Web appendix: Supplementary material

SUPPLEMENTARY TABLES

Web table 1: Factors associated with kidney allograft loss in the multivariate analysis with Cold ischemia time as a continuous variable.

Web Table 2: Factors associated with kidney allograft loss integrating preimplantation biopsy results.

Web Table 3: Determinants of kidney allograft outcome: multivariate model excluding 393 living donors.

Web Table 4: Factors associated with kidney graft loss using non a priori donor parameters instead of ECD criteria.

Web Table 5: Factors associated with kidney allograft loss stratified by centre.

Web Table 6: Baseline characteristics of donors and recipients in the external validation cohort and in the principal cohort.

Web Table 7: Factors associated with kidney allograft loss in the external validation cohort.

SUPPLEMENTARY FIGURES

Web Figure 1: Distribution of donor age in the development cohort.

Web Figure 2: Kidney allograft preimplantation biopsy phenotypes, according to SCD or ECD status and the presence of donor specific anti-HLA antibody on the day of transplantation.

Web Figure 3: Cumulative incidence plots of graft loss comparing ECD and SCD and those of deaths (the competing event for graft loss) comparing ECD and SCD and cumulative incidence graft loss comparing ECD/DSA+ and SCD/DSA+ and those of death comparing ECD/DSA+ and SCD/DSA+.

Web Figure 4: Kidney allograft function at one year post-transplantation, according to SCD or ECD status and the presence of donor specific anti-HLA antibody on the day of transplantation.

Web Figure 5: Kidney-allograft biopsy phenotypes at one year post-transplantation, according to SCD or ECD status and donor specific anti-HLA antibody on the day of transplantation.

Web Figure 6: Kaplan-Meier curves for kidney allograft survival by donor type (SCD, Panel A; ECD, Panel B) and anti-HLA DSA MFI level on the time of transplantation.

Web Figure 7: Kaplan-Meier curves for kidney allograft survival by HLA class of immunodominant DSA.

Web Figure 8: Kaplan-Meier curves for kidney allograft survival by KDRI (Panel A) and the presence of DSA on the day of transplantation (Panel B).

Web Figure 9: Kidney allograft survival according to ECD and DSA status in the propensity score-matched cohort.

Web Figure 10: Kaplan-Meier curves for kidney allograft survival in the external validation cohort by donor type and anti-HLA antibody sensitization (Panel reactive antibodies, PRA).

SUPPLEMENTARY METHODS

Data collection procedures

All data from Necker and Toulouse Hospitals regarding donor and recipient were extracted from the DIVAT clinical prospective cohort (Official website: www.divat.fr). Data from Saint Louis and Foch hospitals were excerpted from the French national agency database CRISTAL (Official website: https://www.sipg.sante.fr/portail/). DIVAT and CRISTAL databases network have been approved by the National French Commission for bioinformatics data and patients liberty: DIVAT: CNIL, Registration number: 1016618, validated 8th June 2004 and CRISTAL: CNIL, Registration number: 363505, validated 3th April 1996. Codes were used to ensure the strict donor and recipient anonymity and blind assay. Informed consent is obtained from the participants at time of transplantation. The data are computerized in real time as well as at each transplant anniversary and are submitted for an annual audit.

Independent validation cohort

This external validation set is composed of the 4128 consecutive kidney recipients transplanted in Lyon, Montpellier, Nancy, and Nantes hospitals, France. Kidney transplantations were performed between 1 January, 2002 and 31 December, 2011. Similar immunological rules for kidney transplantation applied, with all transplantations being ABO compatible with a negative current IgG T-cell and B-cell complement-dependent cytotoxicity cross-matching required for all patients. The quantification of day-0 anti-HLA sensitisation was determined in the validation cohort using cytotoxic panel-reactive antibodies (PRAs) for the patients transplanted before July 2009 and calculated PRAs (cPRAs) for the kidney recipient patients transplanted after July 2009. A PRA value >5% was defined as the threshold for defining sensitised patients according to the French national agency for organ procurement recommendations (Agence de la biomedicine (http://www.sipg.sante.fr/portail/)).

Post-transplantation induction protocols and maintenance of immunosuppressive therapy

Patients received induction therapy consisting of rabbit antithymocytes globulin (1.5 mg per kilogram per day, for 10 days) or basiliximab (20 mg at day 0 and day 4) immediately after transplantation. Subsequent maintenance immunosuppressive therapy consisted of prednisone, mycophenolate mofetil (1000 mg twice daily), tacrolimus administrated to maintain a target blood level of 8 to 10 ng per millilitre for the first 3 months and 6 to 8 ng per milliliter after 3 months or cyclosporine administrated to maintain a target blood level of 800 to 1200 ng per millilitre for the first 3 months and 600 to 800 ng per milliliter after 3 months.

Kidney allograft lesions: Banff scoring system (15)

Chronicity scores reflecting donor-derived lesions and baseline transplant damage were measured in preimplantation biopsies according to the percentage of sclerotic glomeruli, interstitial fibrosis/tubular atrophy (IF/TA score), arteriolar hyaline thickening (ah score) and vascular fibrous intimal thickening arteriosclerosis (cv score). In addition, the following histological factors were assessed and scored in all post-transplant kidney allograft biopsies: glomerulitis (g score), tubulitis (t score), mononuclear cell interstitial inflammation (i score), intimal arteritis (v score), peritubular capillaritis (ptc score), and allograft glomerulopathy (cg score). C4d staining was performed in the post-transplant biopsies by immunochemistry on paraffin sections using polyclonal human anti-C4d antibodies (Biomedica Gruppe, Austria).

Propensity score

To test whether older recipient age might have affected allograft outcome and the associations identified in the primary analyses, a propensity score was used, which estimates the a posteriori probability of assigning an ECD kidney conditional on baseline parameters, such as recipient age, recipient gender, recipient cause of end-stage renal disease, recipient time on dialysis, presence of recipient circulating anti-HLA DSA on the day of transplantation, donor diabetes, living donor, retransplantation, cold ischemia time, and

HLA A/B/DR mismatch. The covariates included in the ECD definition were excluded (donor age, history of hypertension, cardio-vascular death and creatinine levels). Using propensity score matching, each ECD individual was matched with an SCD individual with the same a posteriori probability of receiving an ECD organ (caliper width: 0.2). In this manner, the indication bias for ECD therapy was reduced. The matched sample was composed of 540 ECD recipients matched with 540 SCD recipients. The mean recipient age was 55±10 years in the ECD group and 54±9 years in the SCD group.

KDRI score

The KDRI score included the following:

- Donor age,
- Donor height
- Donor weight
- Donor history of hypertension
- Donor history of diabetes
- Donor cause of death (cerebral stoke)
- Donor serum creatinine at donation
- Donor hepatitis C virus (HCV) status,
- Donation after circulatory death (DCD) status.

