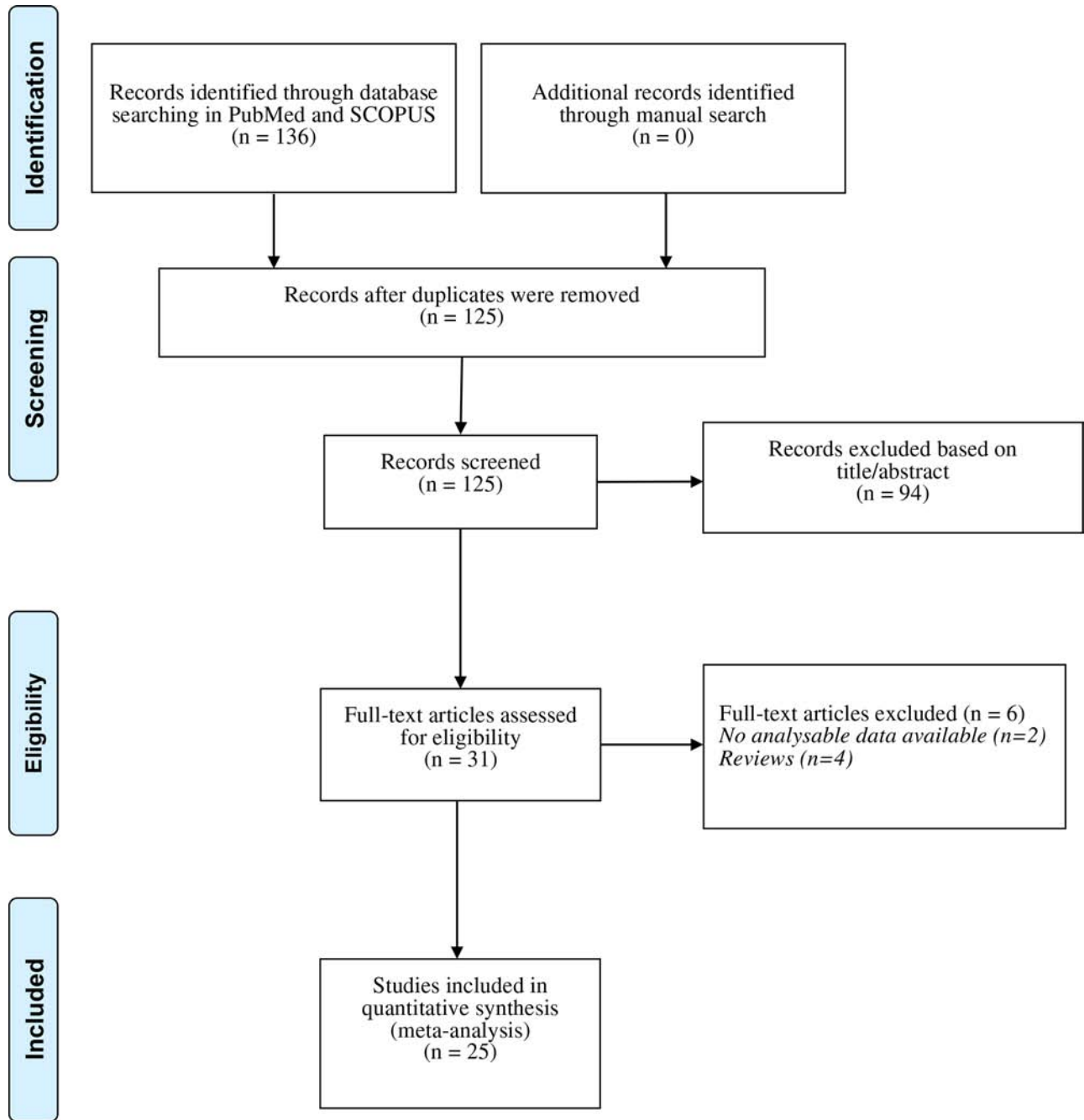
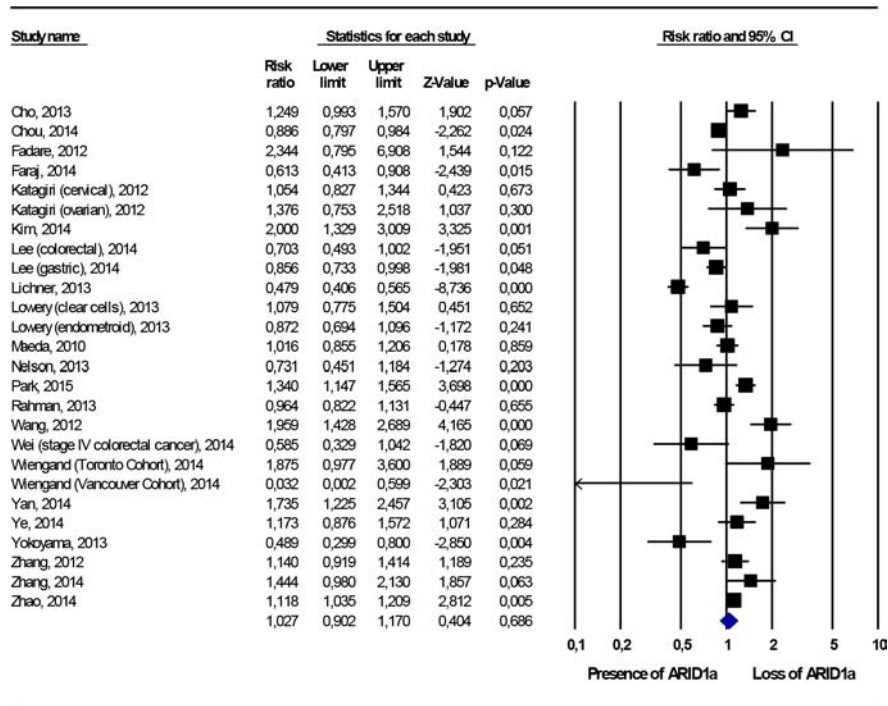


