Supplementary Table 1. Missing Data (N=542 Patients)

Variable	n (%)
Clinical Factors	
Age at cancer diagnosis (years)	0
Tumor histology	0
Cancer stage	0
Grade	2 (0.4)
Ascites present at surgery	103 (19)
Postoperative residual disease	82 (15)
Lifestyle/Reproductive Factors	
Age at menarche (years)	126 (23)
Oral contraceptive use	40 (7)
Parity and age at first birth (years)	37 (7)
Education	70 (13)
Smoking status	37 (7)
Tumor Protein Expression	
ARID1A	38 (7)
Beta 2 defensin	73 (14)
CD8	66 (12)
CD68	85 (16)
DKK1	52 (10)
ER	42 (8)
Fibrinogen	79 (15)
FOLR1	37 (7)
gp96	53 (10)
Heparan sulfate	76 (14)
Heparanase	83 (15)
High-mobility group box 1	81 (15)
HNF1B	42 (8)
hsp60	57 (11)
hsp70	39 (7)
IkappaBalpha	60 (11)
IKKB	68 (13)
MDM2	50 (9)
MMP9	78 (14)
MyD88	78 (14)
p16	43 (8)
p50	83 (15)
p53	47 (9)
p65	50 (9)
Phospho-IkappaBalpha	65 (12)
Phospho-p65	61 (11)
PR	52 (10)
TFF3	48 (9)
TLR4	73 (14)
Vimentin	51 (9)
WT1	39 (7)

Supplemental Table 2. Univariate Associations with Ovarian Cancer using Imputation of Missing Data

Variable	Level	HR (95% CI)
Clinical Factors		
Age at cancer diagnosis (years)	<50	ref
	50-59	1.02 (0.74-1.41)
	60-69	1.15 (0.84-1.57)
	70+	1.62 (1.20-2.19)
Tumor histology	Serous	Ref
	Endometrioid	0.22 (0.10-0.49)
	Clear Cell	0.30 (0.21-0.42)
	Mucinous	0.50 (0.32-0.80)
	Other	0.80 (0.51-1.28)
Cancer stage	1	ref
	2	1.88 (1.02-3.47)
	3	5.85 (3.84-8.91)
	4	10.09 (6.38-15.98)
Grade	Low	ref
	High	3.54 (2.49-5.04)
Ascites present at surgery	No	ref
	Yes	2.37 (1.89-2.96)
Postoperative residual disease	None	ref
	≤1cm	3.21 (2.53-4.07)
	>1cm	4.46 (3.28-6.06)
Lifestyle/Reproductive Factors		
Age at menarche (years)	≤11	ref
	12	1.00 (0.70-1.43)
	13	0.92 (0.64-1.32)
	14+	1.11 (0.81-1.53)
Oral contraceptive use	Never	ref
	Ever	0.88 (0.72-1.07)
Parity/age at first birth	Nulliparous	ref
	1-2, ≤20 years	0.91 (0.58-1.42)
	1-2, >20 years	1.02 (0.75-1.38)
	3+ , ≤20 years	1.21 (0.86-1.70)
	3+ , >20 years	1.29 (0.95-1.75)
Education	Less than high school	ref
	Finished high school	1.06 (0.69-1.62)
	More than high school	0.97 (0.65-1.44)
Smoking status	Never	ref
	Ever	1.09 (0.89-1.34)
Tumor Protein Expression		
ARID1A	<1%-50% positive	ref
	>50% positive	1.51 (1.07-2.13)
Beta 2 defensin	None	ref
	Weak	0.90 (0.53-1.51)
	Moderate/Strong	0.80 (0.49-1.29)
CD68	None/Weak	ref
	Moderate	1.27 (0.99-1.62)
	Strong	1.33 (0.99-1.79)
CD8	None/Weak	ref
	Moderate	0.96 (0.75-1.22)
	Strong	0.66 (0.45-0.97)
DKK1	Negative (<1%)	ref
	1-50% positive	0.97 (0.74-1.26)
	>50% positive	0.42 (0.23-0.75)
ER	Negative (<1%)	ref
	1-50% positive	1.23 (0.89-1.69)
	>50% positive	0.88 (0.69-1.13)
Fibrinogen	None	ref
	Weak/Moderate/Strong	0.95 (0.65-1.38)

