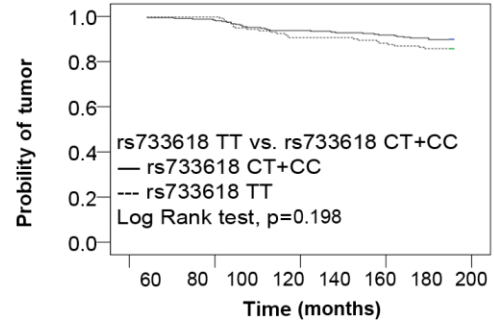
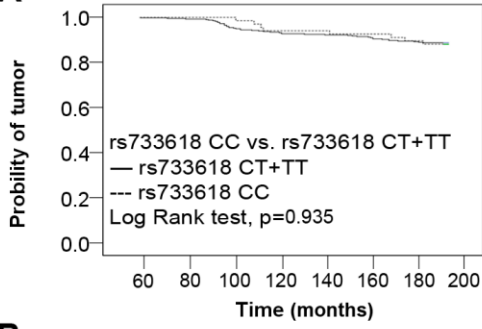
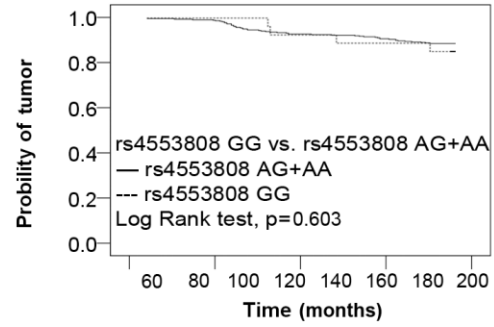
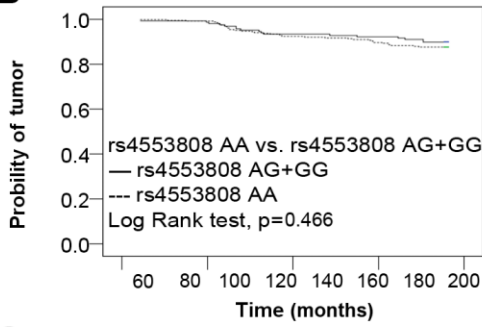
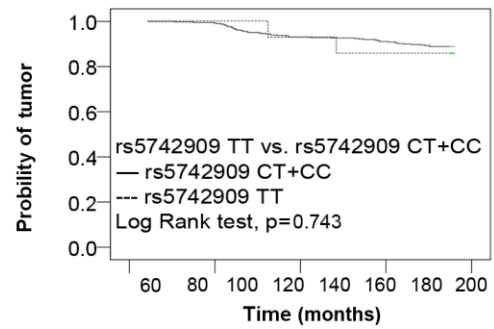
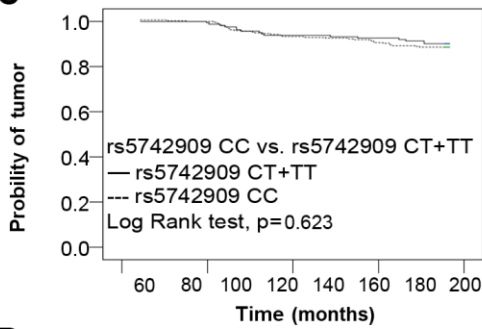
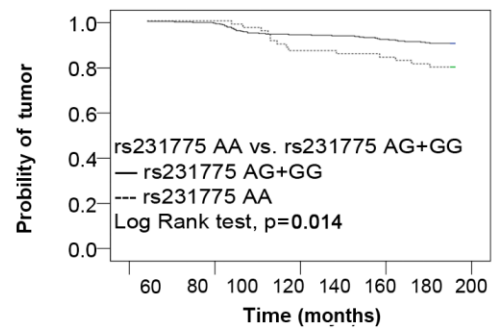
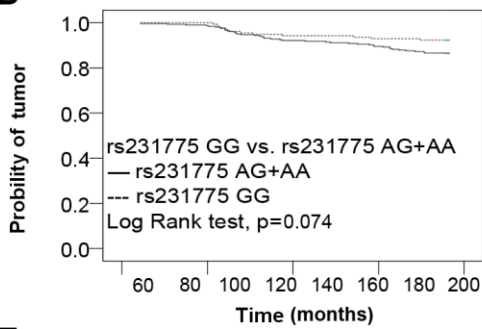
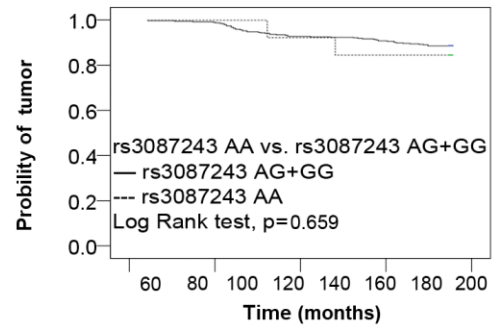
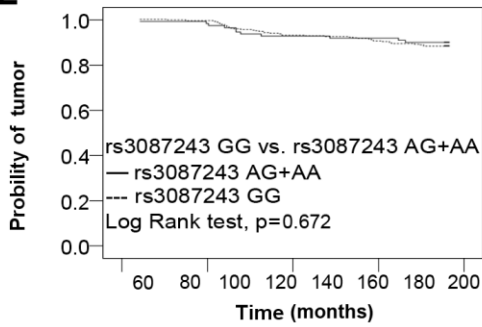


Supplementary materials

Supplementary figure 1. Association of the *CTLA4* genotypes with time of discovery of tumor

Associations of the *CTLA4* SNPs with the time of discovery of tumor in patients were analyzed by the Kaplan-Meier test. In the Supplemental figure 1h, comparison between groups carrying with rs231775 AA and rs231775 AG+ GG was statistic, $p = \mathbf{0.014}$.

