

Die Blutgruppen inkompatible Nierentransplantation

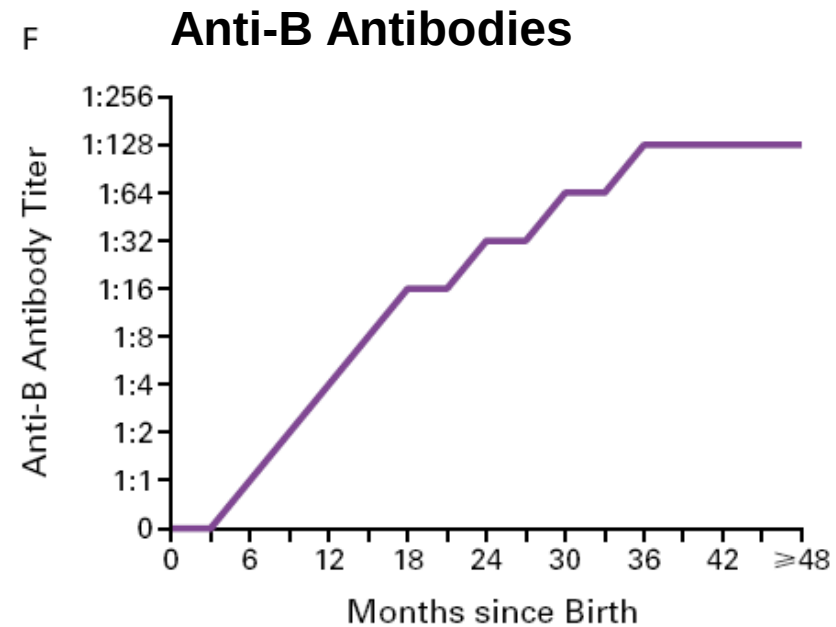
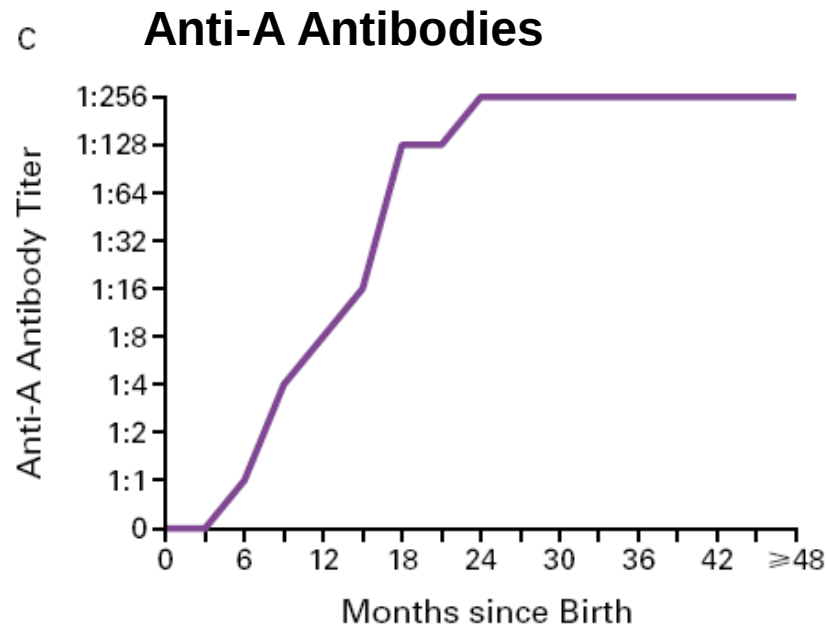
Wo stehen wir heute?

Michael Dickenmann



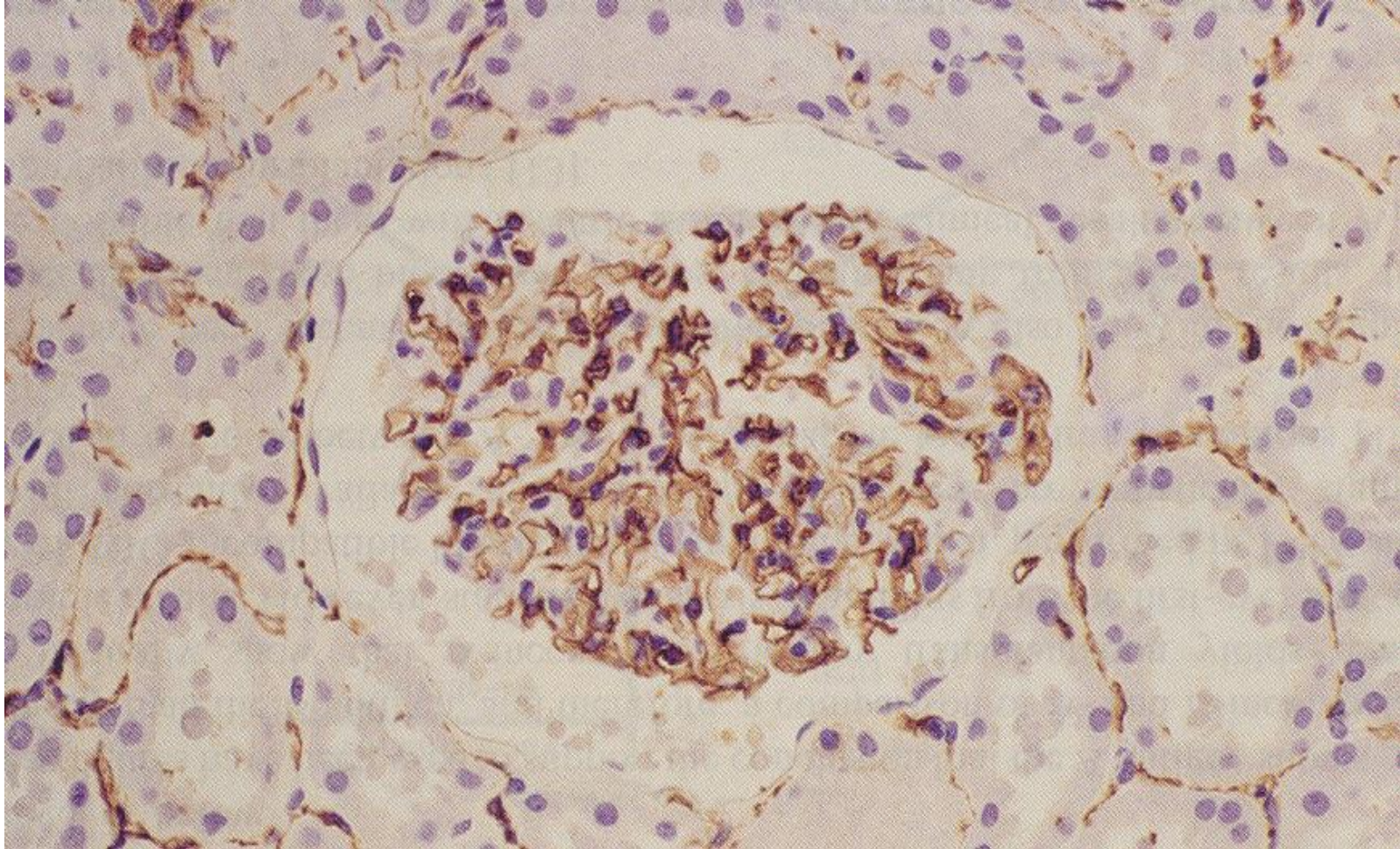
Karl Landsteiner, 1868-1943
Nobel Price 1930

