Supplementary Table 1 Correlations between Oct4 and Nanog expression and clinicopathologic variables in patients of validation cohort

Parameters	Oct4 expression		P		Nanog expression		P
	High n = 66	Low n = 37			High n = 65	Low n = 38	
Age(year)				Age(year)			
≤ 61	29	18		≤ 61	27	20	
> 61	37	19	0.645	> 61	38	18	0.275
Sex				Sex			
Female	43	25		Female	42	26	
Male	23	12	0.804	Male	23	12	0.694
Liver cirrhosis				Liver cirrhosis			
Yes	8	11		Yes	9	10	
No	58	26	**0.027**	No	56	28	0.115
Tumor differentiation				Tumor differentiation			
well to moderately	42	23		well to moderately	40	25	
poorly	24	14	0.882	poorly	25	13	0.666
Tumor number				Tumor number			
Single	45	32		Single	44	33	
Multiple	21	5	**0.040**	Multiple	21	5	**0.031**
Tumor size(cm)				Tumor size(cm)			
≤ 5cm	32	22		≤ 5cm	31	23	
> 5cm	34	15	0.285	> 5cm	34	15	0.208
Direct invasion and local extrahepatic metastasis				Direct invasion and local extrahepatic metastasis			
Yes	8	3		Yes	10	1	
No	58	34	0.742	No	55	37	0.051
Regional lymph node metastasis				Regional lymph node metastasis			
Yes	21	5		Yes	22	4	
No	45	32	**0.040**	No	43	34	1.000
Vascular invasion				Vascular invasion			
Yes	22	4		Yes	20	6	
No	44	33	**0.017**	No	45	32	0.091
Child-Pugh score (A versus B)				Child-Pugh score (A versus B)			
A	60	31		A	57	34	
B	6	6	0.280	B	8	4	1.000
GGT				GGT			
> 60 U/L	50	14		> 60 U/L	50	14	
≤ 60U/L	16	23	**<0.001**	≤ 60U/L	15	24	**<0.001**

CEA				CEA			
≥ 5ng/mL	27	7		≥ 5ng/mL	27	7	
< 5ng/mL	39	30	**0.023**	< 5ng/mL	38	31	**0.016**
CA19-9				CA19-9			
≥ 37U/L	46	13		≥ 37U/L	47	12	
< 37U/L	20	24	**0.001**	< 37U/L	18	26	**<0.001**
AJCC 7th edition				AJCC 7th edition			
I-II	38	29		I-II	34	33	
III-IV	28	8	**0.034**	III-IV	31	5	**<0.001**
LCSGJ stage				LCSGJ stage			
I-II	20	22		I-II	17	25	
III-IV	46	15	**0.004**	III-IV	48	13	**<0.001**
Nanog expression				Oct4 expression			
High	61	4		High	61	5	
Low	5	33	**<0.001**	Low	4	33	**<0.001**

P-value <0.05 marked in bold font shows statistical significant

Abbreviations: GGT, gamma-glutamyltransferase; CEA, carcinoembryonic antigen; CA19-9, carbohydrate antigen 19-9;
AJCC, American Joint Committee on Cancer; LCSGJ, the Liver Cancer Study Group of Japan;

Supplementary Table 2 Univariate and multivariate analyses of factors associated with OS and RFS in validation cohort