The KDRI score estimates the risk of function loss of a kidney-graft transplanted to a reference donor. This donor is defined as a person 40 years old, non afro-american, 170 cm tall, weighing 80 kg, with a creatinine level of 1 mg/dL, negative history of hypertension, diabetes and hepatitis C. Ethnicity was not used in our study because it is not available according to French national bioethics rules. The interquartile range of 1.82 to identify the 25 % of patients with the highest KDRI was used (Supplementary Figure 8).

Web Table 1: Factors associated with kidney-allograft loss in the multivariate analysis with Cold ischemia time as continuous variable.

		Number of patients	Number of events	HR	95% CI	P
ECD	**No**	1835	187	1	-	
	Yes	855	138	1.884	(1.506 to 2.571)	**<0.0001**
Cold ischemia time (per 1-hour increment)		2690	325	1.013	(1.000 to 1.027)	**0.04625**
Graft rank	**1**	2278	241	1	-	
	>1	412	84	1.574	(1.190 to 2.080)	**0.0015**
No. of HLA A/B/DR mismatches		2690	325	1.095	(1.013 to 1.184)	**0.0221**
Anti-HLA DSA on day 0	**No**	2364	241	1	-	
	Yes	326	84	2.997	(2.272 to 2.357)	**<0.0001**

Abbreviations: ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibody; HLA, human leucocyte antigen

Web Table 2A: Factors associated with kidney allograft loss integrating preimplantation biopsy results in univariate analysis.

			Number of patients	Number of events	HR	95% CI	P
Baseline recipients characteristics	**Age (**per 1-yr increment)		1011	108	1.009	(0.994 to 1.024	0.2184
	Gender	**Female**	407	46	1	-	
		Male	604	62	0.868	(0.593 to 2.271)	0.4675
Baseline donor characteristics	**Age** (per 1-yr increment)		1011	108	1.018	(1.006 to 1.031)	**0.0046**
	Gender	**Female**	451	62	1	-	
		Male	560	46	0.584	(0.399 to 0.855)	**0.0057**
	Donor Type	**Living related**	44	2	1	-	
		Death of CV disease	536	68	2.441	(0.598 to 9.967)	
		Other cause of death	431	38	1.632	(0.394 to 6.769)	**0.0803**
	Deceased donor	**No**	44	2	1	-	
		Yes	967	106	2.073	(0.511 to 8.400)	0.3073
	Hypertension	**No**	690	63	1	-	
		Yes	290	42	1.804	(1.220 to 2.668)	**0.0031**
	Diabetes mellitus	**No**	856	89	1	-	
		Yes	63	8	1.357	(0.658 to 2.799)	0.4080
	Creatinine (mg/dL)	**< 1.5**	902	100	1	-	
		≥ 1.5	98	8	0.722	(0.351 to 1.483)	0.3747
	ECD	**No**	392	55	1	-	
		Yes	619	53	1.856	(1.272 to 2.707)	**0.0013**
Transplant characteristics	**Graft Rank**	**1**	820	74	1	-	
		> 1	191	34	2.007	(1.337 to 3.012)	**0.0008**
	Cold ischemia time	**< 12**	143	7	1	-	
	(hours)	**12-24**	633	73	2.408	(1.108 to 5.231)	
		≥ 24	235	28	2.587	(1.130 to 5.023)	0.0676
Histological factors at day 0[a]	**Percentage of glomerulosclerosis**	**0**	415	33	1	-	
		1-10%	222	23	1.478	(0.867 to 2.518)	
		11-20%	181	26	1.900	(1.136 to 3.177)	
		> 20%	145	20	1.909	(1.095 to 3.328)	**0.0468**
	Interstitial fibrosis and tubular atrophy	**Low score: 0 or 1**	792	84	1	-	
		High score: ≥ 2	21	4	2.267	(0.794 to 5.913)	0.1311
	Arteriosclerosis	**Low score: 0 or 1**	533	55	1	-	
		High score: ≥ 2	228	26	1.169	(0.733 to 1.865)	0.5112
	Arteriolar hyalinosis	**Low score: 0 or 1**	658	67	1	-	
		High score: ≥ 2	159	19	1.341	(0.805 to 2.236)	0.2601
Immunologic factors	**No. of HLA A/B/DR mismatches**		1010	108	1.062	(0.931 to 1.212)	0.3694
	Anti-HLA DSA on Day 0	**No**	836	68	1	-	
		Yes	175	40	3.656	(2.468 to 5.415)	**<0.0001**

Abbreviations: CI, Confidence interval; HR, Hazard ratio; CV, Cardio-vascular; ECD, Expanded criteria donor; DSA, Donor-specific anti-HLA antibodies; HLA, human leucocyte antigen

[a]Banff scores range from 0 to 3, with higher scores indicating more severe abnormalities

Web Table 2B: Factors associated with kidney-allograft loss integrating preimplantation biopsy results in multivariate analysis.

		Number of patients	Number of events	HR	95% CI	P
ECD	**No**	392	55	1	-	
	Yes	619	53	1.944	(1.332 to 2.838)	**0.0006**
Anti-HLA DSA on day 0	**No**	836	68	1	-	
	Yes	175	40	3.777	(2.548 to 5.599)	**<0.0001**

Final multivariate Cox model obtained by entering risk factors from the univariate model reaching $p \leq 0.10$ as the threshold in a single multivariate proportional hazards model. The final multivariate model is adjusted on the following parameters: Donor gender, ECD, graft rank, cold ischemia time, the number of HLA A/B/DR mismatch, circulating donor-specific antibodies and the percentage of glomerulosclerosis in preimplantation kidney allograft biopsy.
Abbreviations: CI, Confidence interval; HR, Hazard ratio; ECD, Expanded criteria donor.; HLA, human leucocyte antigen

Web Table 3: Determinants of kidney allograft outcome: multivariate model excluding 393 living donors

		Number of patients	Number of events	HR	95% CI	P
ECD	**No**	1454	162	1	-	
	Yes	855	138	1.856	(1.473 to 2.337)	**<0.0001**
Cold ischemia time	**<12 hours**	294	19	1	-	
	12-24 hours	1510	198	1.670	(1.039 to 2.684)	
	≥24 hours	505	83	1.964	(1.182 to 3.263)	**0.032**
Graft rank	**1**	1933	217	1	-	
	>1	376	83	1.620	(1.216 to 2.159)	**0.001**
No. of HLA A/B/DR mismatches		2309	300	1.084	(0.999 to 1.176)	**0.053**
Anti-HLA DSA on day 0	**No**	2024	221	1	-	
	Yes	285	79	2.880	(2.158 to 3.845)	**<0.0001**

Abbreviations: ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibody; HLA, human leucocyte antigen

Web Table 4: Factors associated with kidney graft loss using non a priori donor parameters instead of ECD criteria in multivariate analysis.