Evolution of blood group antibodies

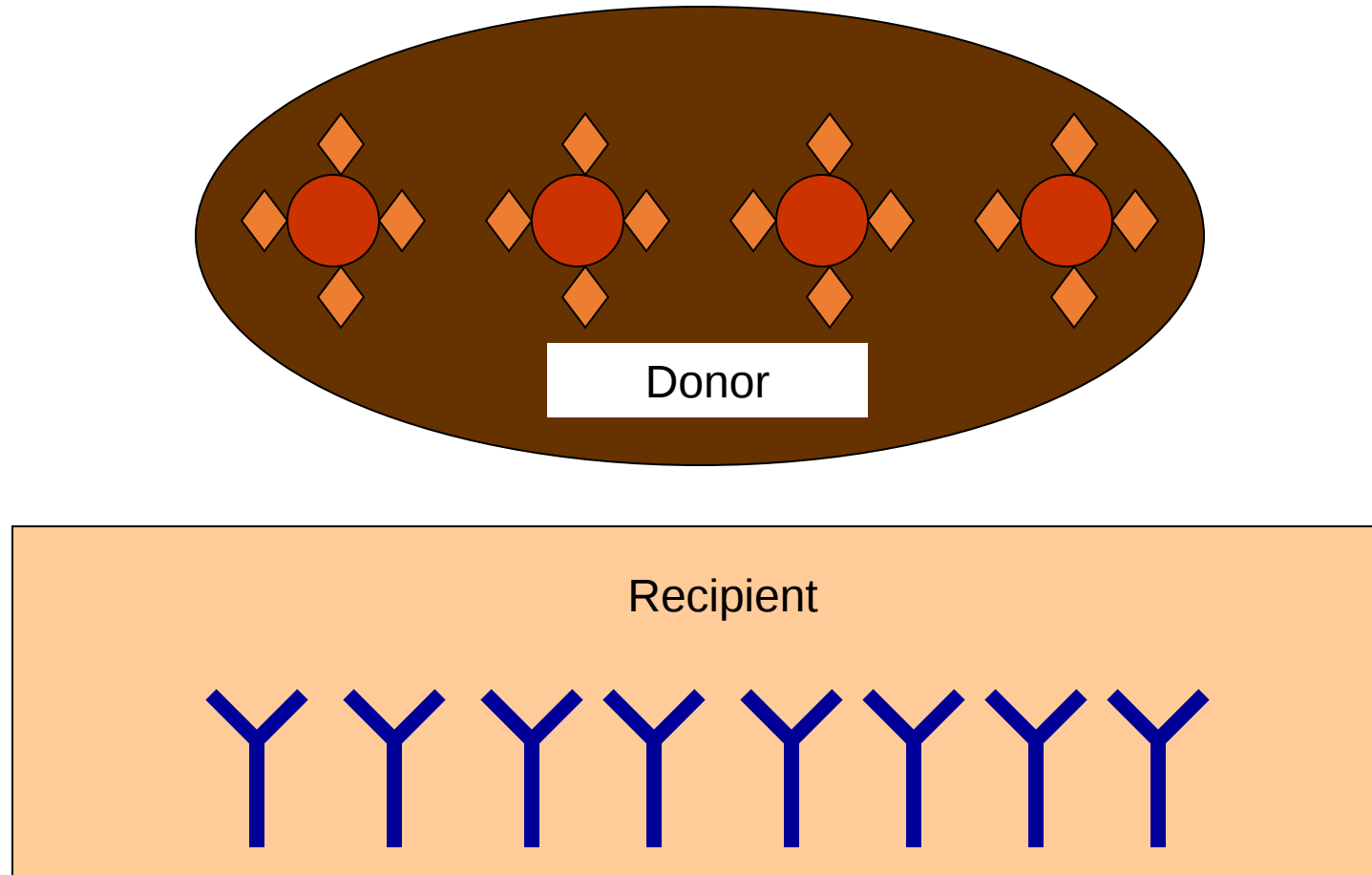


West et al, N Engl J Med 2001; 544: 793-800

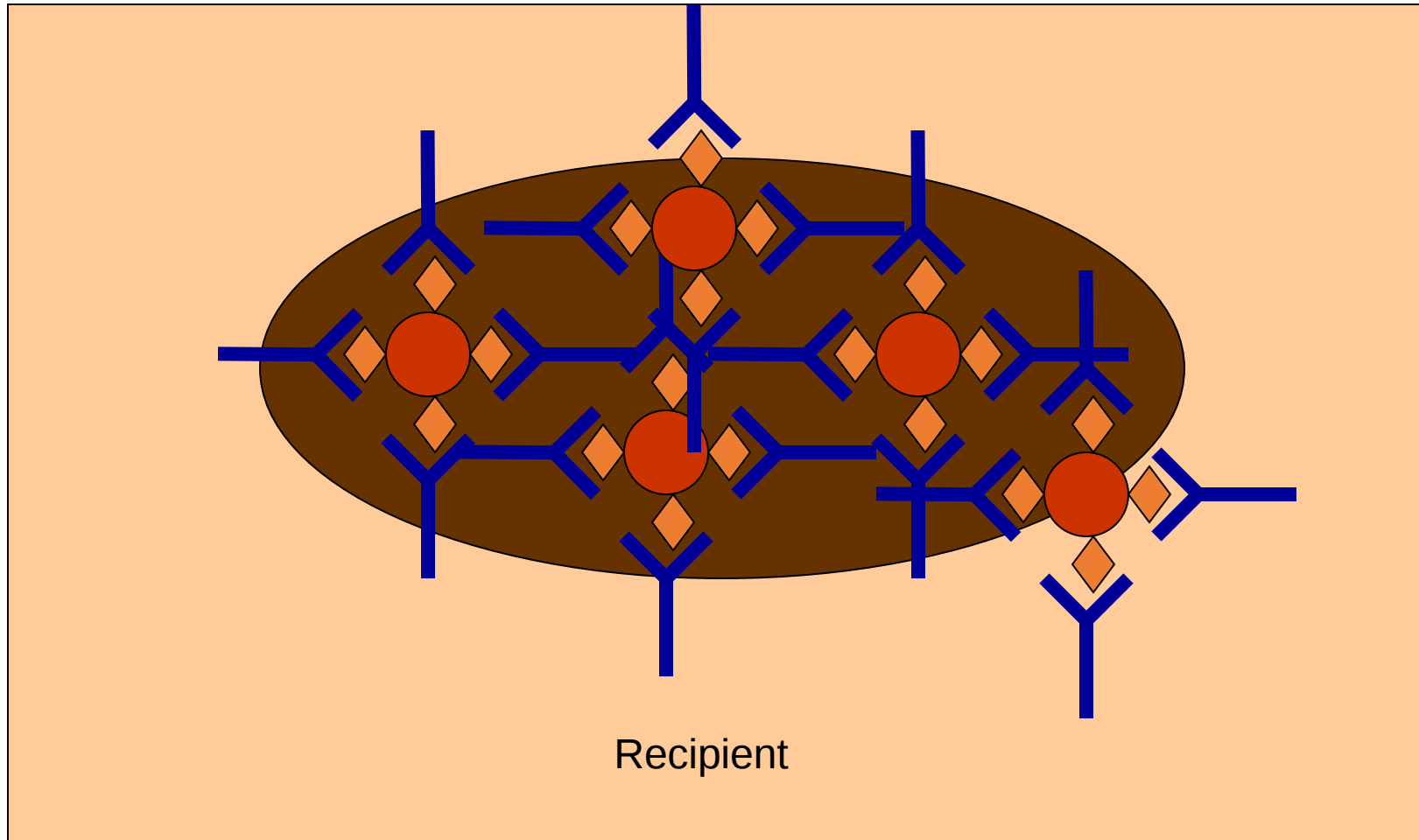