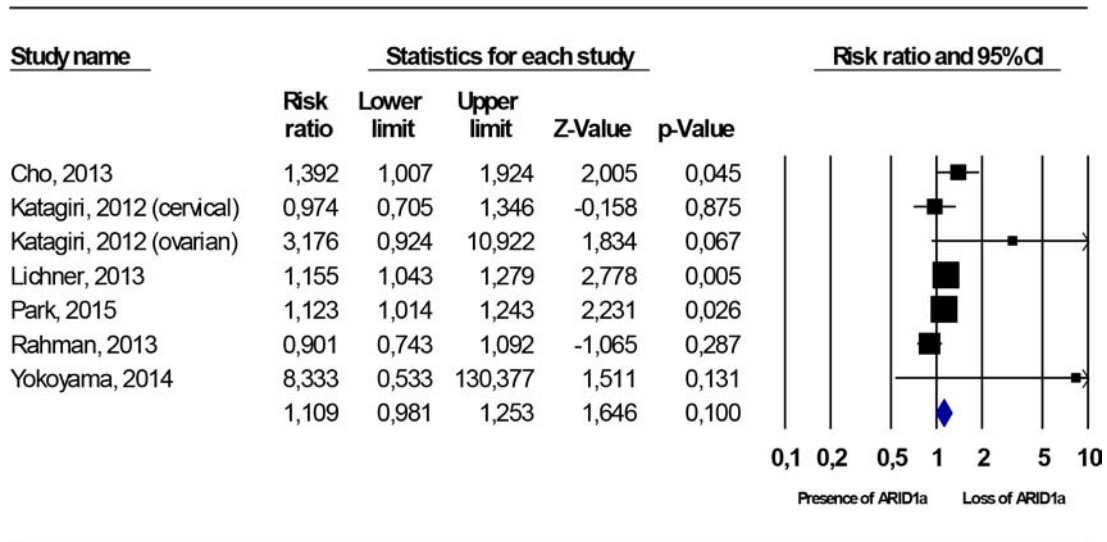
SUPPLEMENTARY FIGURES AND TABLES



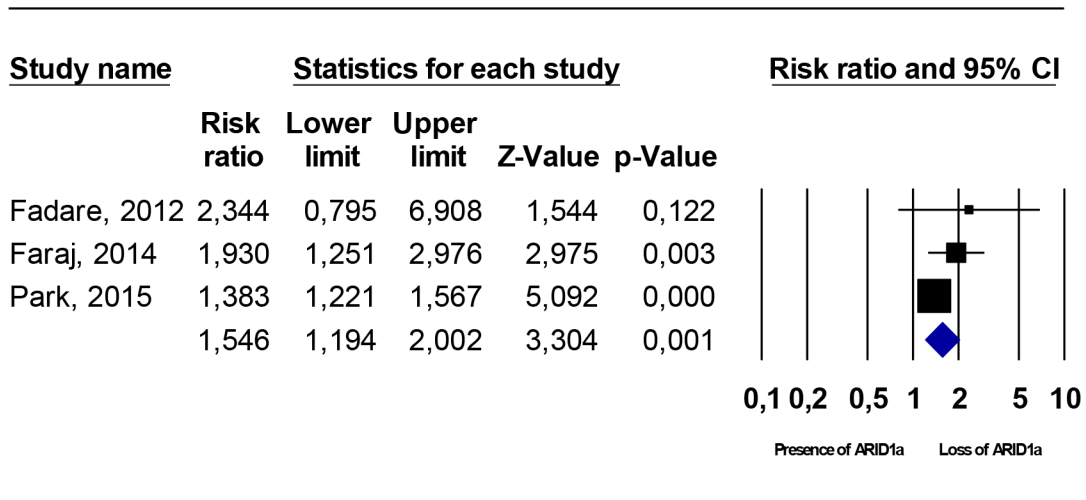
Supplementary Figure S1: PRISMA Flow-Diagram.



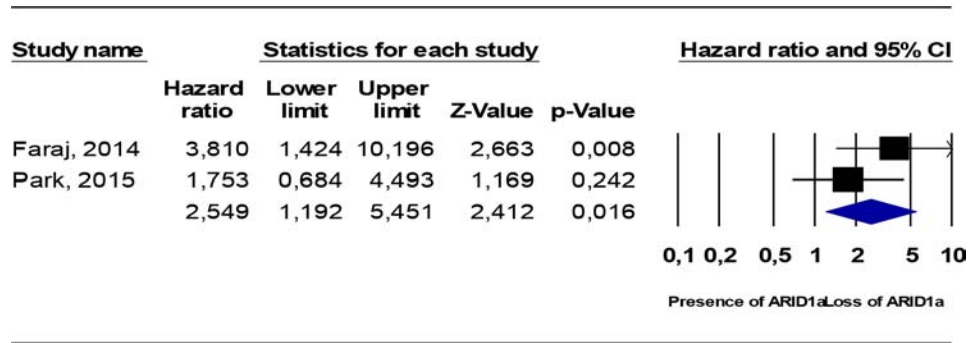
Supplementary Figure S2: Pooled Risk Ratios For All-Cause Mortality According To ARID1A Status.



Supplementary Figure S3: Pooled Risk Ratios For Recurrence According To ARID1A Status.



Supplementary Figure S4: Pooled Risk Ratios For Death Due To Cancer According To ARID1A Status.



Supplementary Figure S5: Pooled Hazard Ratio (Adjusted For Potential Confounders) For Death Due To Cancer According To ARID1A Status.

Supplementary Table S1: Characteristics Of The Studies According To The Expression Of ARID1A