		Number of patients	Number of events	HR	95% CI	P
Donor age (per 1-yr increment)		2690	325	1.016	(1.009 to 1.024)	**<0.0001**
Cold ischemia time	**< 12 hours**	670	44	1	-	
	12-24 hours	1514	198	1.638	(1.179 to 2.277)	
	≥ 24 hours	506	83	1.872	(1.289 to 2.718)	**0.0033**
Graft Rank	**1**	2278	241	1	-	
	> 1	412	84	1.544	(1.168 to 2.042)	**0.0023**
No. of HLA A/B/DR mismatches		2690	325	1.103	(1.020 to 1.193)	**0.0138**
Anti-HLA DSA on day 0	**No**	2364	241	1	-	
	Yes	326	84	2.976	(2.254 to 3.928)	**<0.0001**

Final multivariate Cox model obtained by entering risk factors from the univariate model reaching $p \leq 0.10$ as the threshold in a single multivariate proportional hazards model. The final multivariate model is adjusted on the following parameters: Deceased donor, Donor diabetes, Donor's age, graft rank, cold ischemia time, the number of HLA A/B/DR mismatch and circulating donor-specific antibodies.
Abbreviations: CI, Confidence interval; HR, Hazard ratio; ECD, Expanded criteria donor; HLA, human leucocyte antigen

Web Table 5A: Factors associated with kidney allograft loss stratified by centre in univariate analysis.

			Number of patients	Number of events	HR	95% CI	P
Baseline recipients characteristics	**Age (**per 1-yr increment)		2763	333	1.000	(0.992 to 1.008)	0.9613
	Gender	**Female**	1120	131	1	-	
		Male	1643	202	1.048	(0.841 to 1.306)	0.6761
Baseline donor characteristics	**Age (**per 1-yr increment)		2763	333	1.016	(1.009 to 1.024)	**<0.0001**
	Gender	**Female**	1254	163	1	-	
		Male	1509	170	0.854	(0.689 to 1.059)	0.1515
	Donor Type	**Living related**	393	25	1	-	
		Death of CV disease	1323	184	2.066	(1.358 to 3.143)	
		Other cause of death	1047	124	1.651	(1.072 to 2.543)	**0.0015**
	Deceased donor	**No**	393	25	1	-	
		Yes	2370	308	1.877	(1.246 to 2.827)	**0.0026**
	Hypertension	**No**	2048	225	1	-	
		Yes	661	102	1.712	(1.351 to 2.168)	**<0.0001**
	Diabetes mellitus	**No**	2462	292	1	-	
		Yes	142	22	1.583	(1.025 to 2.446)	**0.0382**
	Creatinine	**< 1.5 mg/dL**	2466	291	1	-	
		≥ 1.5 mg/dL	270	40	0.977	(0.554 to 1.724)	0.9358
	ECD	**No**	1947	187	1	-	
		Yes	916	146	1.950	(1.565 to 2.429)	**<0.0001**
Baseline transplant characteristics	**Graft Rank**	**1**	2350	249	1	-	
		> 1	413	84	2.233	(1.736 to 2.873)	**<0.0001**
	Cold ischemia time	**< 12 hours**	674	44	1	-	
		12-24 hours	1560	203	1.885	(1.358 to 2.616)	
		≥ 24 hours	519	85	2.495	(1.729 to 3.601)	**<0.0001**
Baseline Immunologic characteristics	**No. of HLA A/B/DR mismatches**		2700	326	1.076	(0.993 to 1.165)	0.0723
	Anti-HLA DSA on day 0	**No**	2428	249	1	-	
		Yes	335	84	4.086	(3.141 to 5.315)	**<0.0001**

Abbreviations: CI, Confidence interval; HR, Hazard ratio; ECD, Expanded criteria donor; DSA, Donor-specific anti-HLA antibodies: CV, Cardio-vascular; HLA, human leucocyte antigen

Web Table 5B: Factors associated with kidney allograft loss stratified by centre in multivariate analysis.

		Number of patients	Number of events	HR	95% CI	P
ECD	**No**	1835	187	1	-	
	Yes	855	138	1.914	(1.524 to 2.404)	**<0.0001**
Cold ischemia time	**< 12 hours**	670	44	1	-	
	12-24 hours	1514	198	1.437	(1.028 to 2.009)	
	≥ 24 hours	506	83	1.763	(1.209 to 2.572)	**0.0131**
Graft Rank	**1**	2278	241	1	-	
	> 1	412	84	1.508	(1.132 to 2.008)	**0.0050**
No. of HLA A/B/DR mismatches		2690	325	1.100	(1.015 to 1.199)	**0.0207**
Anti-HLA DSA on day 0	**No**	2364	241	1	-	
	Yes	326	84	3.594	(2.679 to 4.820)	**<0.0001**

Final multivariate Cox model obtained by entering risk factors from the univariate model reaching $p \leq 0.10$ as the threshold in a single multivariate proportional hazards model. The final multivariate model is adjusted on the following parameters: Deceased donor, Donor diabetes, ECD, graft rank, cold ischemia time, the number of HLA A/B/DR mismatch and circulating donor-specific antibodies.
Abbreviations: CI, Confidence interval; HR, Hazard ratio; ECD, Expanded criteria donor; HLA: human leucocyte antigen; DSA, donor-specific anti-HLA antibodies

Web Table 6: Baseline characteristics of donors and recipients in the external validation cohort and in the principal cohort.

	External validation Cohort (n=4128)		Development cohort (n=2763)		P[a]
	n		n		
Recipient characteristics					
Age, mean (SD), y	4128	49.36 (13.6)	2763	49.23 (13.5)	0.6913
Gender male, No. (%)	4128	2548 (61.72)	2763	1643 (59.46)	0.0600
ESRD causes	4128		2763		
Glomerulonephritis, No. (%)		1101 (26.67)		767 (27.76)	
Diabetes, No. (%)		622 (15.07)		264 (9.56)	
Hypertension, No. (%)		237 (5.74)		212 (7.67)	
Other, No. (%)		2168 (52.52)		1520 (55.01)	**<0.0001**
Time since onset dialysis, mean (SD), y	4128	2.79 (3.44)	2763	3.90 (4.41)	**<0.0001**
Donor characteristics					
Age, mean (SD), y	4127	48.16 (16.05)	2763	50.31 (15.98)	**<0.0001**
Donor age categories, No. (%), y	4127		2763		
0-49		2043 (49.50)		1222 (44.23)	
50-59		1005 (24.35)		733 (26.53)	
>60		1079 (26.15)		808 (29.24)	**<0.0001**
Gender male, No. (%)	4128	2457 (59.52)	2763	1509 (54.61)	**<0.0001**
Hypertension, No. (%)	3414	802 (23.49)	2709	661 (24.40)	0.4080
Diabetes mellitus, No. (%)	2271	47 (2.07)	2604	142 (5.45)	**<0.0001**
Creatinine > 1.5 mg/dL, No. (%)	4008	495 (12.35)	2736	270 (9.87)	**<0.0001**
Donor type					
Deceased donors, No. (%)	4128	3755 (90.96)	2763	2370 (85.78)	**<0.0001**
Death of cerebro-vascular disease, No. (%)	3755	1963 (52.28)	2370	1323 (55.82)	0.0070
ECD, No. (%)	4015	1245 (31.01)	2763	916 (33.15)	0.0630
ECD/death donors, No. (%)	3646	1245 (34.15)	2370	916 (38.65)	**<0.0001**
Transplant baseline characteristics					
Graft rank > 1, No. (%)	4128	611 (14.80)	2763	413 (14.95)	0.8670
Cold ischemia time, No. (%)	4126		2753		
< 12 hours		803 (19.46)		674 (24.48)	
[12-24[hours		2319 (56.21)		1560 (56.67)	
≥ 24 hours		1004 (24.33)		519 (18.85)	**<0.0001**
HLA A/B/DR mismatch, mean (SD), number	4128	3.30 (1.37)	2700	3.12 (1.43)	**<0.0001**
Delayed graft function[b], No. (%)	4009	1151 (28.71)	2603	707 (27.16)	0.1710
Follow up (years), median, 95%[IC]	4128	6.08 (5.95 to 6.23)	2763	5.54 (5.42 to 5.68)	**<0.0001**
Death events, No. (%)	4128	366 (8.87)	2763	263 (9.52)	0.3570
Graft lost, No. (%)	4128	595 (14.41)	2763	333 (12.05)	**0.0050**