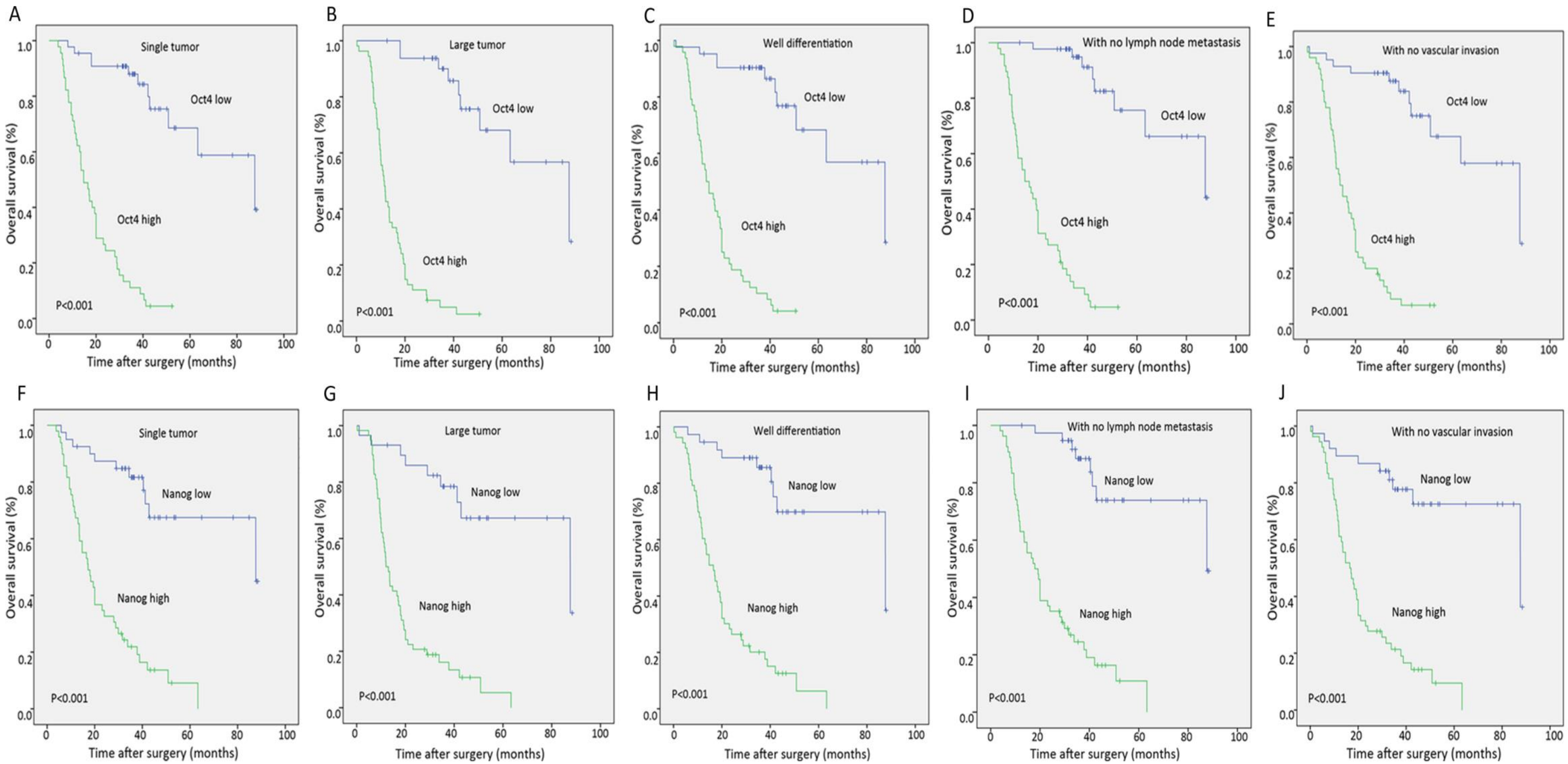
Variables	OS				RFS			
	Univariate analysis		Multivariate analysis		Univariate analysis		Multivariate analysis	
	HR(95%CI)	P	HR(95%CI)	P	HR(95%CI)	P	HR(95%CI)	P
Age(years)	1.245(0.775-1.999)	0.365	NA	NA	1.140(0.717-1.814)	0.580	NA	NA
Sex	0.817(0.499-1.338)	0.422	NA	NA	0.793(0.488-1.289)	0.350	NA	NA
Liver cirrhosis	2.037(1.009-4.110)	**0.047**	1.975(0.935-4.168)	0.074	1.457(0.783-2.711)	0.234	NA	NA
Tumor differentiation	1.491(0.919-2.420)	0.106	NA	NA	1.540(0.962-2.465)	0.072	NA	NA
Tumor number (multiple vs.single)	1.815(1.097-3.001)	**0.020**	1.611(0.881-2.945)	0.121	1.649(0.987-2.755)	0.056	NA	NA
Tumor size (> 5cm vs. ≤ 5cm)	1.463(0.864-2.475)	0.156	NA	NA	1.167(0.711-1.916)	0.541	NA	NA
Regional lymph node metastasis	2.231(1.329-3.743)	**0.002**	1.325(0.567-3.095)	0.515	2.024(1.222-3.353)	**0.006**	1.285(0.565-2.921)	0.550
Child-Pugh score (A versus B)	1.067(0.530-2.148)	0.855	NA	NA	1.383(0.708-2.701)	0.343	NA	NA
Direct invasion and local extrahepatic metastasis	1.944(0.992-3.808)	0.053	NA	NA	1.322(0.657-2.662)	0.434	NA	NA
Vascular invasion (no vs. yes)	1.827(1.099-3.035)	**0.020**	2.694(1.302-5.575)	**0.008**	1.553(0.922-2.616)	0.098	NA	NA
CEA (≥ 5ng/mL vs. < 5ng/mL)	1.840(1.138-2.975)	**0.013**	1.316(0.750-2.307)	0.339	1.245(0.765-2.027)	0.378	NA	NA
CA19-9 (≥ 37 U/L vs. < 37)	2.406(1.438-4.027)	**0.001**	1.561(0.826-2.949)	0.170	1.237(0.770-1.989)	0.379	NA	NA
GGT (≥ 60 U/L vs. < 60	2.864(1.650-4.972)	**<0.001**	1.909(0.980-3.718)	0.057	1.655(1.008-2.717)	**0.046**	1.243(0.732-2.111)	0.421
AJCC 7th edition	2.518(1.553-4.083)	**<0.001**	3.089(1.086-8.790)	**0.035**	2.009(1.252-3.223)	**0.004**	1.062(0.453-2.493)	0.889
LCSGJ stage	2.423(1.452-4.044)	**<0.001**	2.157(0.843-5.521)	0.109	2.153(1.302-3.560)	**0.003**	1.409(0.739-2.686)	0.298
Oct4	8.206(4.062-16.578)	**<0.001**	3.403(1.522-7.610)	**0.003**	3.679(2.084-6.496)	**<0.001**	2.167(1.099-4.273)	**0.026**
Nanog	8.886(4.347-18.166)	**<0.001**	4.106(1.777-9.488)	**0.001**	3.702(2.099-6.531)	**<0.001**	2.020(1.009-4.044)	**0.047**