Study Author, Year (Country)	Type of cancer	Exclusion criteria	Other genes/proteins abnormalities	ARID1A+										Mean Follow-up period (years)		
				Number of participants	N. of females (%)	Mean Age \pm SD	TNM stage at baseline (number, %)	Tumor Grading	Number of participants	N. of females (%)	Mean Age \pm SD	TNM stage at baseline (number, %)	Tumor Grading		Methods of ARID1A analysis (if IHC: clone specified) #	Number of adjustments
Cho, 2013 (Korea)	Cervical cancer	No data at follow-up; no clinicopathological data	No	27	100%	49.0 \pm 14.3	FIGO I-II: 81.5% FIGO IV: 18.5%	G1-G2: 48.2% G3: 51.8%	120	100%	48.5 \pm 11.1	FIGO I-II: 96.6% FIGO IV: 3.4%	G1-G2: 66.9% G3: 33.1%	TMA-IHC (1)	4	4.5
Chou, 2014 (Australia)	Colorectal cancer	NA	BRAF (V600E), MMR status	74	62.2%	77.0 \pm 8.0	Stage: I-II: 56.7% III-IV: 43.3%	G1-G2: 42.9% G3: 57.1%	1334	50.9%	71.2 \pm 12.6	Stage I-II: 53.3% III-IV: 46.7%	G1-G2: 82.0% G3: 18.0%	TMA-IHC (2)	6	5.3
Fadare, 2012 (USA)	Endometrial clear cell carcinoma	Not pure histology (considered only pure clear cell carcinomas)	No	5	100%	63 (range 61-78)	FIGO I-II: 0% III-IV: 100%	NA	17	100%	69 (range 54-87)	FIGO I-II: 94.1% III-IV: 5.9%	NA	Whole-section IHC (1)	0	3.9
Faraj, 2014 (USA)	Invasive urothelial carcinoma of urinary bladder	TMA with normal urothelium	No	85	8.2%	65.3 \pm 11.3	Stage 0-I-II: 43.5% III-IV: 56.5%	NA	37	45.9%	67.1 \pm 9.8	Stage I-II: 70.3% III-IV: 29.7%	NA	TMA-IHC (2)	5	3.9
Katagiri, 2012 (Japan) (cervical)	Adeno-(squamous) carcinomas of uterine cervix	Squamous carcinomas (focus on adenocarcinomas)	Ki-67	14	100%	49.8 \pm 13.5	Stage I-II: 78.6% III-IV: 21.4%	NA	31	100%	46.8 \pm 10.9	Stage I-II: 74.2% III-IV: 25.8%	NA	TMA-IHC (1)	0	3.8
Katagiri, 2012 (Japan)	Ovarian clear cell carcinoma	NA	Ki-67	9	100%	53.1 \pm 3.3	Stage I-II: 44.4% III-IV: 55.6%	G3: 100%	51	100%	53.2 \pm 9.1	Stage I-II: 80.4% III-IV: 19.6%	G3: 100%	TMA-IHC (1)	3	3.8

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ARIDIA- ARIDIA+

	Small intestinal carcinoma	Cases with core loss in IHC slides	p53	96	38.9%	NA	NA	Stage I-II: 16.7% III-IV: 83.3%	G1-G2: 63.9% G3-G4: 36.1%	82	37.3%	NA	59.4 ± 12.1	Stage I-II: 12.5% III-IV: 87.5%	G1-G2: 79.6% G3-G4: 20.4%	TMA-IHC (2)	0	4.6