Variable	Level	HR (95% CI)
FOLR1	Negative (<1%)	ref
	Weak cyto, membr	1.29 (0.95-1.77)
	Moderate/strong cyto, heterogeneous memb	1.59 (1.16-2.17)
	Full diffuse cyto, consistent strong memb	1.43 (0.98-2.08)
gp96	None	ref
	Weak	0.73 (0.43-1.23)
	Moderate/Strong	0.61 (0.37-1.01)
Heparan sulfate	None/Weak	ref
	Moderate/Strong	1.21 (0.99-1.49)
Heparanase	None	ref
	Weak	0.86 (0.69-1.07)
	Moderate/Strong	0.83 (0.59-1.18)
High-mobility group box 1	None	ref
	Weak	0.80 (0.65-1.00)
	Moderate/Strong	0.99 (0.68-1.45)
HNF1B	Negative (<1%)	ref
	1-50% positive	0.73 (0.53-1.02)
	>50% positive	0.66 (0.46-0.95)
hsp60	Weak	ref
	Moderate/Strong	1.22 (0.96-1.56)
hsp70	Low	ref
	Medium	1.46 (1.15-1.86)
	High	1.12 (0.86-1.45)
IkappaBalpha	None	ref
	Weak	0.87 (0.67-1.13)
	Moderate/Strong	0.83 (0.61-1.12)
IKKB	None	ref
	Weak	0.90 (0.70-1.16)
	Moderate/Strong	0.97 (0.71-1.31)
MDM2	Negative (<1%)	ref
	≥1% positive	0.60 (0.47-0.77)
MMP9	None	ref
	Weak	0.80 (0.64-1.01)
	Moderate/Strong	0.82 (0.54-1.24)
MyD88	None/Weak	ref
	Moderate	1.39 (1.02-1.90)
	Strong	1.55 (1.15-2.10)
p16	Negative (<1%)	ref
	1-50% positive	1.36 (0.76-2.42)
	>50% positive	1.93 (1.11-3.36)
p50	None	ref
	Weak	0.90 (0.68-1.19)
	Moderate/Strong	0.72 (0.53-0.98)
p53	Negative (<1%)	ref
	1-50% positive	0.58 (0.43-0.78)
	>50% positive	1.16 (0.89-1.53)
p65	None/Weak	ref
	Moderate/Strong	1.31 (0.91-1.90)
Phospho-IkappaBalpha	None	ref
	Weak/Moderate/Strong	0.87 (0.71-1.08)
Phospho-p65	None	ref
	Weak	0.87 (0.62-1.23)
	Moderate/Strong	0.91 (0.64-1.31)
PR	Negative (<1%)	ref
	1-50% positive	0.76 (0.60-0.97)
	>50% positive	0.43 (0.31-0.60)
TFF3	Negative (<1%)	ref
	1-50% positive	0.82 (0.63-1.07)
	>50% positive	0.34 (0.23-0.51)
TLR4	None/Weak	ref

Variable	Level	HR (95% CI)
	Moderate	1.19 (0.95-1.50)
	Strong	1.57 (1.18-2.11)
Vimentin	Negative (<1%)	ref
	1-50% positive	0.64 (0.49-0.85)
	>50% positive	0.72 (0.50-1.03)
WT1	Negative (<1%)	ref
	1-50% positive	1.88 (1.35-2.62)
	>50% positive	2.33 (1.79-3.03)

Abbreviations: HR, hazard ratio; CI, confidence interval; memb., membrane staining; cyto, cytoplasmic staining; Cox regression of multiple imputed data.