P-value <0.05 marked in bold font shows statistical significant; NA = not applicable

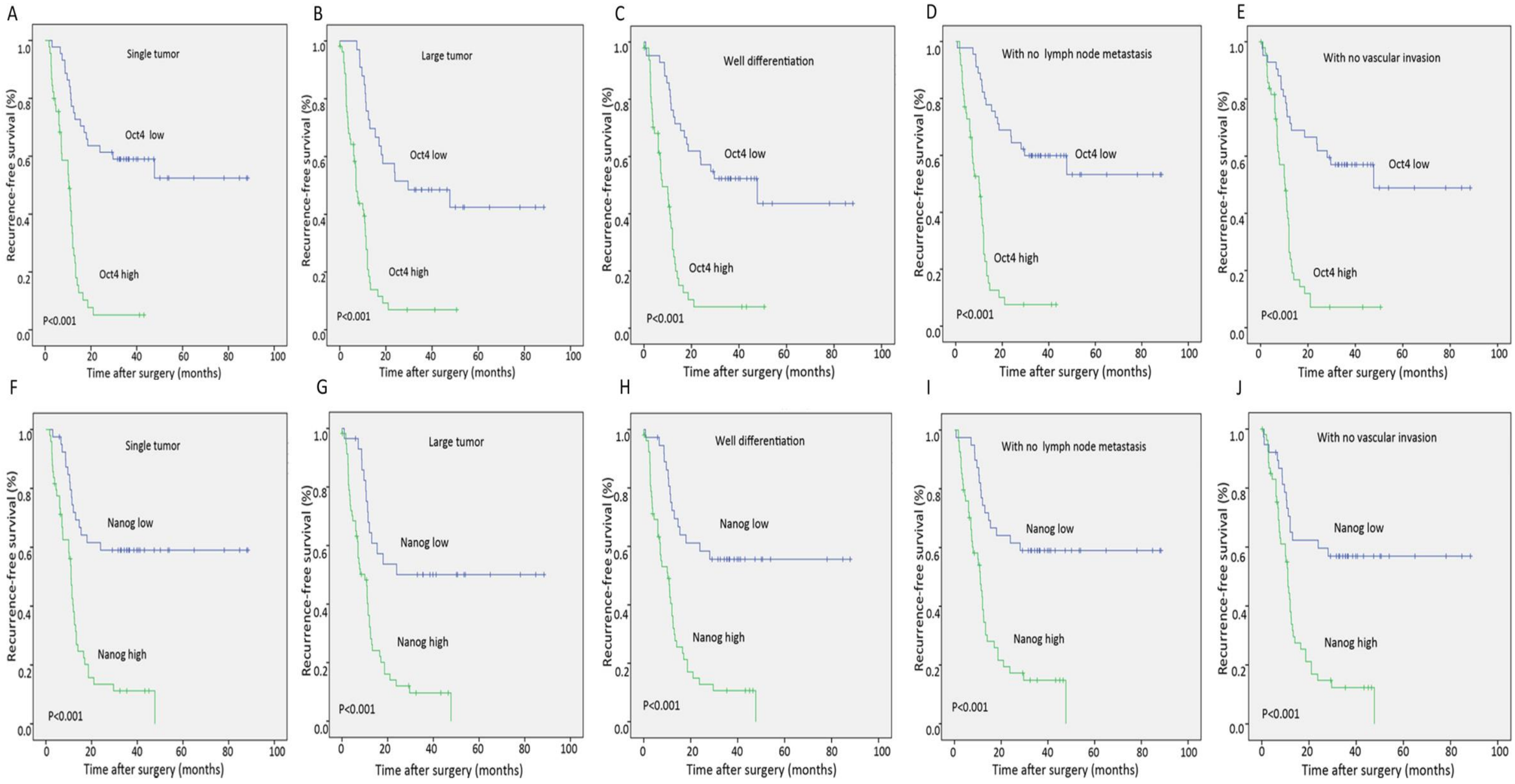
Abbreviations: OS, overall survival; RFS, recurrence-free survival; HR, hazard ratio; GGT, gamma-glutamyltransferase; CEA, carcinoembryonic antigen; CA19-9, carbohydrate antigen 19-9; AJCC, American Joint Committee on Cancer; LCSGJ, the Liver Cancer Study Group of Japan;