Kim, 2014 (Korea)	Small intestinal carcinoma	Cases with core loss in IHC slides	p53	96	38.9%	NA	NA	Stage I-II: 16.7% III-IV: 83.3%	G1-G2: 63.9% G3-G4: 36.1%	82	37.3%	NA	59.4 ± 12.1	Stage I-II: 12.5% III-IV: 87.5%	G1-G2: 79.6% G3-G4: 20.4%	TMA-IHC (2)	0	4.6
Lee, 2014 (Korea)	Colorectal cancer	Hereditary Syndromes	No	12	41.7%	65.3 ± 11.8	Stage I-II: 68.2% III-IV: 31.8%	G1-G2: 91.7% G3: 8.3%	G1-G2: 91.7% G3: 8.3%	184	45.7%	59.4 ± 12.1	Stage I-II: 12.5% III-IV: 87.5%	G1-G2: 86.9% G3: 13.1%	G1-G2: 86.9% G3: 13.1%	TMA-IHC (2)	5	5
Lee, 2014 (Korea)	Gastric cancer	Hereditary Syndromes	No	22	40.9%	63.4 ± 9.9	Stage I-II: 68.2% III-IV: 31.8%	NA	NA	248	36.4%	59.5 ± 11.5	Stage I-II: 63.6% III-IV: 36.4%	NA	NA	TMA-IHC (2)	4	5
Lichner, 2013 (Canada)	Renal cancer	NA	No	139	43.1%	60.1 ± 1.9	Stage I: 47.9% II-IV: 52.1%	G1: 57.9% G2-G3: 42.1%	G1: 57.9% G2-G3: 42.1%	265	56.9%	59.6 ± 1.4	Stage I: 56.9% II-IV: 43.1%	G1: 42.1% G2-G3: 57.9%	G1: 42.1% G2-G3: 57.9%	TMA-IHC (3)	2	5
Lowery, 2012 (USA)	Clear cell and endometrioid ovarian cancer	No	No	96	100%	>49: 61.5%	Stage I-II: 64.2% III-IV: 35.8%	G1-G2: 46.8% G3: 53.2%	G1-G2: 46.8% G3: 53.2%	116	100%	>49: 70.7%	Stage I-II: 58.3% III-IV: 41.7%	G1-G2: 36.0% G3: 64.0%	G1-G2: 36.0% G3: 64.0%	Whole-section IHC (3)	0 for both cancers	5.9
Maeda, 2010 (Japan)	Ovarian clear cell carcinoma	No data at follow-up; no clinicopathological data	No	83	100%	>49: 69.0%	Stage I-II: 74.3% III/IV: 25.7%	Nuclear atypia: mild-moderate 91.4% Severe 8.6%	Nuclear atypia: mild-moderate 91.4% Severe 8.6%	52	100%	>49: 58.1%	Stage I-II: 74.5% III/IV: 25.5%	Nuclear atypia: mild-moderate 83.9% Severe 16.1%	Nuclear atypia: mild-moderate 83.9% Severe 16.1%	TMA-IHC (4)	0	5.0
Nelson, 2013 (Canada)	Endometrial carcinoma	No	MMR genes	19	100%	64.3 ± 8.6	Stage I-II: 61% III-IV: 39%	G3: 100%	G3: 100%	39	100%	59.8 ± 6.4	Stage I-II: 59.0% III-IV: 41.0%	G3: 100%	G3: 100%	TMA-IHC (NS)	0	5.0
Numata, 2013 (Japan)	Pancreatic cancer	No	Proteins: BRM, BRG1, BAF180, BAF47	34	61.8%	>64: 61.8%	Stage 0-III: 29.4% IV: 70.6%	G1: 41.2% G2-G3: 58.8%	G1: 41.2% G2-G3: 58.8%	34	44.1%	>64: 50%	Stage 0-III: 38.2% IV: 61.8%	G1: 18/34. 52.9% G2-G3: 47.1%	G1: 18/34. 52.9% G2-G3: 47.1%	TMA-IHC (1)	0	5.0