Blood group A antigens in the kidney



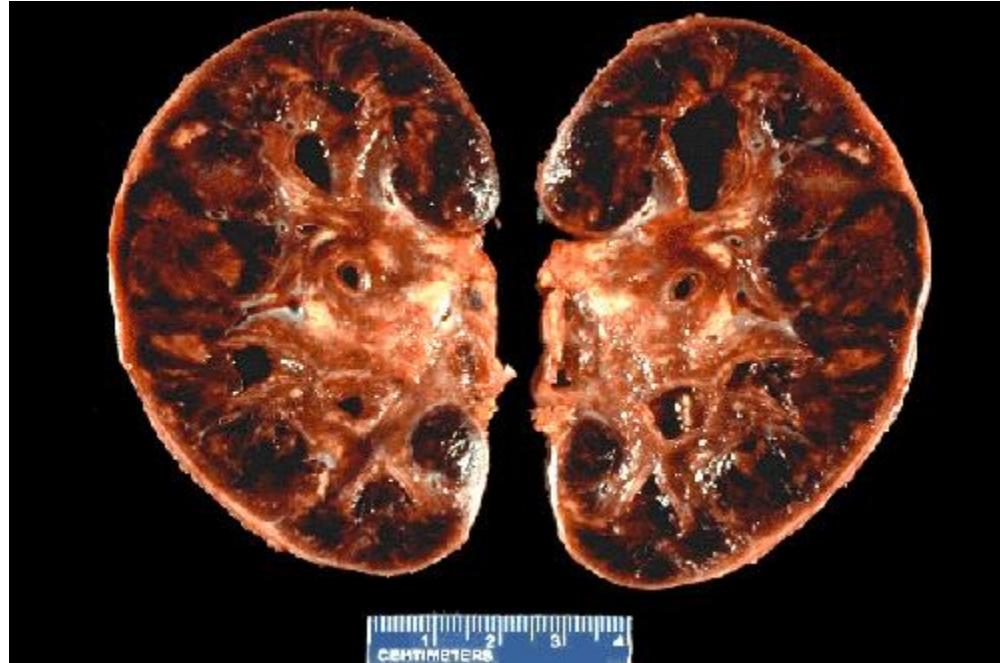
ABO incompatible kidney transplantation



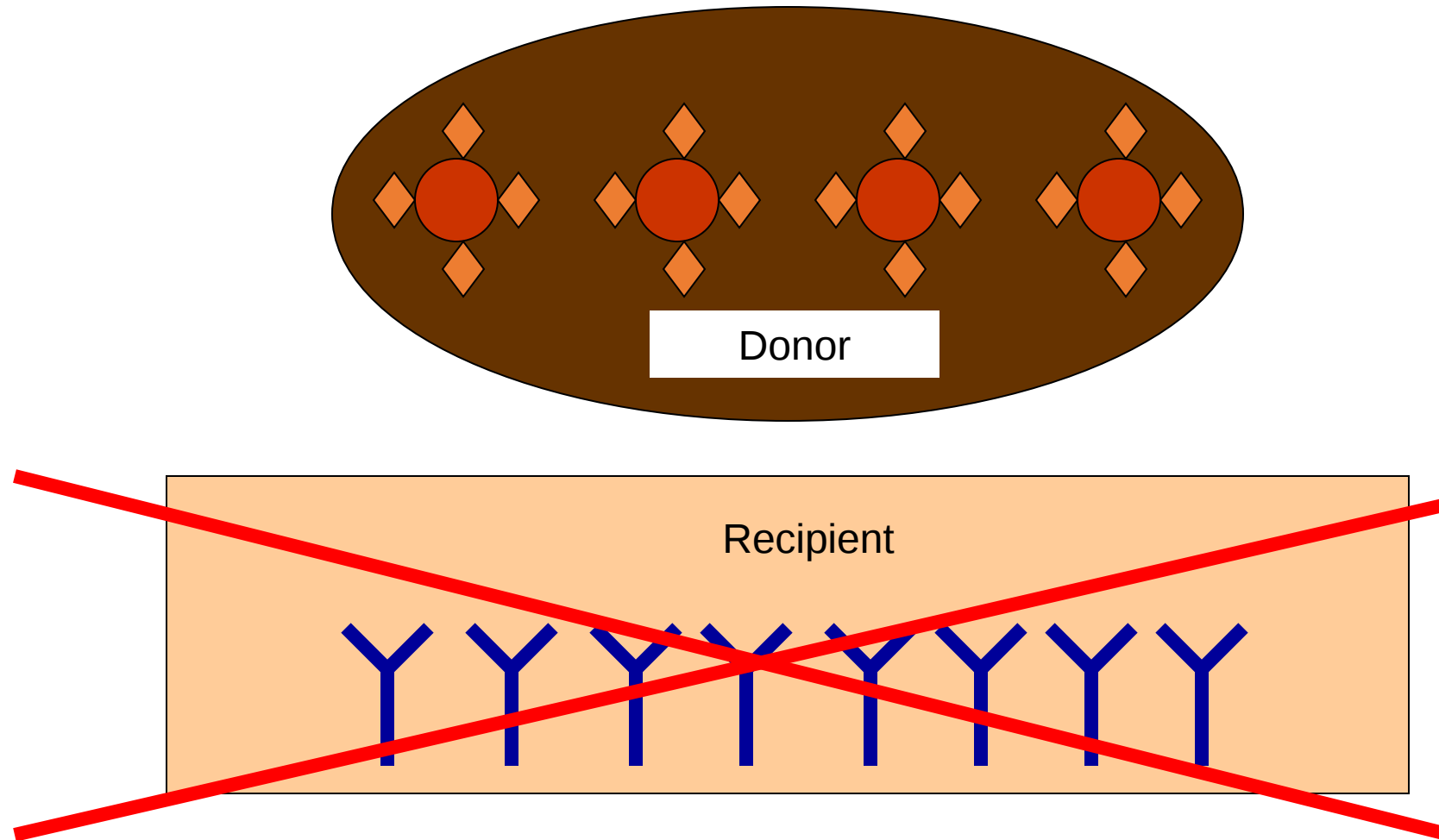
ABO incompatible kidney transplantation



