

Supplementary Table S1. Ovarian cancer cell lines

Cell line	Histology	Characterization ^a	Treatment(s) ^b	Xeno graft	Sequencing data ^{c,d}	Reference
59M	Endometrioid	Ascites	Naïve		X	(Wilson et al.)
138D	Cystadeno-carcinoma	Ascites	Carboplatin			(Wilson et al.)
180D	Adeno-carcinoma	Ascites	Cisplatin, Carboplatin			(Wilson et al.)
200D	Adeno-carcinoma	Tumor tissue	Naïve			(Wilson et al.)
253D	Adeno-carcinoma	Ascites	Warfarin, Cyclophosphamide, medroxyprogesterone acetate			(Wilson et al.)
2008 2008 *C13[†]	Cystadeno-carcinoma	Tumor tissue Constant 1 μ M	Naïve			(Andrews et al.)
A1847	Adeno-carcinoma	Tumor tissue	Naïve			(Pirker et al.)
A2780 CP70* C30* C200* ADR*	Adeno-carcinoma	Tumor tissue Intermittent 70 μ M Constant 30 μ M Constant 200 μ M Adriamycin	Naïve	Yes	X	(Burbridge et al., Karlan et al., Shaw et al.)
Caov-3	Adeno-carcinoma	Tumor tissue	cyclophosphamide, adriamycin, and 5-fluorouracil	Yes	X	(Karlan et al.)
COLO704	Adeno-carcinoma	Ascites	Naïve		X	(Steinmeyer et al.)
COLO720E	Serous	Ascites	Naïve			(Taniguchi et al.)
COV318	Serous	Ascites	Naïve		X	(van der Berg-Baker et al.)
COV362 COV362.4	Endometrioid. Colony of COV362 at passage 16	Pleural effusion	Naïve		X	(van der Berg-Baker et al.)
COV413A	Serous	Tumor tissue	Naïve			(van der Berg-Baker et al.)
COV413B	Serous	Tumor tissue	Naïve			(van der Berg-Baker et al.)
COV434	Granulosa	Tumor tissue	Naïve			(van der Berg-Baker et al.)
COV504	Serous	Pleural effusion	Naïve		X	(van der Berg-Baker et al.)
DOV13	Serous	Ascites		Yes		(Afzal et al., Ahmed et al., Rodriguez et al.)
EFO-21	Adeno-carcinoma	Ascites	Naïve		X	(Holzel et al.)
EFO-27	Adeno-carcinoma	Solid omental metastasis	Naïve		X	(Holzel et al.)
ES-2	Clear Cell	Tumor tissue	Naïve	Yes	X	(Lau et al., Shaw et al.)
Hey A8[†] C2[†]	Serous	Tumor tissue xenograft	Naïve	Yes	X	(Buick et al.)
ID-8, IG10, IF5	Mouse transformed ovary	Line developed from transformed mouse ovarian surface epithelial cells	Naïve	Yes		(Roby et al.) (Greenaway et al., Urzua et al.)
IGROV-I	Endometrioid	S:III, Tumor tissue	Naïve		X	(Benard et al., Burbridge et al.)