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ARIDIA-

ARIDIA+

Park, 2015 (Korea)	Clear cell renal cell carcinoma	No	No	213	26.3%	58.4±10.4	Stage I-II: 71.7% III/IV: 28.3%	G1-G2: 43.7% G3-G4: 56.3%	77	23.4%	>55: 46.7%	Stage I-II: 85.7% III/IV: 14.3%	G1-G2: 71.1% G3-G4: 29.9%	TMA-IHC (1)	2	6.9
Rahman, 2013 (Japan)	Endometrial cancer	No	p53, hMLH1, Her2, PTEN, ER, PR	27	100%	>59: 48.1%	FIGO Stage I-II: 63.0% III/IV: 37.0%	G1-G2: 85.2% G3: 14.8%	84	100%	59.8±12.6	FIGO Stage I-II: 72.6% III/IV: 27.4%	G1-G2: 30.2% G3: 29.8%	Whole-section IHC (1)	0	4.3
Wang, 2011 (USA)	Gastric cancer	NA	TP53	38	NA	NA	NA	NA	71	NA	NA	NA	NA	Exome-sequencing, IHC (NS)	3	5.0
Wang, 2012 (China)	Gastric cancer	No	No	115	27.8%	>54: 49.6%	NA	G1-G2: 13.1% G3: 86.9%	109	39.4%	>54: 57.8%	NA	G1-G2: 30.3% G3: 69.7%	Whole-section IHC (3)	5	5.0
Wei, 2014 (China)	Colorectal cancer	No	No	54	22.2%	>55: 44.4%	Stage I-II: 31.5% III-IV: 68.5%	G1-G2: 74.1% G3: 25.9%	155	13.5%	>55: 51%	Stage I-II: 42.6% III-IV: 57.4%	G1-G2: 85.8% G3: 14.2%	Whole-section IHC (1)	2	5.0
Wiegand, 2014 (Canada, Toronto cohort)	Gastric carcinoma	Totally in 2 cohorts 102 cases (no data at follow-up; no clinicopathological data)	MMR, HER2, EBV, p53	16	37.5%	71.6±13.2	Stage I-II: 31.5% III-IV: 68.5%	G2: 4. 25.0% G3: 12. 75.0%	64	31.3%	66.6±11.1	Stage I-II: 34.3% III-IV: 65.7%	G1-G2: 46.9% G3: 53.1%	TMA-IHC (2)	10	2.0
Wiegand, 2014 (Canada, Vancouver cohort)	Gastric carcinoma	Totally in 2 cohorts 102 cases (no data at follow-up; no clinicopathological data)	MMR, HER2, EBV, p53	29	25.6%	66.4±12.2	Stage I-II: 44.1% III-IV: 55.9%	G1-G2: 51.2% G3: 48.8%	134	27.6%	64.1±10.5	Stage I-II: 45.5% III-IV: 54.5%	G1-G2: 47.8% G3: 52.2%	TMA-IHC (2)	10	2.0