Consequence



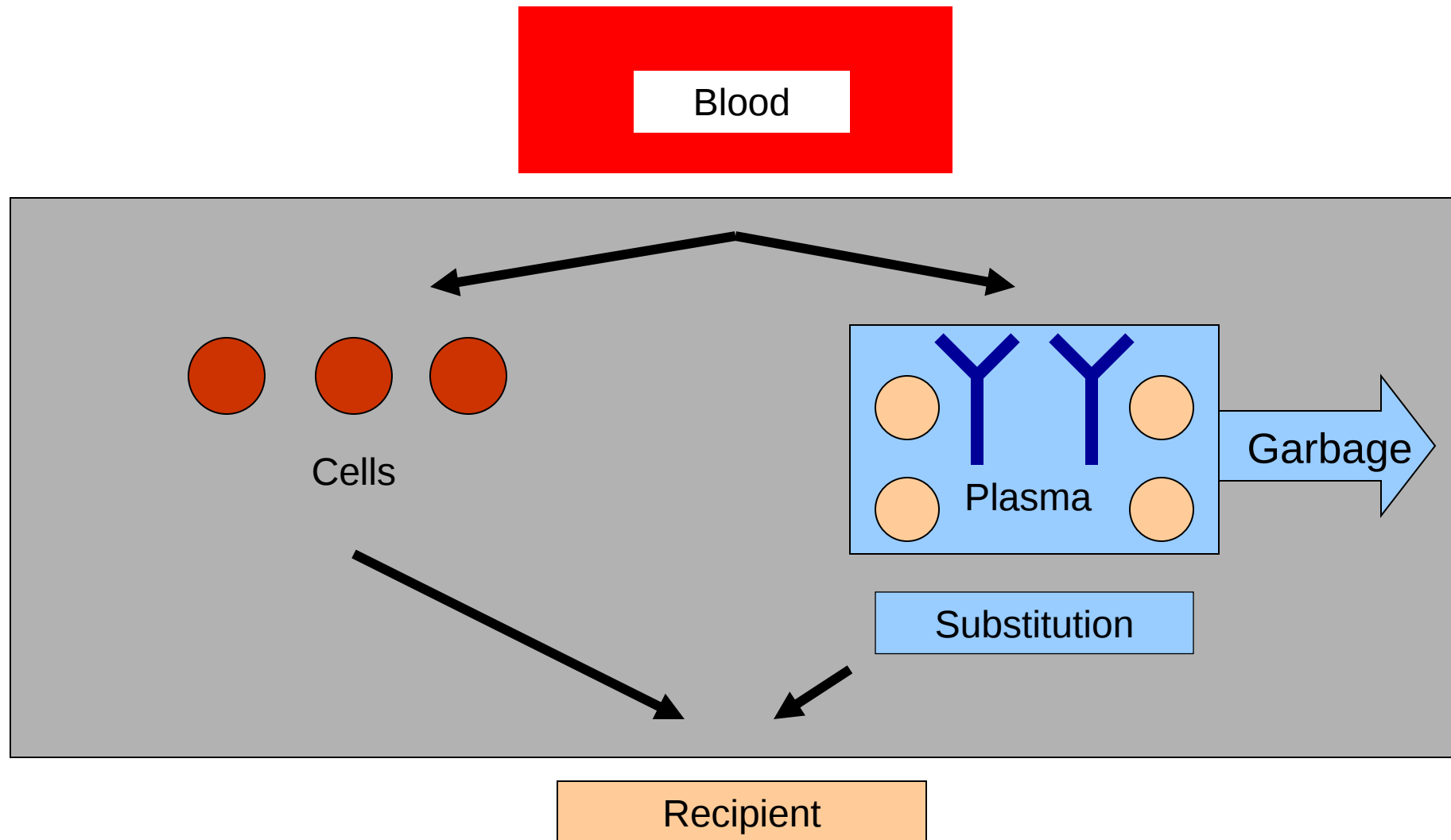
No Rejection without antibodies



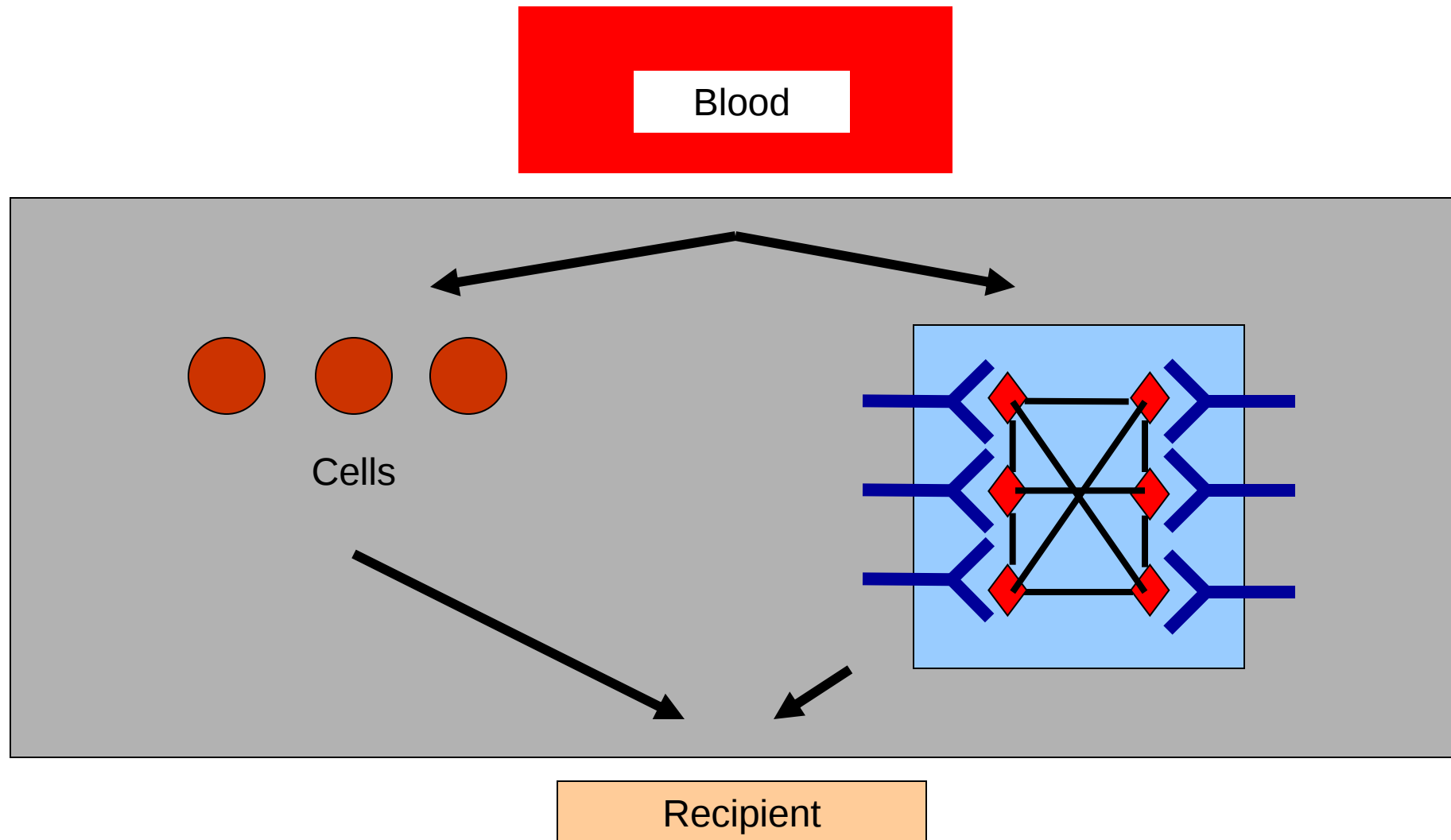
How to remove antibodies?