MDAH2774	Endometrioid	Ascites	Naïve	Yes		(Freedman et al.)
MOSE	Mouse normal ovary	Mouse Ovarian tissue	Naïve			(Roby et al.)
MONTY1	Serous	Tissue	Naïve	Yes		(Kaur et al.)
OAW-28	Adeno-carcinoma	Ascites	Cisplatin, Melphalan		X	(Wilson et al.)
OAW-42	Cystadeno-carcinoma	Ascites - forms free-floating, platinum sensitive cysts in vitro.	Cisplatin		X	(Ahmed et al., Wilson et al.)
OC314	Serous-papillary cancer	Ascites. 39 yrs, FIGO IIIC, low differentiated ser.-pap	Naïve		X	(Alama et al.)
OC316	Adeno-carcinoma	Ascites. 60 yrs old, FIGO IV, low differentiated	Neo-adjuvant PEC-surgery-PEC, progression/chemo-resistant disease, taxol		X	(Alama et al.)
OV17R	Adeno-carcinoma	S:III, Ascites	Carboplatin, Cyproterone, Tamoxifen			(Boocock et al.)
OV25	Adeno-carcinoma	S:III, Ascites	Cyclophosphamide, Etoposide, Tamoxifen			(Boocock et al.)
OV25R	Adeno-carcinoma	S:III, Ascites	Cyclophosphamide, Etoposide, Tamoxifen			(Boocock et al.)
OV56	Serous	S:IV, Ascites	Carboplatin		X	(Boocock et al.)
OV58	Serous	S:III, Ascites	Carboplatin, Chlorambucil			(Boocock et al.)
OV7	Mixed	Tumor tissue, high grade	Chlorambucil		X	(Boocock et al.)
OV90	Serous	S:IIIC, G:3, Ascites	Naïve	Yes	X	(Boocock et al.)
OVCA429	Serous	Ascites		No		(Ahmed et al., Introna et al., Shaw et al.)
OVCA433	Serous	S:III, G:3, Ascites	Paclitaxel, carboplatin	Yes		(Ahmed et al., Introna et al., Shaw et al., van der Berg-Baker et al.)
OVCAR-3	Serous adeno-carcinoma	Ascites, NCI 60 cell line ^d	Cyclophosphamide, Adriamycin, Cisplatin	Yes	X	(Green et al., Hamilton et al., Yip et al.)
OVCAR-4	Adeno-carcinoma	Ascites, NCI 60 cell line ^d	Cyclophosphamide, Adriamycin, Cisplatin	Yes	X	(Green et al., Yip et al.)
OVCAR-5	Adeno-carcinoma	Tumor tissue, NCI 60 cell line ^d	Naïve	Yes		(Yip et al.)
OVMANA	Clear cell	Tumor tissue. 40 yrs old. FIGO IIB	Cisplatin	Yes, sq	X	(Cheung et al., Gorai et al.)
OVISE	Clear cell	Tumor tissue	Carboplatin	Yes, sq	X	(Cheung et al., Gorai et al.)
OVTOKO	Clear cell	Tumor tissue (spleen), FIGO IIIB	Carboplatin		X	(Cheung et al., Gorai et al.)
PEO23	Adeno-carcinoma	Ascites	Cisplatin,			(Langdon et al.)

			Chlorambucil			
RMUG-S RMUG-L	Adeno-carcinoma				X	(Sakayori et al.)
SKOV3 SKOV3ip.1 SKOV3x SKOV3TR (taxane resistant)	Adeno-carcinoma	Ascites, NCI 60 cell line ^d	Thiotepa	Yes	X	(Hua et al., Shaw et al., Yip et al.) SKOV3ip.1 (Yu et al.) SKOV3x (Shao et al.) SKOV3TR (Landen et al.)
SW 626	Adeno-carcinoma	S:III, Tumor tissue	Naïve			(Giannakakou et al.)
TOV112D	Endometrioid	S:IIIC, G:3, Tumor tissue. P53 mutation. Very aggressive, 42 yr old pt. survived only 3 months.	Naïve	Yes	X	(Provencher et al.)
TOV21G	Clear cell	S:III, G:3, Tumor tissue. 42 yr old pt. P53 wt.	Naïve	Yes	X	(Provencher et al.)
TR175	Cystadeno-carcinoma	S:III, Ascites	Naïve			(Hill et al.)
TYK-nu	Clear cell	Cisplatin sensitive	Naïve	Yes	X	(Cheung et al.)
UCI101	Adeno-carcinoma	S:III, Ascites/ Tumor tissue	Cyclophosphamide, Adriamycin, Cisplatin, Taxol			(Fuchtnet et al.)
UWB1.289 UWB1.289+BRCA1	Serous, mutated BRCA1 exon 11 BRCA1 restored	Tumor tissue	Platinum Refractory			(DelloRusso et al.)

^a Stage, S; Grade, G; Tumor, cell line derived from solid tumor tissue; Ascites, cell line derived from ascetic fluid.

^b Treatments were done before initial derivation of cell line. *Sub-lines of A2780. †Sub-lines of Hey.