Abbreviations: ECD, expanded criteria donor, ESRD, end-stage renal disease, HLA, human leucocyte antigen, IC, confidence interval

[a] χ^2 tests for comparison of proportions and unpaired test for comparison of continuous variables.

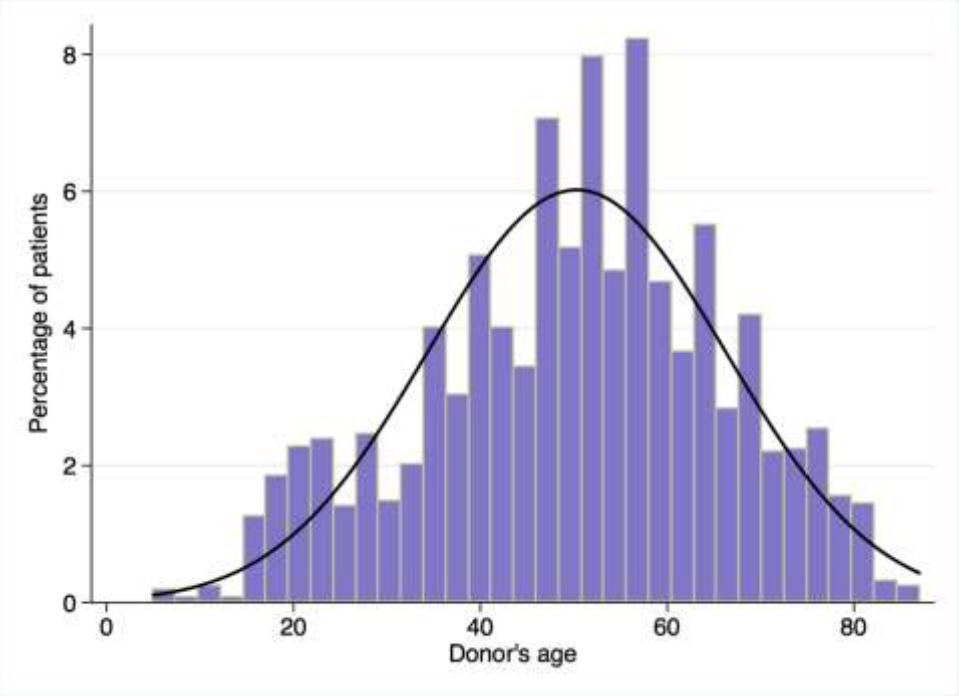
[b] Delayed graft function was defined by the use of dialysis in the first postoperative week.

Web Table 7: Factors associated with kidney allograft loss in the external validation cohort in multivariate analysis.

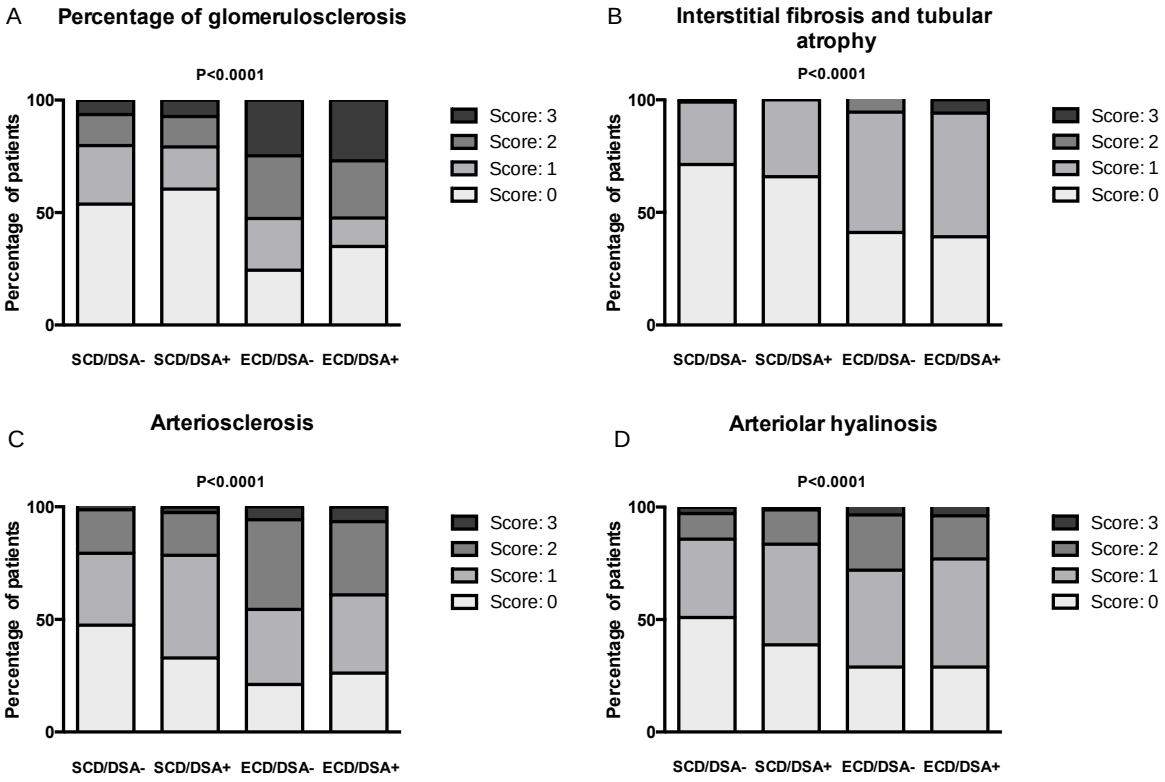
		Number of patients	Number of events	HR	95% CI	P
ECD	**No**	2375	290	1	-	
	Yes	1235	235	1.692	(1.418 to 2.020)	**<0.0001**
Cold ischemia time	**< 12 hours**	694	57	1	-	
	12-24 hours	2006	303	1.442	(1.078 to 1.928)	
	≥ 24 hours	910	165	1.687	(1.244 to 2.287)	**0.0033**
Graft Rank	**1**	3030	414	1	-	
	> 1	580	111	1.251	(0.964 to 1.624)	**0.0920**
No. of HLA A/B/DR mismatches		3610	525	1.074	(1.004 to 1.149)	**0.0370**
Anti-HLA antibodies on day 0	**PRA < 5%**	2724	364	1	-	
	PRA ≥ 5%	886	161	1.380	(1.099 to 1.731)	**0.0060**