- Plasmapheresis
- Immunoadsorption

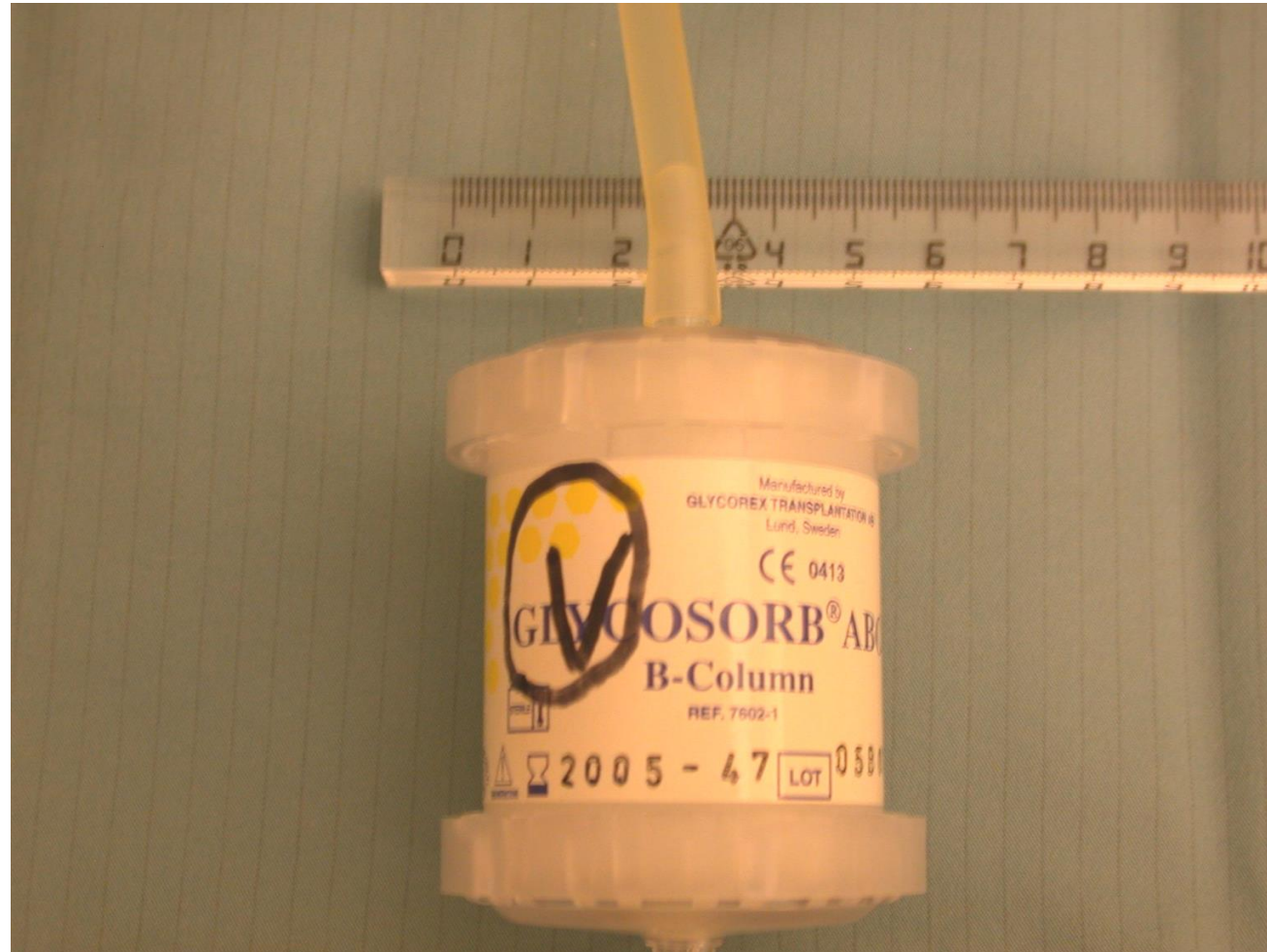
Plasmapheresis



Immunoadsorption

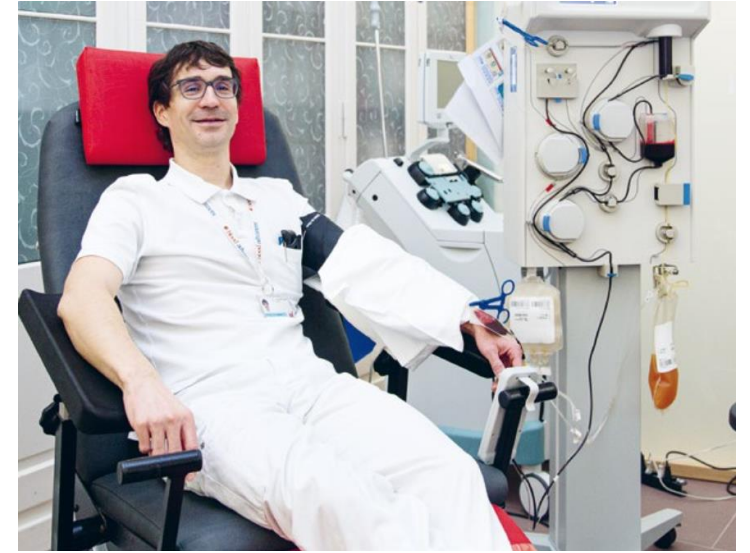


Immunoadsorption column

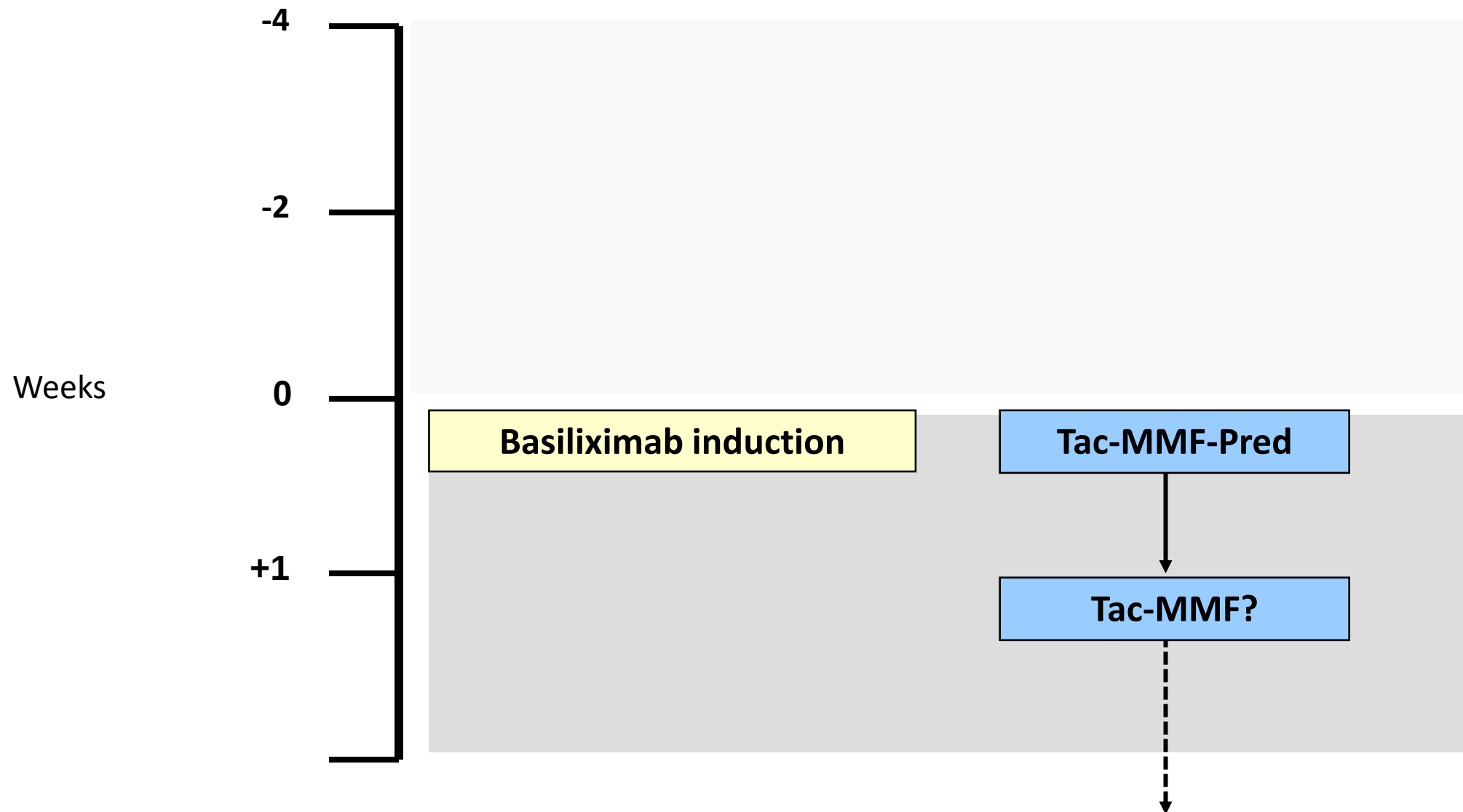


Immunoadsorption Procedure