Supplementary Figure legends

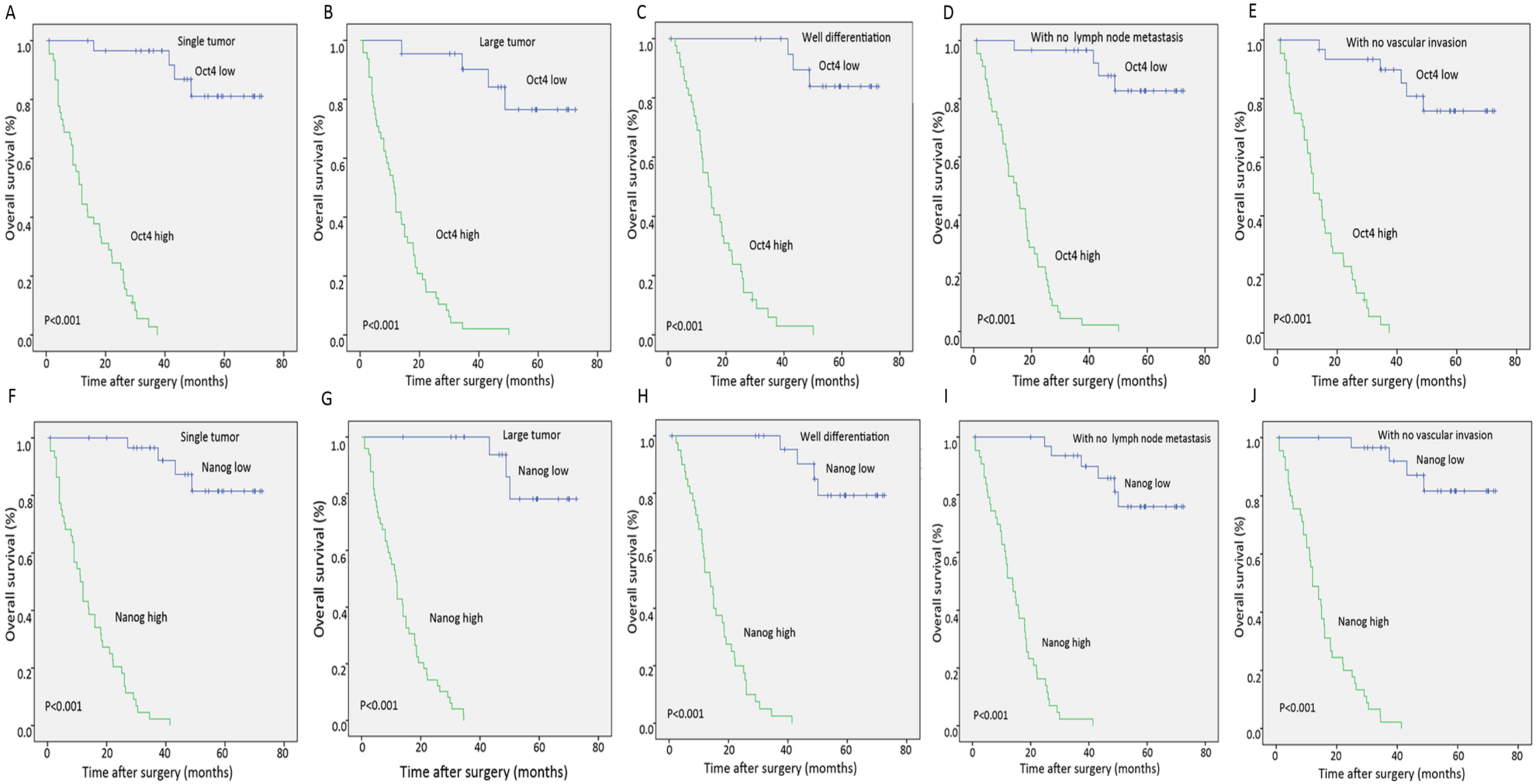
Supplementary Figure 1 Overall survival curves for the expression of Oct4 and Nanog among ICC subgroups in training cohort. Subgroup analysis indicated that significant differences in OS were found between Oct4-high and Oct4-low, Nanog-high and Nanog-low patients after categorized by clinicopathologic variables.