Abbreviations: CI, Confidence interval; HR, Hazard ratio; ECD, Expanded criteria donor.; HLA, human leucocyte antigen, PRA, panel reactive antibody

Web Figure 1: Distribution of donor age in the development cohort. (N=2763)



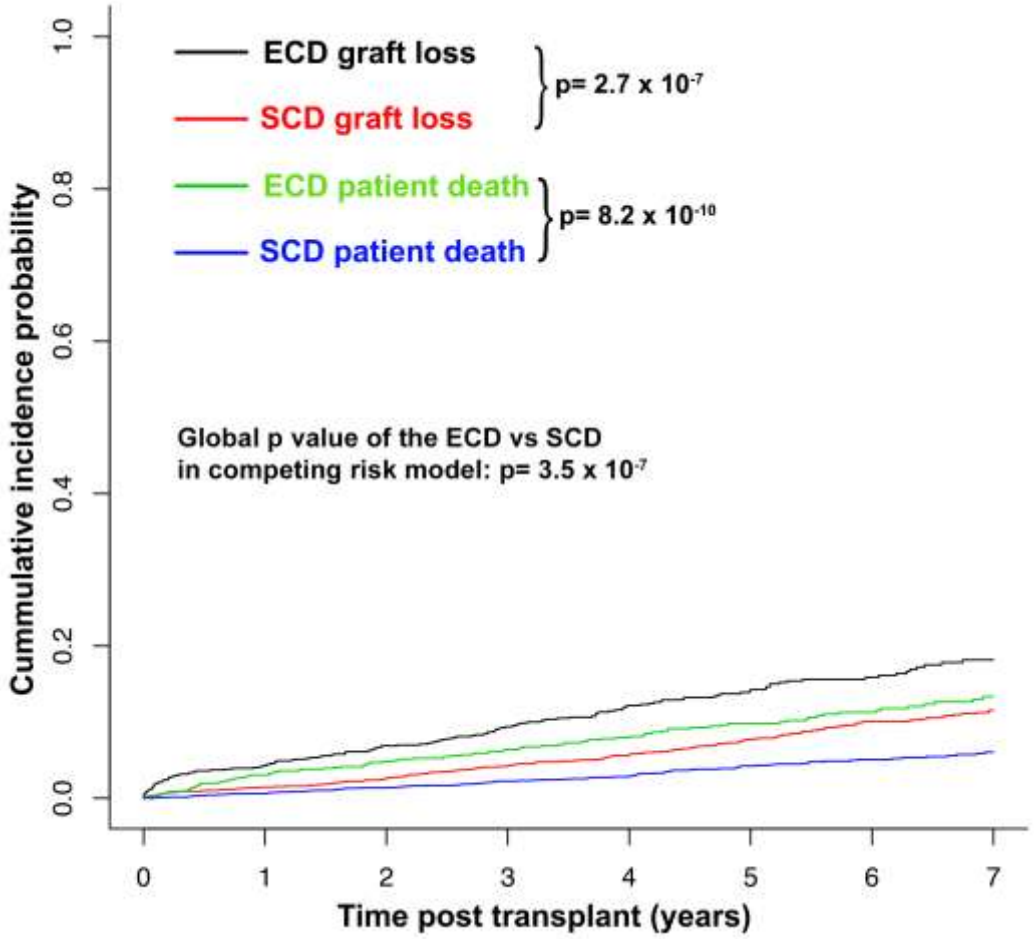
Web Figure 2: Kidney allograft preimplantation biopsy phenotypes, according to SCD or ECD status and the presence of donor specific anti-HLA antibody on the day of transplantation.*



Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibodies

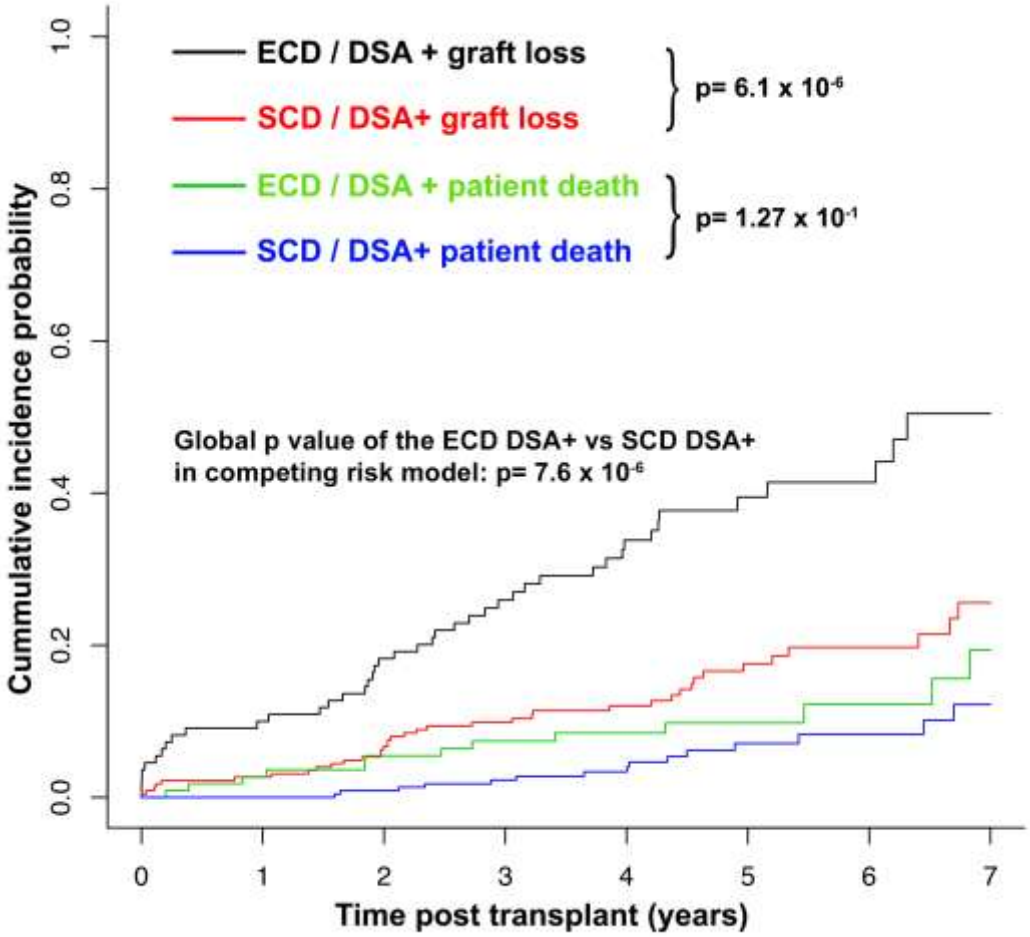
* Biopsy analysis performed in 1011 patients with available and adequate preimplantation biopsy on the day of transplantation.