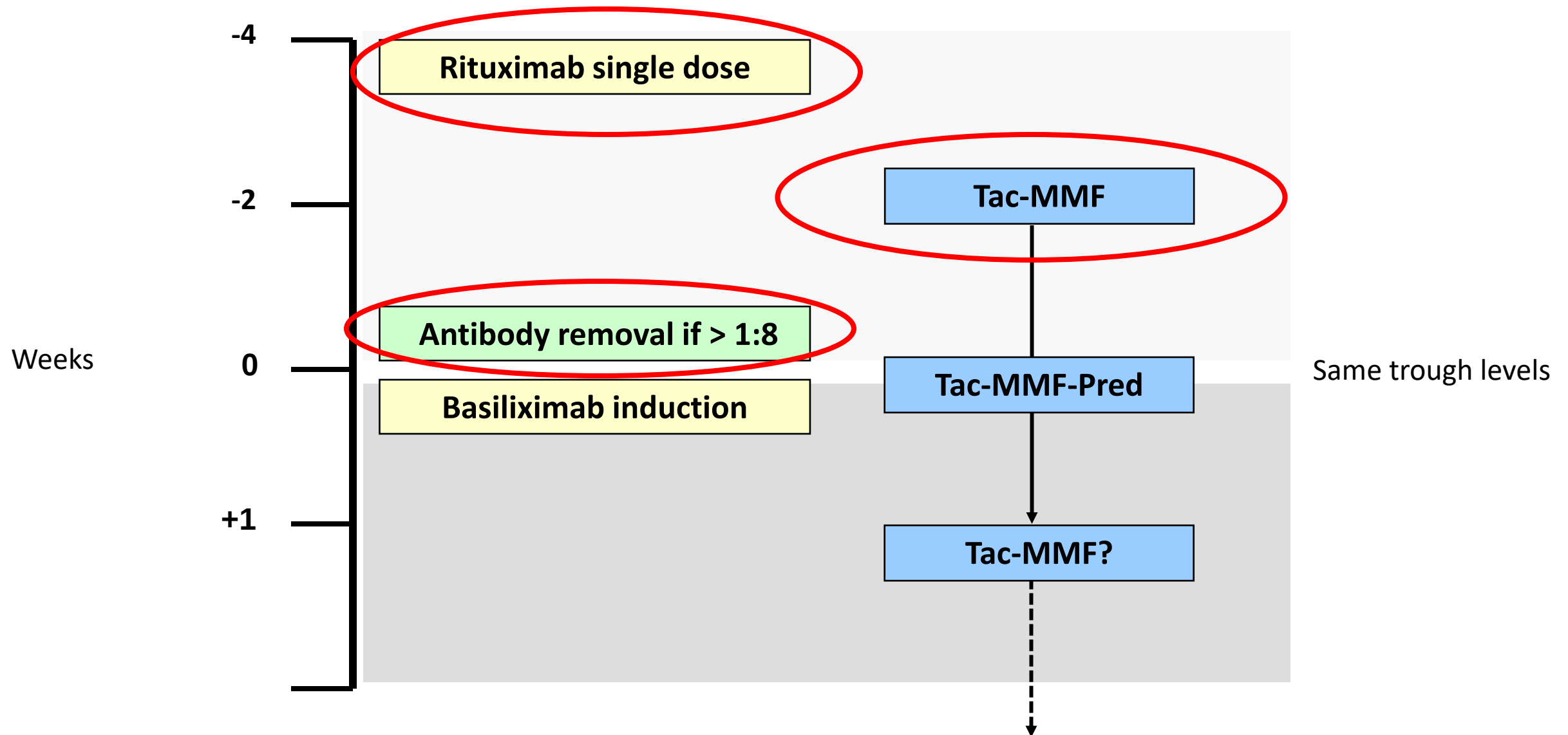
- Plasma volume: 2-5x
- Flow rate: 30-50 ml/min
- Anticoagulation:
 - Citrate
 - Heparin in case of residual diuresis <1 l/24 h



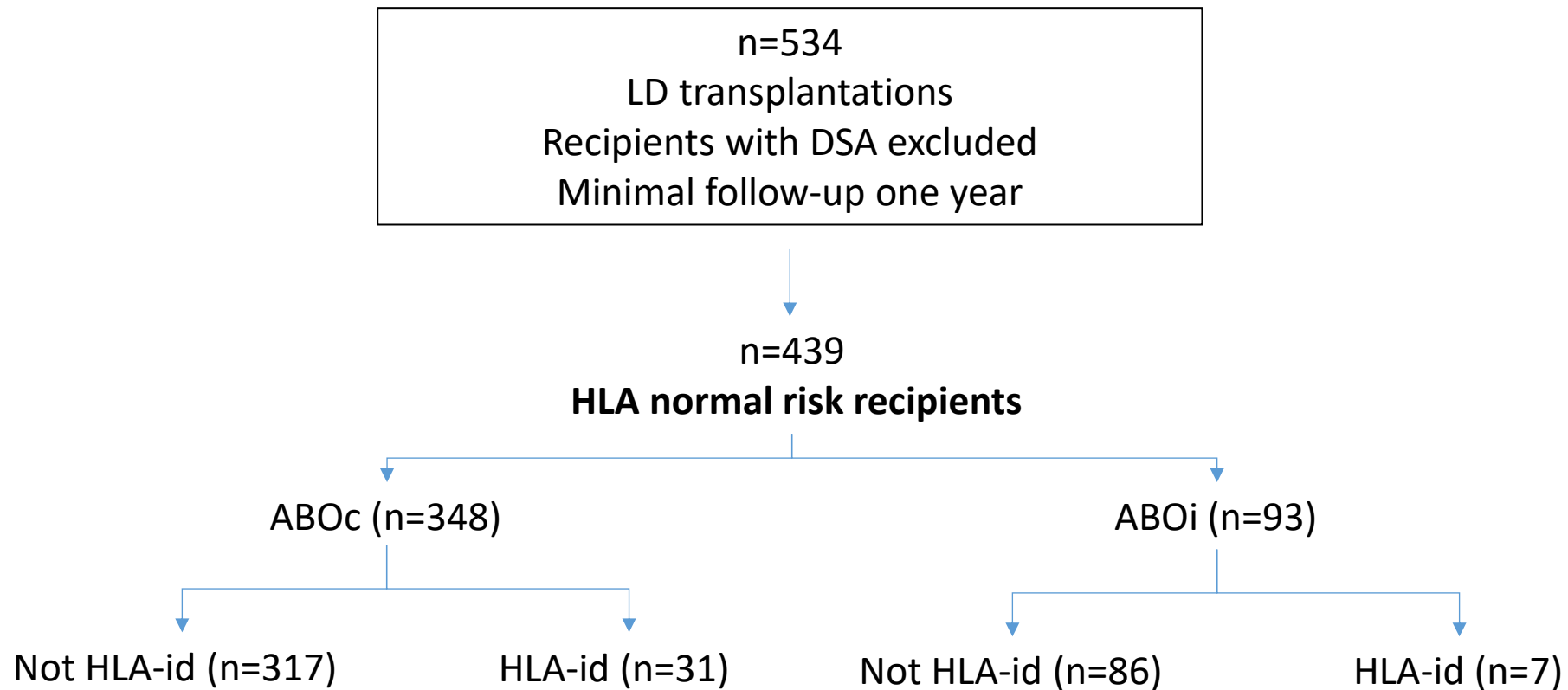
Treatment protocol blood group compatible patients