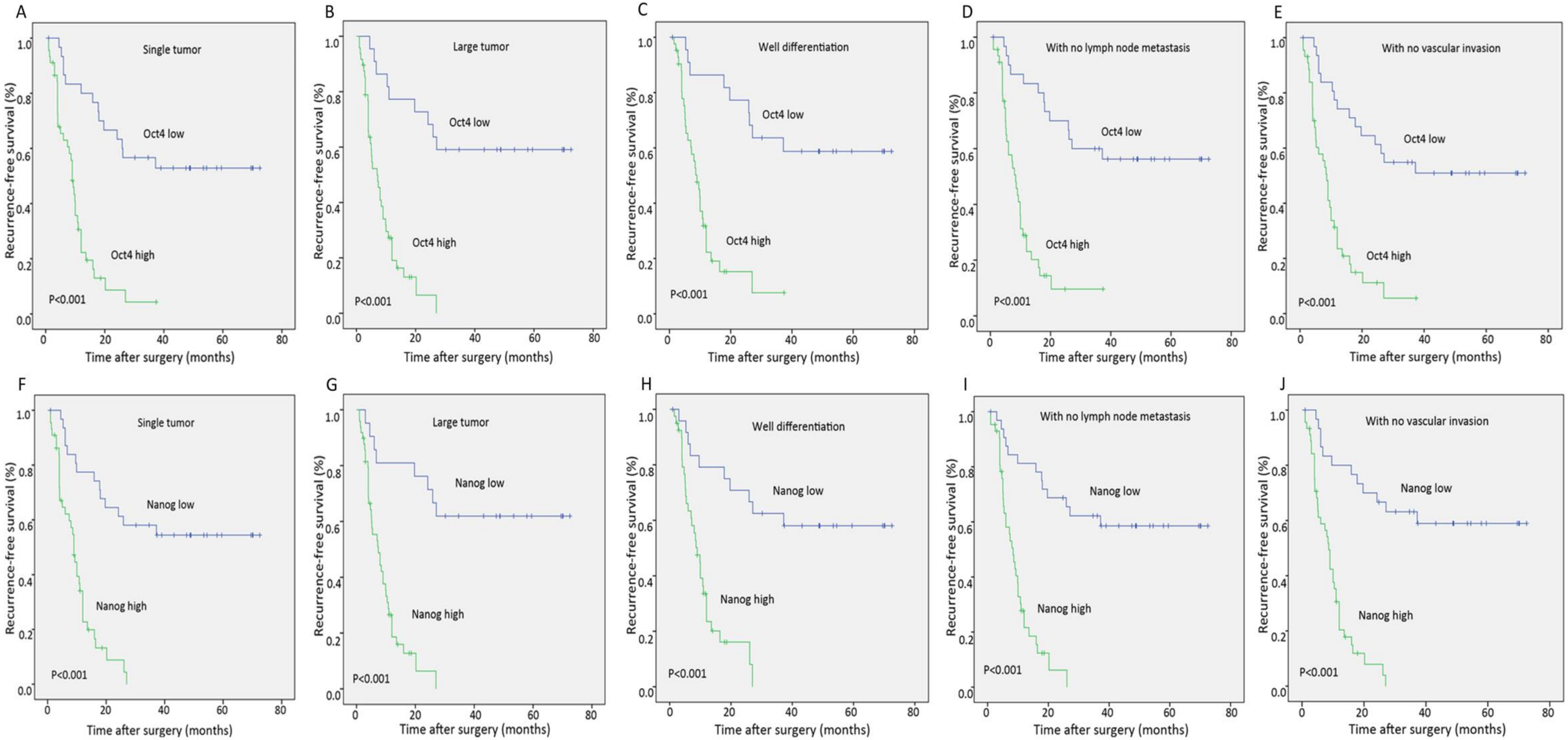
Supplementary Figure 2 Recurrence-free survival curves for the expression of Oct4 and Nanog among ICC subgroups in training cohort. Subgroup analysis indicated that significant differences in RFS were found between Oct4-high and Oct4-low, Nanog-high and Nanog-low patients after categorized by clinicopathologic variables.