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ARIDIA+																
ARIDIA-																
Yan, 2014 (China)	Gastric cancer	7 cases (follow-up lost)	E-cadherin	52	51.2%	54.4±8.7	Stage I-II: 18.2% III-IV: 81.8%	G1-G2: 36.4% G3: 63.6%	137	32.3%	58.4±10.5	Stage I-II: 16.3% III-IV: 83.7%	G1-G2: 34.9% G3: 65.1%	TMA-IHC (4)	4	5.0
Ye, 2014 (USA)	Colorectal carcinoma	45 TMA cores excluded for tissue loss	MMR	22	54.5%	Mean: 62.0 (range: 36-89)	Stage I-II: 45.4% III-IV: 54.6%	Low: 50% High: 50%	235	48.1%	Mean: 49.7 Range (18-86)	Stage I-II: 50.2% III-IV: 49.8%	Low: 87.2% High and medullary: 12.8%	TMA-IHC (4)	0	4.8
Yokoyama, 2014 (Japan)*	Ovarian Carcinoma	No	No	11	100%	52.0±9.5	Stage III-IV: 100%	NA	35	100%	56±7.8	Stage III-IV: 100%	NA	Whole-section IHC (1)	5	5.3
Zhang, 2012 (China)	Breast cancer	No	HER2, p53, ER, PR, Ki67	22	100%	59.9±11.3	Stage I-II: 90.9% III: 9.1%	NA	18	100%	60.3±12.3	Stage I-II: 77.8% III: 22.2%	NA	mRNA real-time PCR (1)	4	5.4
Zhang, 2014 (China)	Breast cancer	No	HER2, p53, ER, PR, Ki67	63	100%	59.9±9.9	Stage I-II: 93.7% III: 6.3%	NA	49	100%	61.3±10.3	Stage I-II: 91.8% III: 8.2%	NA	Whole-section IHC (1)	0	3.1
Zhao, 2014 (China)	Breast cancer	No	p53, HER2, ER, PR	324	NA	>45: 66.7%	Stage I-II: 74.7% III: 25.3%	G1-G2: 71.9% G3: 28.1%	172	NA	>45: 53.5%	Stage I-II: 89.5% III: 10.5%	G1-G2: 78.5% G3: 21.5%	TMA-IHC (4)	9	5.8

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Supplementary Table S2: Methodological Quality Of Cohort Studies Included In The Meta-Analysis*

First author, publication year	Representativeness of the exposed cohort	Selection of the unexposed cohort	Ascertainment of exposure [†]	Outcome of interest not present at start of study ^{††}	Control for important factor or additional factor ^{†††}	Assessment of outcome	Follow-up long enough for outcome to occur ^{††††}	Adequacy of follow-up cohorts	Total quality scores
Cho, 2013	*	*	*	*	*	*	-	*	7
Chou, 2014	*	*	*	-	**	*	*	*	8
Fadare, 2012	*	*	*	*	-	*	-	*	6
Faraj, 2014	*	*	*	*	*	*	*	-	7
Katagiri, 2012 (cervical)	*	*	-	*	**	*	-	*	7
Katagiri, 2012 (ovarian)	*	*	-	*	**	*	-	*	7
Kim, 2014	*	*	*	-	**	*	-	*	7
Lee, 2014	*	*	*	-	*	*	*	*	7
Lichner, 2013	*	*	*	-	-	*	-	*	7
Lowery, 2012	*	*	*	-	*	*	*	*	7
Maeda, 2010	*	*	*	-	*	*	-	*	6
Nelson, 2013	*	*	*	-	**	*	-	-	6
Numata, 2013	*	*	-	-	**	*	-	*	6
Park, 2015	*	*	*	*	*	*	*	*	8
Rahman, 2013	*	*	*	*	**	*	-	*	8
Wang, 2011	*	*	*	-	*	*	-	*	6
Wang, 2012	*	*	*	-	*	*	*	*	7
Wei, 2014	*	*	*	-	*	*	*	*	7
Wiegand, 2014	*	*	*	*	**	*	*	*	9
Yan, 2014	*	*	*	-	*	*	-	-	5
Ye, 2014	*	*	*	-	*	*	*	*	7
Yokoyama, 2014	*	*	*	*	*	*	*	*	8
Zhao, 2014	*	*	*	-	**	*	*	*	8