[‡]Sub-lines of 2008.

^c Sequencing information at <http://www.broadinstitute.org/ccle/home> and published by Barretina and colleagues (Barretina et al.). This website contains sequencing information on 50 ovarian cancer cell lines

^d Sequencing information for the NCI 60 celllines is available at <http://discover.nci.nih.gov/cellminer/home.do>

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Supplementary Table S2. Ovarian Cancer Stem Cell Marker

Marker	Normal function(s)	Proposed OC function(s)	Reference(s)
CD117 (c-KIT)	Hematopoietic cell survival, proliferation, differentiation	Cancer stemness, tumor proliferation, metastasis, angiogenesis	(Inoue et al., Zhang et al.)
CD44	Cell adhesion, hyaluronate degradation, lymphocyte homing	Cancer stemness, mesothelium binding, Nanog activation, cytoskeletal activation of MDR-1	(Alvero et al., Zhang et al.)
CD133 (PROM1)	Hematopoiesis, tissue development, differentiation	Cancer stemness, metastasis, angiogenesis	(Baba et al., Curley et al.)
MyD88	Immune response, inflammation	Chemoresistance, proliferation	(Alvero et al.)
CD24	Self-renewal, differentiation	Cancer stemness, quiescence, chemoresistance	(Gao et al., Kristiansen et al.)
LIN28	Stem cell self-renewal, maintenance of pluripotency	Cancer stemness, dedifferentiation	(Peng et al.)
Oct4	Maintenance of pluripotency, stem cell self-renewal	Cancer stemness, dedifferentiation	(Hu et al., Peng et al.)
ALDH1 (Aldehyde dehydrogenase 1)	Metabolism of aldehydes, alcohol oxidation, differentiation (generation of retinoic acid)	Cancer stemness, tumor development	(Deng et al., Landen et al.)

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Supplementary Table S3. Summary of all Published Genetic Engineered Mouse Models of Ovarian Cancer

Reference	Year	Gene Alterations	Site Specific Delivery	Phenotype	Comments
(Wu et al.)	2013	<i>Pten/APC/p53^{R172H}/PIK3ca</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Endometrioid ovarian tumors, ascites, metastasis	Mutant p53 and mutation in <i>PIK3ca</i> shorten survival and increase metastasis in beta-catenin and Pten dependent endometrioid tumors.
(Szabova et al.)	2012	<i>p53/p53^{R172H}/Rb^{T121}/BRCA1/BRCA2</i>	TgK18G ^{T121} - Adeno-Cre injection in bursa for floxed alleles (Flesken-Nikitin et al.)	Serous epithelial ovarian carcinomas, metastasis, ascites p53/Brca1 or 2 → tumors p53/Rb → tumors p53/Brca1 or 2/Rb → tumors	More tumors from p53 null than p53 mutant in combination with Brca or Rb. Rb and p53 induced tumors regardless of Brca mutations.
(Kim et al.) and (Kim et al.)	2012	<i>Pten/Dicer</i> and triple knock-out <i>Dicer/Pten/p53LSL^{R172H/+}</i>	MISRII-Cre (Jamin et al.)	High-grade serous fallopian tube carcinoma, ascites, metastasis	Tumors form in oviductal stroma (double knock-out) independent of p53 or BRCA mutations and in both the ovary and fallopian tube (triple knock-out).
(Kinross et al.)	2012	<i>Pten/PI3Kca^{H1047R}</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Serous adenocarcinoma and granulosa cell tumors	mTor/PI3K inhibitors delayed tumor growth and increased survival.
(Mullany et al.)	2011	<i>Pten/K-ras^{G12D}</i>	MISRII-Cre (Jamin et al.)	Low grade serous ovarian papillary adenocarcinoma	Estrogen increased metastasis.
(Laviolette et al.)	2010	<i>tgCAG-LS-TAg</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Poorly differentiated ovarian tumors, ascites, metastasis	Estrogen accelerated tumor formation.
(Quinn et al.)	2009	<i>p53/Brca1</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	High grade leiomyosarcomas	May originate in bursa. Did not display epithelial, follicular or lymphocyte markers.
(Liang et al.)	2009	<i>PIK3ca</i>	MISRII-Cre (Jamin et al.)	OSE hyperplasia, no transformation	PIK3CA plus K-ras may induce full transformation.
(Fan et al.)	2008	<i>Pten/K-ras^{G12D}</i>	Pgr-Cre (Soyal et al.) Cyp-19-Cre (Fan et al.) MISRII-Cre (Jamin et al.)	Pgr-No granulosa tumors 19-Granulosa tumors Pten/K-ras/MISRII-low grade serous tumors	K-ras/Pten deletion in the OSE causes tumors, while in granulosa cells blocks K-ras induced tumors.
(Wu et al.)	2007	<i>Pten/APC</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Endometrioid ovarian tumors, ascites, metastasis	Supports beta-catenin and Pten as important in endometrioid histotype from ovarian surface.
(Clark-Knowles et al.)	2007	<i>p53/Brca1/Rb</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Leiomyosarcomas	Brca deficient derived cells displayed greater sensitivity to cisplatin, which was reduced when