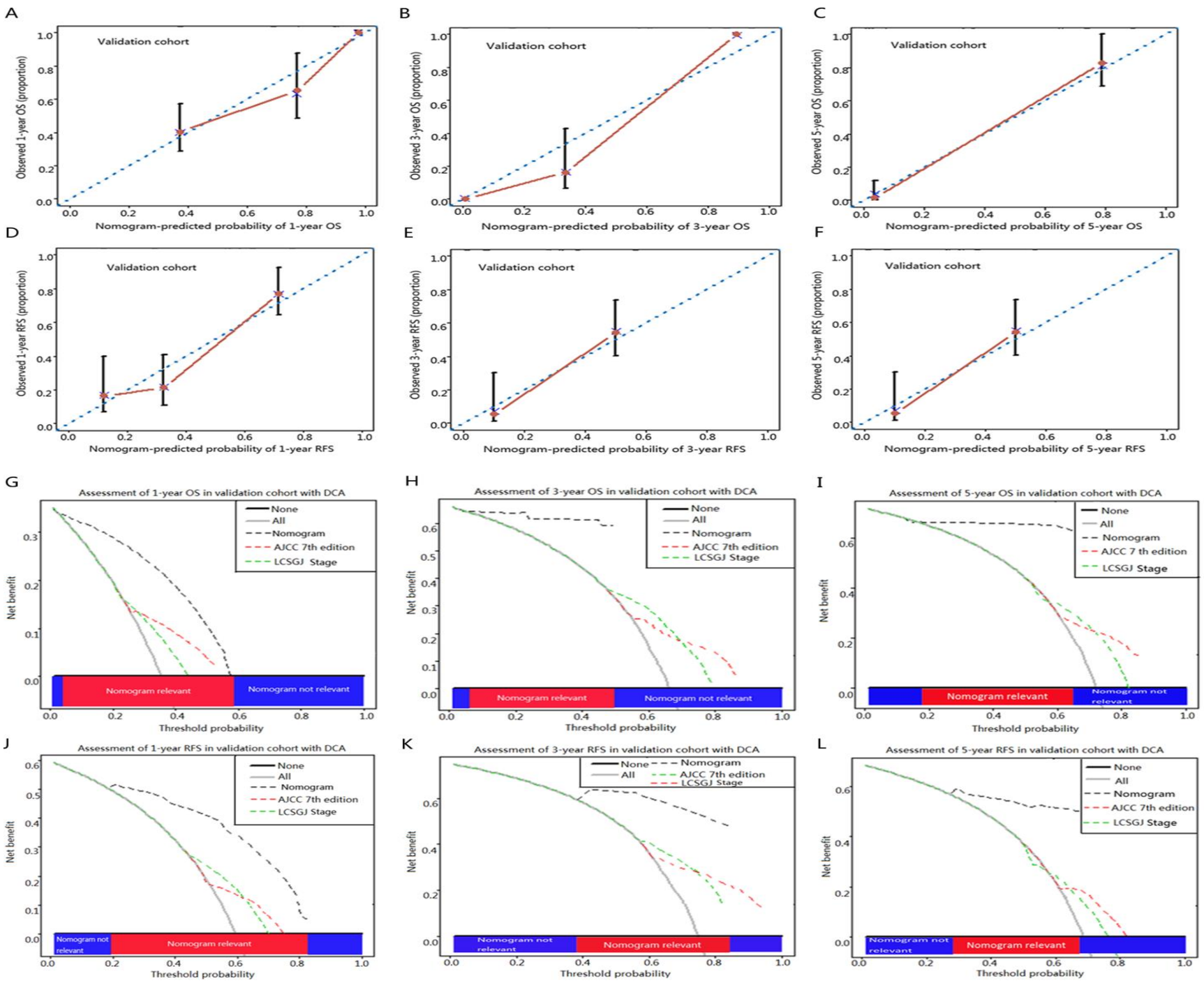
Supplementary Figure 3 Overall survival curves for the expression of Oct4 and Nanog among ICC subgroups in validation cohort. Subgroup analysis indicated that significant differences in OS were found between Oct4-high and Oct4-low, Nanog-high and Nanog-low patients after categorized by clinicopathologic variables.