Original studies were analyzed in the quality assessment.

* A study could be awarded a maximum of one star for each item except for the item Control for important factor or additional factor. The definition/explanation of each column of the Newcastle-Ottawa Scale is available at http://www.ohri.ca/programs/clinical_epidemiology/oxford.htm.

† For this index, one star was given if in Method section the ARIDIA assessment was calculated with genetic analysis, whole section-IHC, TMA-IHC with at least 2 cores per case or with an adjunctive method or technique as control.

†† Being outcome of interest mortality, we took as outcome of interest for assessment of quality if the disease-specific survival or the recurrence rate was assessed.

††† A maximum of 2 stars could be awarded for this item. Studies that controlled their survival analyses for at least two confounders received one star, whereas studies that controlled genetic status of other gene/genes, an additional star.

†††† A cohort study with a mean/median follow-up time ≥ 5 y (60 months) takes one star.

Supplementary Table S3: Results Of Univariable Moderator Analyses For All-Cause Mortality, Recurrence Of Disease And Adjusted HR Estimates For All-Cause Mortality And Recurrence By ARID1A Status

Moderator Variable		All-cause mortality	Recurrence	Adjusted HR estimates for all-cause mortality	Adjusted HR estimates for recurrence
Study characteristics	Studies	26	7	19	10
	Patients: ARID1A+ vs. ARID1A-	3,735 vs. 1,633	373 vs. 454	3,139 vs. 1,062	871 vs. 497
System (0 = urological system [ref.] vs.1 = gastrointestinal system vs. 2 = gynaecological system)	<i>p</i> -value	0.07 (gastro) 0.43 (gyneco)	0.11 (gyneco)	0.80 (gastro) 0.53 (gyneco)	0.51 (gastro) 0.68 (gyneco)
	Slope	0.36 (gastro) 0.15 (gyneco)	-0.19 (gyneco)	0.14 (gastro) 0.35 (gyneco)	-0.38 (gastro) 0.24 (gyneco)
	Studies	26	7	19	10
Sample size	<i>p</i> -value	0.44	0.58	0.27	0.86
	Slope	-0.0002	0.0003	-0.0006	-0.0004
	Studies	26	7	19	10
Age difference	<i>p</i> -value	0.96	0.84	0.72	0.41
	Slope	0.00014	0.0139	0.0229	0.078
	Studies	16	6	14	8
% Females difference	<i>p</i> -value	0.38	0.76	0.66	0.52
	Slope	0.0088	-0.0041	0.0120	-0.03
	Studies	25	7	17	9
TNM 1–2 difference	<i>p</i> -value	0.62	0.11	0.96	0.09
	Slope	0.0024	0.00167	-0.0008	0.03
	Studies	20	6	15	8
TNM 3–4 difference	<i>p</i> -value	0.31	0.36	0.75	0.24
	Slope	0.0039	-0.0036	0.0046	-0.017
	Studies	21	6	16	8
Grade 1–2 difference	<i>p</i> -value	0.01	0.80	0.20	0.78
	Slope	0.0077	0.0007	0.0149	0.0025
	Studies	16	5	13	7
Grade 3–4 difference	<i>p</i> -value	0.19	0.39	0.30	0.43
	Slope	0.0082	-0.0037	0.0157	-0.0179
	Studies	15	5	12	7

(Continued)

