

**Table S1.** Correlation matrix of surrogate variables of tacrolimus exposure / metabolism at the time of the first biopsy. TAC-C<sub>0</sub> (ng/mL), tacrolimus trough levels; CV-TAC (%), coefficient of variability of tacrolimus levels; TTR (%), time in therapeutic range; above TR (%), time above therapeutic; below TR (%), time below therapeutic range; C/D (ng/mL/mg), concentration dose ratio.

	TAC-C <sub>0</sub>	CV-TAC	TTR	Above TR	Below TR	C/D
TAC-C <sub>0</sub>	1					
CV-TAC	<b>-0.226</b> <b>0.037</b>	1				
TTR	-0.047 0.671	<b>-0.476</b> <b>&lt;0.001</b>	1			
Above TR	0.158 0.148	<b>0.293</b> <b>0.006</b>	<b>-0.863</b> <b>&lt;0.001</b>	1		
Below TR	<b>-0.215</b> <b>0.049</b>	<b>0.338</b> <b>0.002</b>	<b>-0.239</b> <b>0.028</b>	<b>-0.285</b> <b>0.008</b>	1	
C/D	0.161 0.142	0.052 0.639	<b>-0.265</b> <b>0.014</b>	<b>0.311</b> <b>0.004</b>	-0.095 0.386	1

**Table S2.** Correlation matrix of surrogate variables of tacrolimus exposure / metabolism at the time of the second biopsy. TAC-C<sub>0</sub> (ng/mL), tacrolimus trough levels; CV-TAC (%), coefficient of variability of tacrolimus levels; TTR (%), time in therapeutic range; above TR (%), time above therapeutic; below TR (%), time below therapeutic range; C/D (ng/mL/mg), concentration dose ratio.

	TAC-C <sub>0</sub>	CV-TAC	TTR	Above TR	Below TR	C/D
TAC-C <sub>0</sub>	1					
CV-TAC	0.048 0.665	1				
TTR	<b>-0.427</b> <b>&lt;0.001</b>	-0.149 0.178	1			
Above TR	<b>0.230</b> <b>0.005</b>	0.111 0.318	<b>-0.792</b> <b>&lt;0.001</b>	1		
Below TR	<b>-0.222</b> <b>0.041</b>	<b>0.229</b> <b>0.037</b>	-0.027 0.809	<b>-0.304</b> <b>0.005</b>	1	
C/D	<b>0.236</b> <b>0.029</b>	-0.006 0.955	-0.018 0.870	-0.005 0.962	-0.091 0.405	1

**Table S3.** Inflammation and tubulitis in areas of interstitial fibrosis / tubular atrophy in the first surveillance biopsy and surrogate variables of tacrolimus exposure / metabolism. TAC-C<sub>0</sub>, tacrolimus trough levels; CV-TAC, coefficient of variability of tacrolimus levels; TTR, time in therapeutic range; above TR, time above therapeutic; below TR, time below therapeutic range; C/D, concentration dose ratio; i-IFTA, Interstitial inflammation in areas of interstitial fibrosis and tubular atrophy; t-IFTA, tubulitis in areas of interstitial fibrosis and tubular atrophy.

	i-IFTA=0 & t-IFTA=0	i-IFTA ≥1 & t-IFTA=0	i-IFTA=0 & t-IFTA ≥1	i-IFTA=1 & t-IFTA ≥1 or i-IFTA ≥1 & t-IFTA=1	i-IFTA ≥2 & t-IFTA ≥2	p-value
	Normal	Inflammation w/o tubulitis	Tubulitis w/o inflammation	Borderline changes	Chronic TCMR	
N	31	27	1	24	2	
TAC-C <sub>0</sub> (ng/mL)	10.0 ± 2.9	9.4 ± 2.1	9.2	9.4 ± 2.3	9.6 ± 1.1	0.8815
CV-TAC (%)	31 ± 12	30 ± 15	36	32 ± 12	33 ± 14	0.9712

TTR (%)	48 ± 18	63 ± 22	60	54 ± 22	78 ± 9	0.1123
Time above TR (%)	42 ± 18	31 ± 24	24	32 ± 21	20 ± 9	0.3659
Time below TR (%)	10 ± 14	6 ± 8	16	14 ± 16	2 ± 0	0.1496
C/D (ng/mL/mg)	1.8 ± 1.3	2.2 ± 1.7	1.0	2.0 ± 1.4	1.7 ± 0	0.7546

**Table S4.** Inflammation and tubulitis in areas of interstitial fibrosis / tubular atrophy in the second surveillance biopsy and surrogate variables of tacrolimus exposure / metabolism. TAC-C<sub>0</sub>, tacrolimus trough levels; CV-TAC, coefficient of variability of tacrolimus levels; TTR, time in therapeutic range; above TR, time above therapeutic; below TR, time below therapeutic range; C/D, concentration dose ratio; i-IFTA. Interstitial inflammation in areas of interstitial fibrosis and tubular atrophy; t-IFTA, tubulitis in areas of interstitial fibrosis and tubular atrophy.

	i-IFTA=0 & t-IFTA=0	i-IFTA ≥1 & t-IFTA=0	i-IFTA=0 & t-IFTA ≥1	i-IFTA=1 & t-IFTA ≥1 or i-IFTA ≥1 & t-IFTA=1	i-IFTA ≥2 & t-IFTA ≥2	p-value
	Normal	Inflammation w/o tubulitis	Tubulitis w/o inflammation	Borderline changes	Chronic TCMR	
N	26	23	2	29	5	
TAC-C <sub>0</sub> (ng/mL)	8.6 ± 1.8	8.2 ± 2.0	6.7 ± 1.5	8.7 ± 2.9	8.0 ± 1.9	0.6952
CV-TAC (%)	18 ± 6	17 ± 7	22 ± 0	19 ± 8	21 ± 8	0.7380
TTR (%)	70 ± 27	63 ± 30	74 ± 37	62 ± 16	52 ± 25	0.4942
Time above TR (%)	29 ± 28	33 ± 32	26 ± 37	23 ± 27	41 ± 34	0.6598
Time below TR (%)	1 ± 3	6 ± 17	19 ± 28	4 ± 7	8 ± 13	0.1149
C/D (ng/mL/mg)	2.5 ± 1.1	2.1 ± 0.9	1.7 ± 0.8	1.9 ± 1.0	2.3 ± 0.9	0.1898