Supplementary Figure 4 Recurrence-free survival curves for the expression of Oct4 and Nanog among ICC subgroups in validation cohort. Subgroup analysis indicated that significant differences in RFS were found between Oct4-high and Oct4-low, Nanog-high and Nanog-low patients after categorized by clinicopathologic variables.



Supplementary Figure 5 ICC calibration curve and decision curve analysis in validation cohort. The calibration curve for predicting OS at (A) 1 year, (B) 3 year, (C) 5 year and predicting RFS at (D) 1 year, (E) 3 year, (F) 5 year. Decision curve analyses depict the clinical net benefit in pairwise comparisons across the different models. Nomograms are compared with the AJCC 7th edition and LCSGJ stage in terms of (G) 1-year, (H) 3-year and (I) 5-year OS and (J) 1-year, (K) 3-year and (L) 5-year RFS. On decision curve analysis, nomograms showed superior net benefit compared with AJCC 7th edition and LCSGJ stage across a wider range of threshold probabilities.


A
Validation cohort
Observed 1-year OS (proportion)
Nomogram-predicted probability of 1-year OS
B
Validation cohort
Observed 3-year OS (proportion)
Nomogram-predicted probability of 3-year OS
C
Validation cohort
Observed 5-year OS (proportion)
Nomogram-predicted probability of 5-year OS
D
Validation cohort
Observed 1-year RFS (proportion)
Nomogram-predicted probability of 1-year RFS
E
Validation cohort
Observed 3-year RFS (proportion)
Nomogram-predicted probability of 3-year RFS
F
Validation cohort
Observed 5-year RFS (proportion)
Nomogram-predicted probability of 5-year RFS
G
Assessment of 1-year OS in validation cohort with DCA
None
All
Nomogram
AJCC 7th edition
LCSGJ Stage
Net benefit
Nomogram relevant
Nomogram not relevant
Threshold probability
H
Assessment of 3-year OS in validation cohort with DCA
None
All
Nomogram
AJCC 7th edition
LCSGJ Stage
Net benefit
Nomogram relevant
Nomogram not relevant
Threshold probability
I
Assessment of 5-year OS in validation cohort with DCA
None
All
Nomogram
AJCC 7 th edition
LCSGJ Stage
Net benefit
Nomogram relevant
Nomogram not relevant
Threshold probability
J
Assessment of 1-year RFS in validation cohort with DCA
None
All
Nomogram
AJCC 7th edition
LCSGJ Stage
Net benefit
Nomogram not relevant
Nomogram relevant
Threshold probability
K
Assessment of 3-year RFS in validation cohort with DCA
None
All
Nomogram
AJCC 7th edition
LCSGJ Stage
Net benefit
Nomogram not relevant
Nomogram relevant
Threshold probability
L
Assessment of 5-year RFS in validation cohort with DCA
None
All
Nomogram
AJCC 7th edition
LCSGJ Stage
Net benefit
Nomogram not relevant
Nomogram relevant
Threshold probability