Moderator Variable		All-cause mortality	Recurrence	Adjusted HR estimates for all-cause mortality	Adjusted HR estimates for recurrence
Newcastle-Ottawa scale	<i>p</i> -value	0.46	0.36	0.90	0.33
	Slope	-0.06	-0.14	-0.02	-0.23
	Studies	26	7	19	10
Number of adjustments	<i>p</i> -value	0.83	0.003	0.29	0.86
	Slope	-0.0055	0.11	0.056	-0.00115
	Studies	26	7	19	10
Method of ARID1A analysis (0 = TMA-IHC [ref.] vs. 1 = other methods)	<i>p</i> -value	0.69	0.09	0.56	0.66
	Slope	0.20	-0.23	-0.24	0.22
	Studies	26	7	19	10
Country (0 = Asia [ref.] vs. 1 = other)	<i>p</i> -value	0.04	0.82	0.35	0.36
	Slope	0.27	0.04	-0.33	-0.41
	Studies	26	7	19	10
Mean follow-up period	<i>p</i> -value	0.84	0.79	0.30	0.11
	Slope	-0.05	0.11	-0.17	0.21
	Studies	26	7	19	10

Supplementary Table S4: Results Of Multivariable Meta-Regression Analyses Of Moderators Variables

Significant Multivariable Moderators	All-cause mortality	Recurrence	Adjusted HR estimates for all-cause mortality	Adjusted HR estimates for recurrence
Studies N	15 4,573	5 946	No multivariate analysis was made since in the univariate analysis no moderator reached a $p < 0.20$	8 1,300
Moderator 1	Grade 1–2 difference: Mean difference between groups = 1.17 $z = 3.00$ $p = 0.0027$	Covariates: Mean: 2.8 $z = 1.68$ $p = 0.09$	-	TNM 1–2 difference: Mean difference between groups = 10.59 $z = 1.65$ $p = 0.09$
Moderator 2	Gastrointestinal system (38%): $z = 1.47$ $p = 0.14$ Gynecological System (46%): $z = -0.82$ $p = 0.41$ Gastrointestinal + gynecological systems vs. urological: $p = 0.02$	Gynecological System (57%): $z = 0.10$ $p = 0.61$	-	-
Moderator 3	-	TNM 1–2 difference: Mean: 11.7 $z = -0.01$ $p = 0.99$	-	-
Overall Model	$Q = 35.99$ $p < 0.0001$ $R^2 = 0.76$	$Q = 10.44$ $p = 0.06$ $R^2 = 0.92$	-	$Q = 26.49$ $p = 0.0004$ $R^2 = 0.41$

Moderator	Strata	Analysis details	Outcome			
			All-cause mortality*	Recurrence*	Adjusted HR estimates for All-cause mortality	Adjusted HR estimates for recurrence
Study quality ^b	NOS score < 7	<i>Pooled estimate, HR (95%CI)</i>				
		<i>p-value for HR</i>				
		<i>Heterogeneity, I² (p-value)</i>	1.06 (0.84–1.34)		1.44 (0.99–2.09)	3.09 (1.13–8.48)
		<i>Number of studies</i>	0.61		0.06	0.03
		<i>Number of Subjects</i>	89 (<0.0001)		0 (0.46)	0 (1.00)
		<i>p-value^a</i>	15		3	1
	NOS score ≥ 7	<i>Pooled estimate, HR (95%CI)</i>	2,083	All studies	235	22
		<i>p-value for HR</i>	0.99 (0.85–1.15)	had a NOS score ≥ 7	1.13 (0.76–1.69)	1.84 (1.13–3.00)
		<i>Heterogeneity, I² (p-value)</i>	0.87		0.54	0.01
		<i>Number of studies</i>	81 (<0.0001)		71 (<0.0001)	78 (<0.0001)
		<i>Number of Subjects</i>	11		16	9
		<i>p-value^a</i>	3,205		3,956	1,346
		0.61		0.40	0.37	

*For these outcomes, RRs instead of HRs were used.

Bolded RR or HR values: $p < 0.05$

Abbreviations: NOS, Newcastle-Ottawa Scale

^aThe p -value for the t -test between the two statistical analysis strata according to meta-regression procedure.

^bStratification was performed by median NOS score and number of adjustments as appropriate.