Web Figure 3A. Cumulative incidence plots of graft loss comparing ECD (black curves) and SCD (red curves) and those of deaths (the competing event for graft loss) comparing ECD (green curves) and SCD (blue curves)



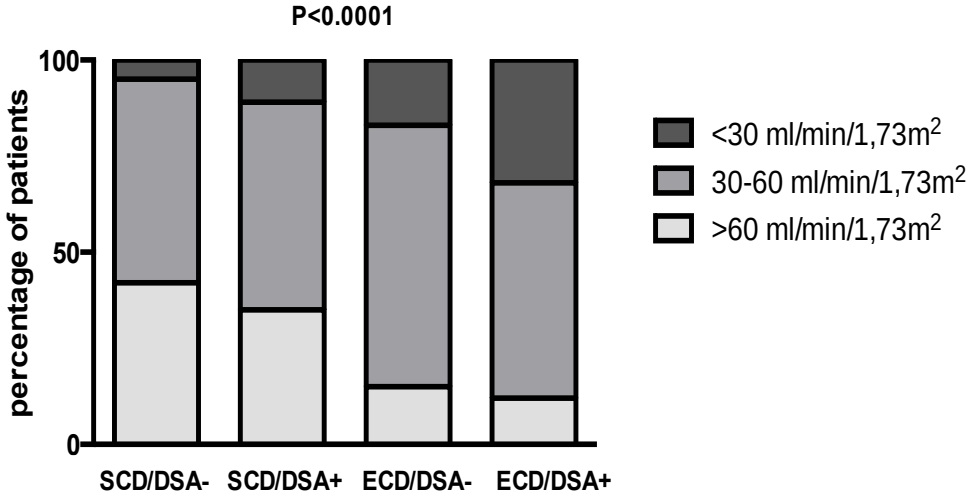
Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor;

Web Figure 3B. Cumulative incidence plots of graft loss comparing ECD/DSA+ (black curves) and SCD/DSA+ (red curves) and those of deaths (the competing event for graft loss) comparing ECD/DSA+ (green curves) and SCD/DSA+ (blue curves)



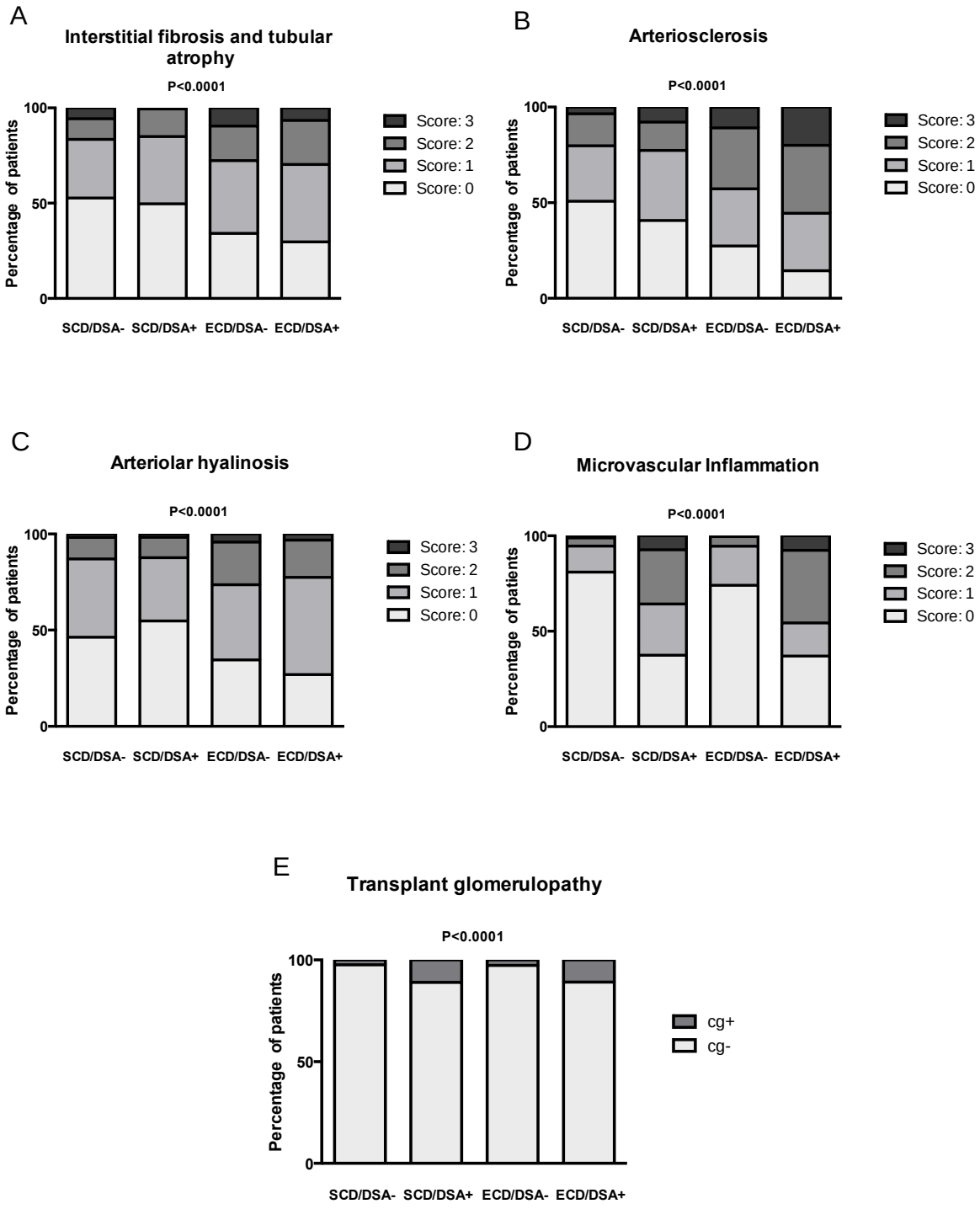
Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibodies

Web Figure 4: Kidney allograft function at one year post-transplantation, according to SCD or ECD status and the presence of donor specific anti-HLA antibody on the day of transplantation.



Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibodies

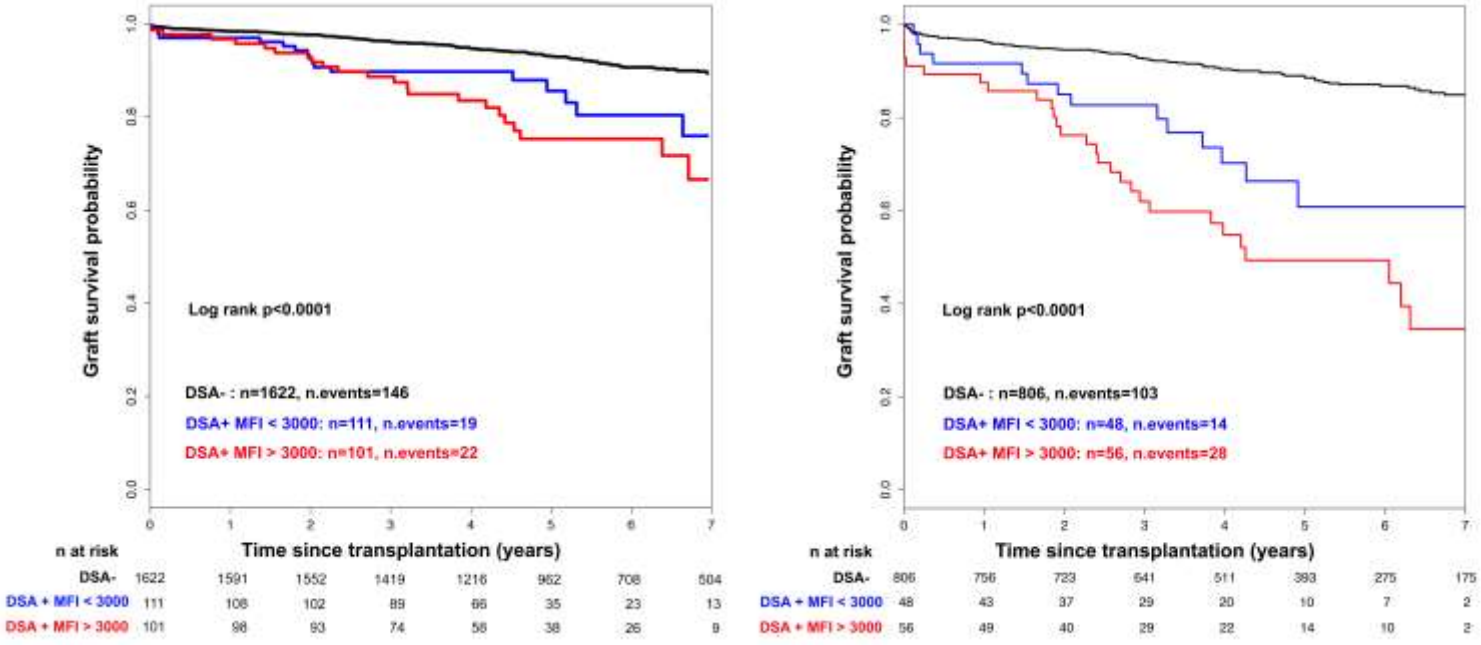
Web Figure 5: Kidney allograft biopsy phenotypes at one year post-transplantation, according to SCD or ECD status and donor specific anti-HLA antibody on the day of transplantation.*



Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibodies

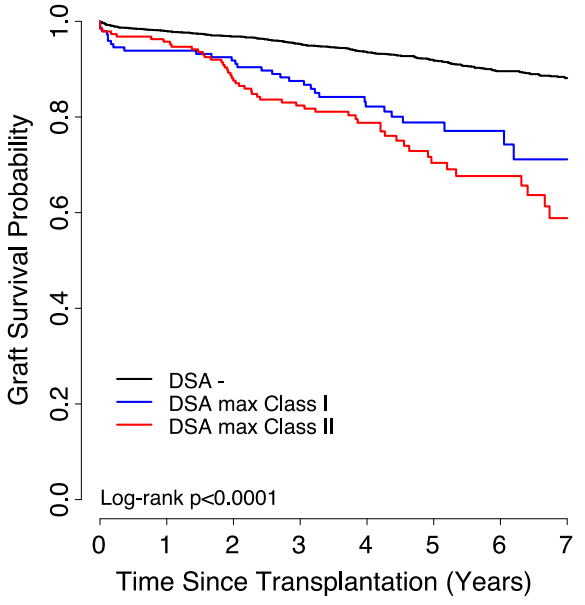
* Biopsy analysis performed in 1743 patients with available and adequate biopsy at one year post-transplantation.

Web Figure 6. Kaplan-Meier curves for kidney allograft survival by donor type (SCD, Panel A; ECD, Panel B) and anti-HLA DSA MFI level on the time of transplantation.



Abbreviations: ECD, Expanded criteria donor; DSA, Donor specific antibodies; MFI, Mean fluorescence intensity

Web Figure 7: Kaplan-Meier curves for kidney allograft survival by HLA Class of immunodominant DSA.

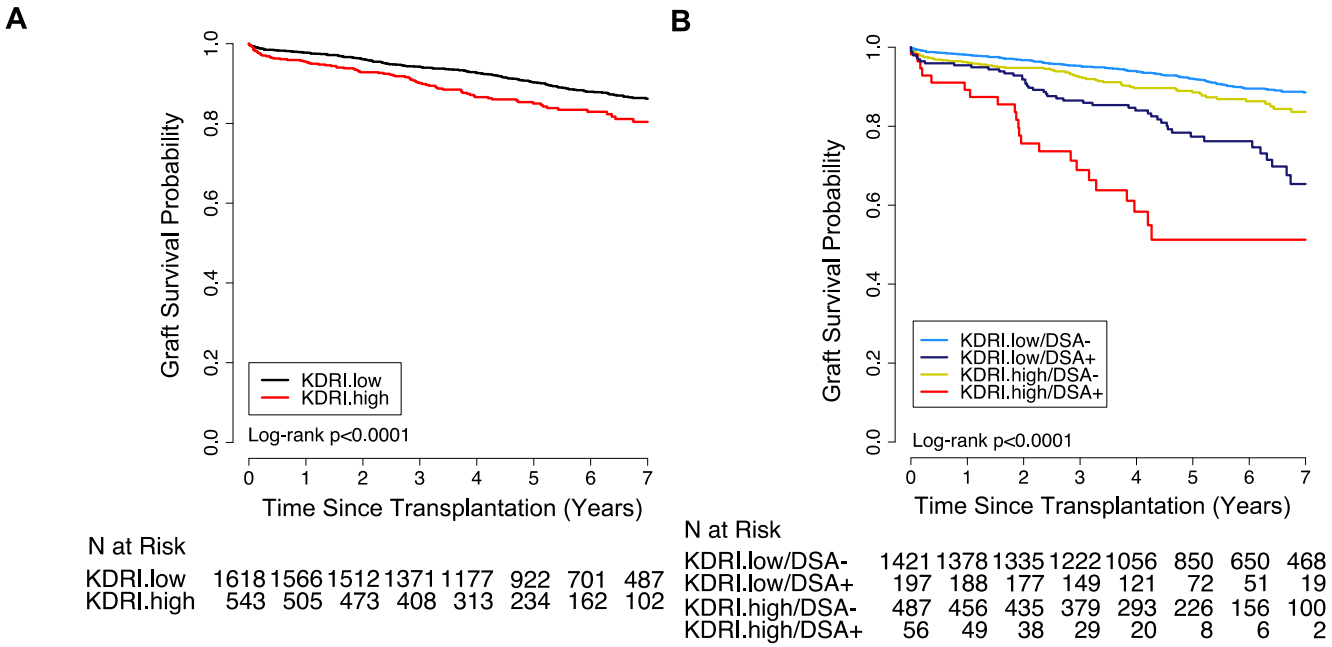


N at Risk

DSA -	2428	2347	2275	2061	1730	1355	983	679
DSA max Class I	147	137	132	110	82	49	27	13
DSA max Class II	188	180	159	128	98	54	40	13

