analysed by RT-PCR for expression of the indicated gene and isoform, including *ACTB* as a control.



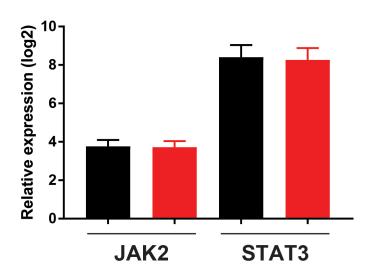
**Supplementary Figure 4: STAT3 activation by leptin.** Lysates from the indicated cell lines, either untreated (–) or treated for 45 min with 100 ng/ml leptin (Lep), were analyzed Western blot with anti-phospho-STAT3 (upper), along with anti-STAT3 (middle) and anti-GAPDH (lower) to confirm equivalent loading. Shown is a representative of three independent experiments.



**Supplementary Figure 5: Inhibition of leptin-induced STAT3 activation by JAK2 and STAT3 inhibitors.** Lysates were prepared from cells, either untreated (–) or treated with 100 ng/ml leptin (Lep), without inhibitors (con) or with specific inhibitors for STAT3 (S3I) or JAK2 (J2I), as indicated, and analyzed for STAT3 activation as described in Supplementary Figure 4. Shown is a representative of three independent experiments.



Supplementary Figure 6: Impact of leptin/LEPR expression on ovarian cancer patient survival. Overall survival curves of serous ovarian cancer patients expressing high (above median, red) versus low (below median, black) levels of *LEP* (A) or *LEPR* (B) (p < 0.05).



**Supplementary Figure 7: Expression of JAK2 and STAT3 in patient cohort.** Relative expression of JAK2 and genes STAT3 in ovarian cancer patients expressing high (above median, red) versus low (below median, black) levels of both *LEP* and *LEPR*.