					p53 or Rb were deleted.
(Mabuchi et al.)	2007	<i>MISRII-TAg</i>	MISRII (Jamin et al.)	Poorly differentiated carcinoma with occasional cysts and papillary structures on ovarian surface, metastasis, ascites	Testing of everolimus (mTor inhibitor) as a targeted treatment in a GEMM. Tumor burden reduced by 84%.
(Xing et al.)	2006	<i>p53/Brca/c-myc</i>	Mouse OSE derived cell lines from TVA engineered mouse infected with specific retrovirus (Orsulic et al.)	Serous ovarian carcinoma, metastasis	Brca1 deficient platinum sensitive. Brca1 deficient and wild-type had similar sensitivity to paclitaxel.
(Xing et al.)	2005	<i>p53/c-myc/K-ras^{G12D}/myr-Akt</i>		Papillary serous carcinoma (p53/myc/K-ras or p53/myc/Akt) or poorly differentiated carcinoma (p53/K-ras/Akt), metastasis	Rapamycin inhibited cells with activated Akt. Rapamycin reduced VEGF. MEK1/2 inhibitors + rapamycin were better than single agents <i>in vitro</i> .
(Orsulic et al.)	2002	<i>p53/Brca1</i>		Ovarian papillary serous carcinoma, metastasis	p53 deletion combined with any two oncogenes (c-myc, K-ras, or Akt) can induce ovarian tumor formation from mouse OSE.
(Dinulescu et al.)	2005	<i>Pten/ K-ras^{G12D}</i>	Adeno-Cre injection in bursa (Flesken-Nikitin et al.)	Endometriosis (K-ras) Endometrioid ovarian cancer (Pten/K-ras), metastasis, ascites	Defined genetic events can induce both endometriosis and endometrioid ovarian cancer.
(Liu et al.)	2004	<i>hTERT/SV40/Hras/K-ras</i>	Human OSE derived cell lines with stable expression of vectors (Liu et al. 2004)	Undifferentiated carcinoma or malignant mixed Müllerian (from all genes combined) tumor, metastasis, ascites	Cells expressed CA125 and NFκB mediated cytokine expression.
(Connolly et al.)	2003	<i>MISRII-TAg</i>	MISRII (Jamin et al.)	Poorly differentiated carcinoma with occasional cysts and papillary structures on ovarian surface, metastasis, ascites	No reported tumor involvement in oviduct or uterus despite expression of MISRII in these tissues.
(Flesken-Nikitin et al.)	2003	<i>p53/Rb</i>	Adeno-Cre injection in bursa	Serous epithelial neoplasms (39% p53/Rb) or poorly differentiated (p53 alone and 45% p53/Rb), metastasis, ascites	First reported use of intrabursal adenoviral injection for delivery of cre-recombinase.
(Miyoshi et al.)	2002	<i>OVGP1-Tag</i>	OVGP1-Cre	Tumorigenesis of the oviduct, uterus, and vagina	Despite TAg expression in the ovary, no tumors were found. Promoter strongly relies on estrogen signaling.

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