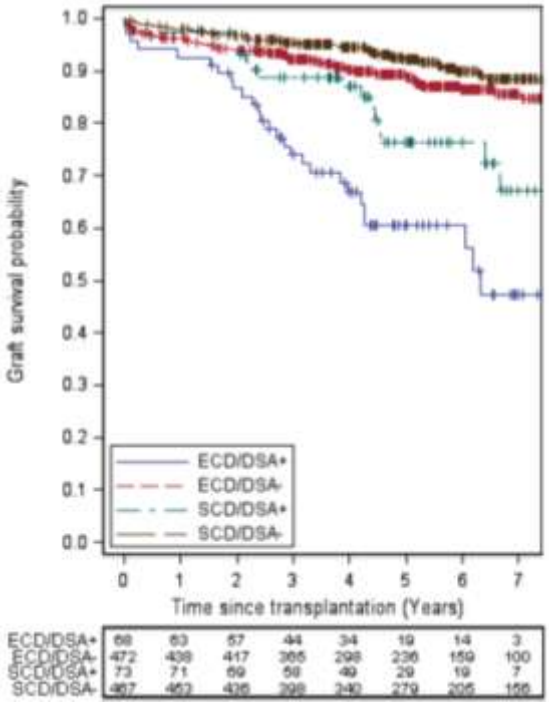
Abbreviations: DSA, Donor specific anti-HLA antibodies

Web Figure 8. Kaplan-Meier curves for kidney allograft survival by KDRI (Panel A) and the presence of DSA on the day of transplantation (Panel B).



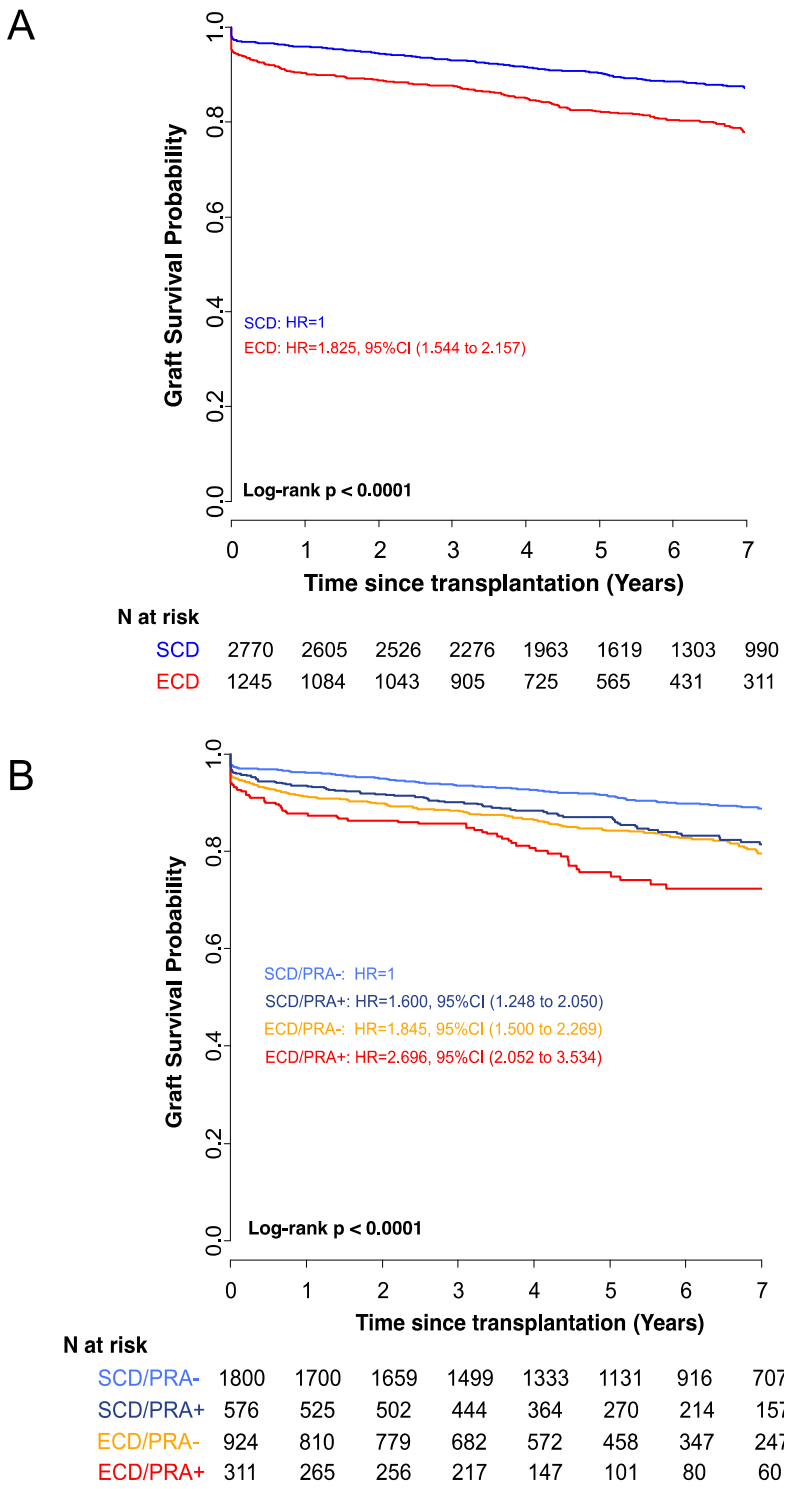
Abbreviations: KDRI, Kidney donor risk index; DSA, Donor specific anti-HLA antibodies

Web Figure 9: Kidney allograft survival according to ECD and DSA status in the propensity score matched cohort.



Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; DSA, Donor specific anti-HLA antibodies

Web Figure 10: Kaplan-Meier curves for kidney allograft survival in the external validation cohort by donor type and anti-HLA antibody sensitization (Panel reactive antibodies, PRA).



Panel A shows the classic approach to determine kidney allograft survival based on the donor SCD or ECD status. Panel B integrates ECD or SCD status with the presence or absence of anti-HLA antibodies on the day of transplantation.
Abbreviations: SCD, Standard criteria donor; ECD, Expanded criteria donor; PRA+, Panel reactive anti-HLA antibodies >5%.