A**B****C****D****E**

Supplementary table 1 Test of Hardy-Weinberg equilibrium in 5 locus of CTLA4 SNP

Locus	Genotype	Patients		<i>p</i> value	Patients		<i>p</i> value
		with tumor (n=53) n (%)			with non-tumor (n=411) n (%)		
rs733618	TT	23	0.504	0.477	141	1.975	0.159
	CT	22			211		
	CC	8			59		
rs4553808	AA	36	2.755	0.096	258	1.485	0.222
	AG	13			130		
	GG	4			23		
rs5742909	CC	36	0.076	0.781	265	1.023	0.311
	CT	15			134		
	TT	2			12		
rs231775	GG	12	0.021	0.882	145	2.531	0.111
	AG	27			211		
	AA	14			55		
rs3087243	GG	42	2.357	0.124	314	2.848	0.091
	AG	9			86		
	AA	2			11		

Supplementary table 2 The genotype distribution of the *CTLA4* polymorphisms in patients

<i>Locus</i>	<i>Genotype</i>	<i>Patients</i>		<i>Model</i>	<i>OR (95% CI)</i>	<i>p value</i>
		<i>Patients with tumor (n=53) n (%)</i>	<i>Patients with non-tumor (n=411) n (%)</i>			
<i>rs733618</i>	<i>TT</i>	23 (43.40)	141 (34.31)	<i>Dominant</i>	1.061 (0.476-2.363)	0.837
	<i>CT</i>	22 (41.51)	211 (51.34)	<i>Recessive</i>	1.468 (0.822-2.622)	0.222
	<i>CC</i>	8 (15.09)	59 (14.35)			
<i>rs4553808</i>	<i>AA</i>	36 (67.92)	258 (62.77)	<i>Dominant</i>	1.377 (0.457-4.148)	0.568
	<i>AG</i>	13 (24.53)	130 (31.63)	<i>Recessive</i>	1.256 (0.682-2.312)	0.545
	<i>GG</i>	4 (7.55)	23 (5.60)			
<i>rs5742909</i>	<i>CC</i>	36 (67.92)	265 (64.48)	<i>Dominant</i>	1.304 (0.284-5.992)	0.732
	<i>CT</i>	15 (28.30)	134 (32.60)	<i>Recessive</i>	1.167 (0.633-2.150)	0.650
	<i>TT</i>	2 (3.77)	12 (2.92)			
<i>rs231775</i>	<i>GG</i>	12 (22.64)	145 (35.28)	<i>Dominant</i>	2.324	0.012*

					(1.185-4.556)	
	<i>AG</i>	27 (50.94)	211 (51.34)	<i>Recessive</i>	0.537	0.089
					(0.274-1.054)	
	<i>AA</i>	14 (26.42)	55 (13.38)			
<i>rs3087243</i>	<i>GG</i>	42 (79.25)	314 (76.16)	<i>Dominant</i>	1.180	0.732
					(0.585-2.380)	
	<i>AG</i>	9 (16.99)	86 (20.92)	<i>Recessive</i>	1.426	1.426
					(0.307-6.616)	
	<i>AA</i>	2 (3.77)	11(2.92)			

OR: odds ratio, CI: confidence intervals, *Bonferroni-adjusted $p = 0.06$

Supplementary table 3 The allele distribution of *CTLA4* polymorphisms in patients

Locus	Allele	Patients	with	patients with	OR (95% CI)	<i>p</i> value
		tumor		non-tumor		
		(n= 106)		(n= 822)		
		n (%)		n (%)		
rs733618	T	68(64.15)		493(59.98)	0.837 (0.550-1.275)	0.408
	C	38(35.85)		329(40.02)		
rs4553808	A	85(80.19)		646(78.59)	1.103 (0.665-1.829)	0.705
	G	21(19.81)		176(21.41)		
rs5742909	T	87(82.07)		664(80.78)	1.090 (0.644-1.843)	0.749
	C	19(17.93)		158(19.22)		
rs231775	G	51(48.11)		501(60.95)	0.594 (0.396-0.892)	0.011*
	A	55(51.89)		321(39.05)		
rs3087243	G	93(87.74)		714(86.86)	1.082 (0.585-2.001)	0.801
	A	13(12.26)		108(13.14)		

OR: odds ratio, CI: confidence intervals

* Bonferroni-adjusted *p* =**0.055**

Supplementary table 4 Association between tumor and several risk factors

Variables	Multivariable analysis		
	tumor(n=53)	Non-tumor(n=411)	<i>p</i> value
Mean age±SD	40.72± 9.47	40.18± 10.10	0.712
Sex			
Male/Female	35/18	253/158	0.528
Primary diseases			
Chronic glomerulonephritis	47	377	0.458
Polycystic kidney	1	17	0.426
Pyelonephritis	2	14	0.891
Aristolochic acid nephropathy	3	3	0.003
Dialysis time (≥3year)	23	193	0.625
Number of HLA -mismatch	2.57±1.029	2.47±0.806	0.429
Real transplantation			0.701
lived /cadaver	5/48	46/365	
Antibody induction therapy	17	140	0.774
Immunosuppressive regiment			0.770
CsA +MMF+Pred	34	272	
TAC + MMF+Pred	19	139	
Blood transfusion	5	52	0.503
Rejection			0.119
AR/ non-AR	11/42	53/358	

rs231775 SNPs

0.012

AA

AG+ GG

Time of discovery of tumor

-

-

0.000

CsA: cyclosporine, MMF: mycophenolate mofetil, Pred: prednisone, TAC: tacolimus,

AR: acute rejection, non-AR: non-acute rejection