Difference ABOi to ABOc



Living donor kidney transplantations Basel 2005 to 2022



ABOi transplantation increases the number of living donor transplantations

Percentage of all living donor kidney transplantations in Basel
since 2005

21%

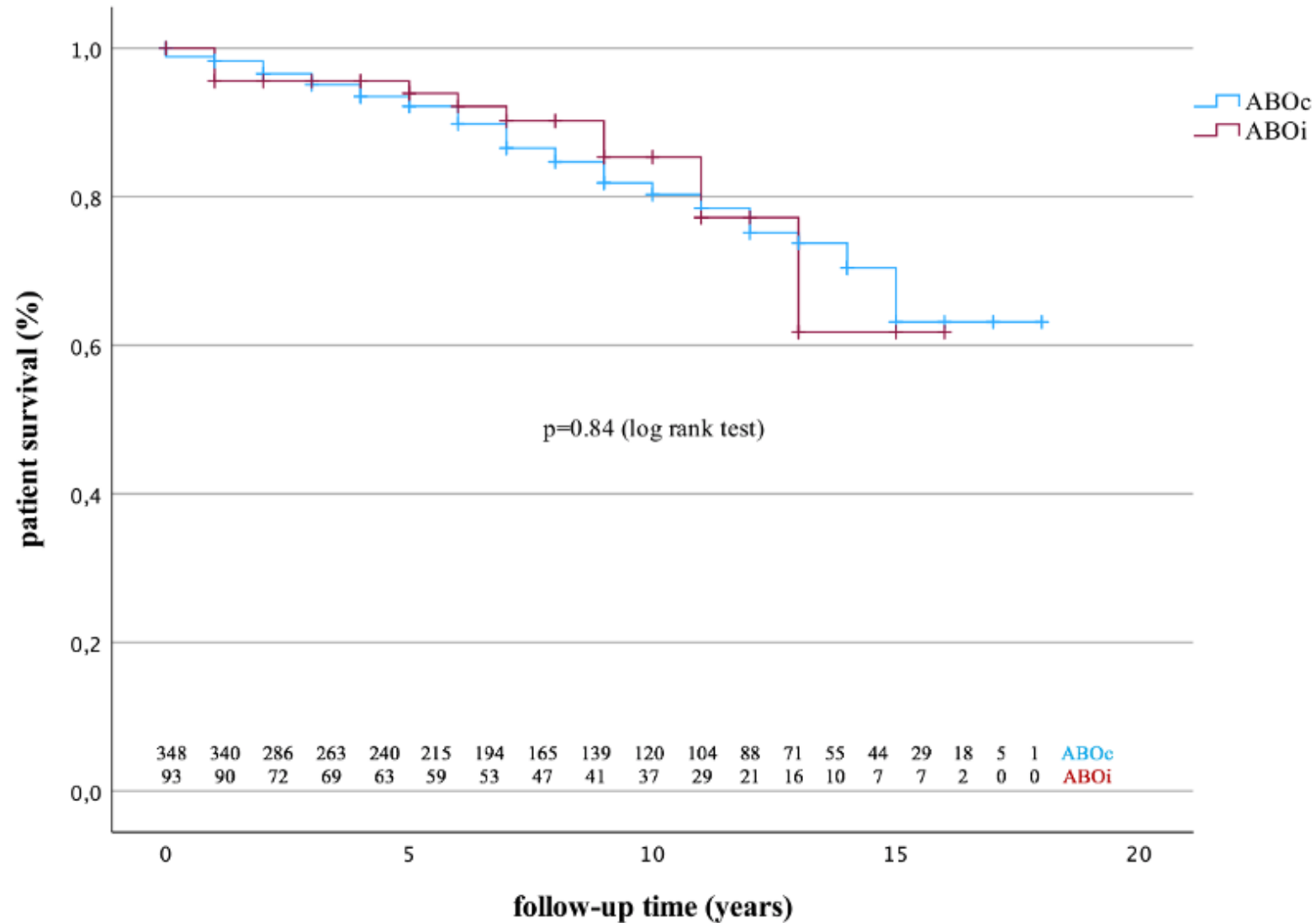
Preemptive ABOi transplantations

40%

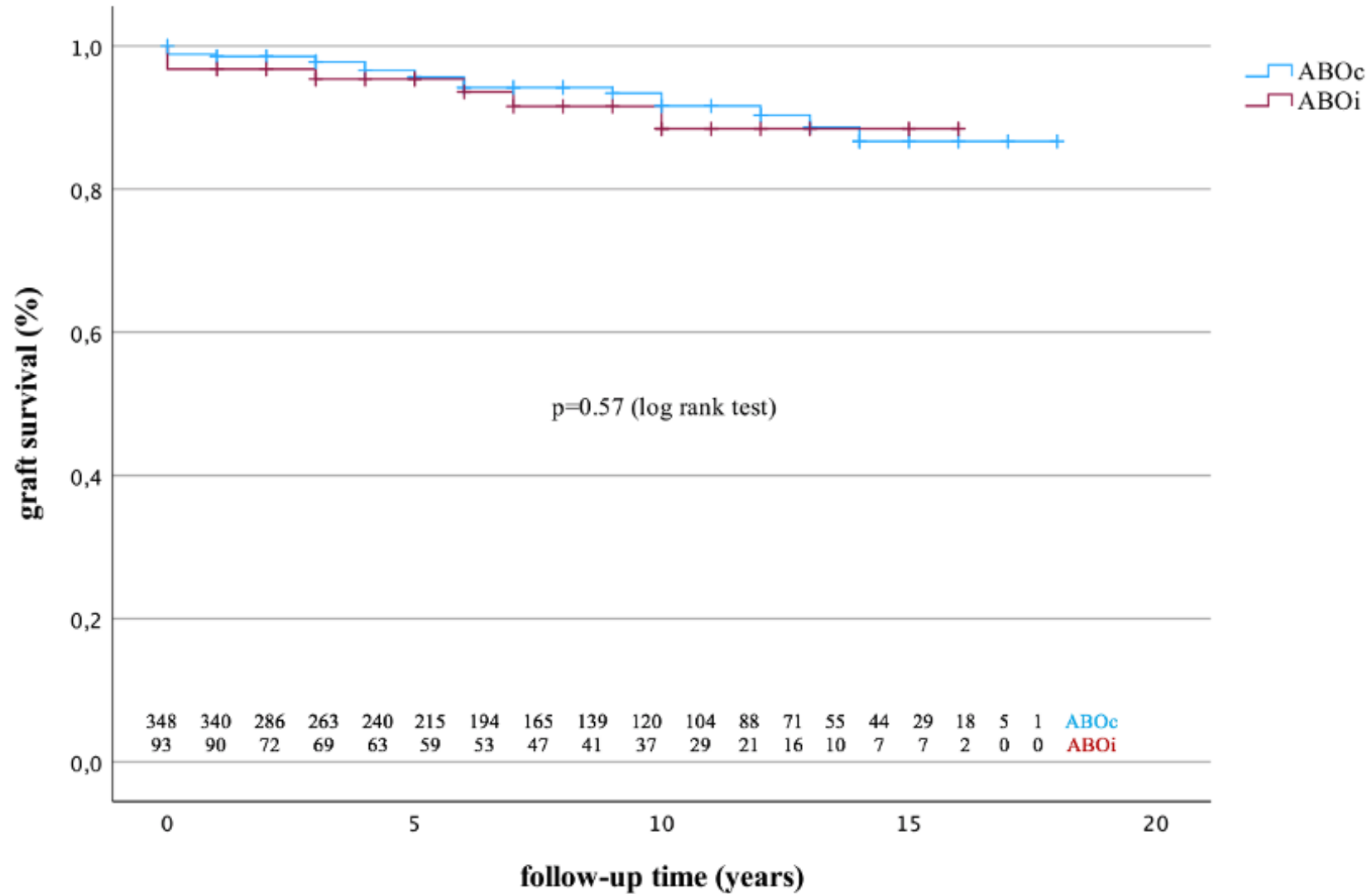
Blood group incompatibility constellation

A-0	52,7%
A-B	14,0%
AB-0	3,2%
AB-A	7,5%
AB-B	5,4%
B-0	8,6%
B-A	8,6%

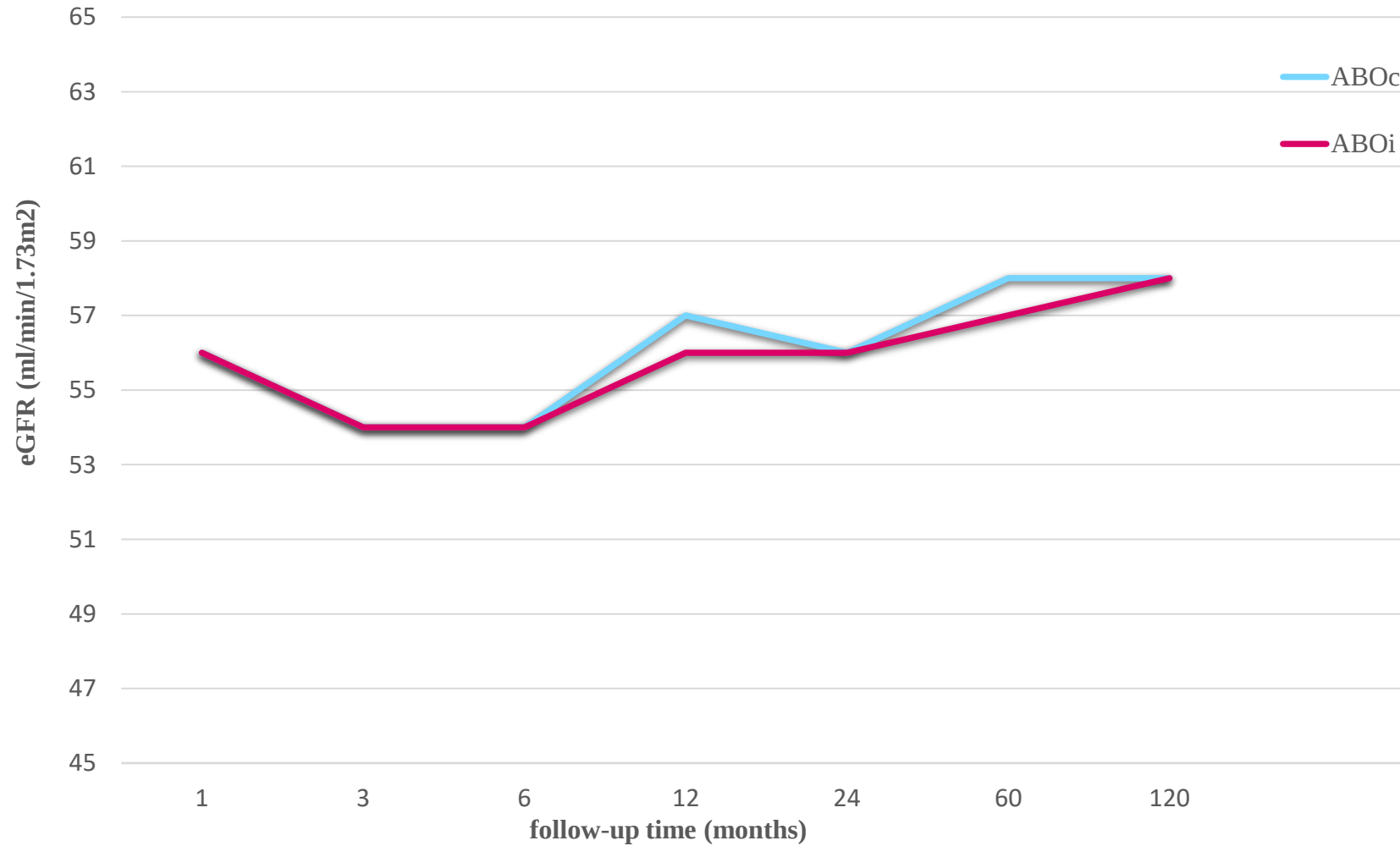
2005 – 2023: Patient survival



2005 – 2023: Graft survival



2005 – 2023: Graft function



2005 – 2023: Death and graft loss

		ABOc n=348	ABOi n=93	p-value
Total number of deaths		53	13	0.87
Cause of death	malignancy	13 (24.5%)	4 (30.8%)	0.11
	infections	10 (17%)	5 (30.8%)	
	cardiac event	9 (17%)	2 (15.4%)	
	others	4 (7.5%)	2 (15.4%)	
	unknown	17 (32.1%)	0 (0%)	
Total number of graft losses		21 (6%)	7 (7.5%)	0.63
Cause of graft loss	rejection	10 (47.6%)	3 (42.9%)	0.57
	multifactorial/others	8 (38.1%)	3 (42.9%)	
	recurrent GN	2 (9.5%)	0 (0%)	
	vascular or surgical	0 (0%)	1 (14.2%)	
	unknown	1 (4.8%)	0 (0%)	

All infections

ABOi n = 93

ABOc n = 348

p-value

Number of infections						
	none	43	(46,2%)	185	(53,2%)	NS
	<3	31	(33.4%)	131	(37.6%)	
	>3	19	(20.4%)	32	(9.2%)	

Number of infections without UTI

none	50	(53.7%)	219	(63%)	NS
<3	31	(33.4%)	114	(32.7%)	
>3	12	(12.9%)	15	(4.3%)	

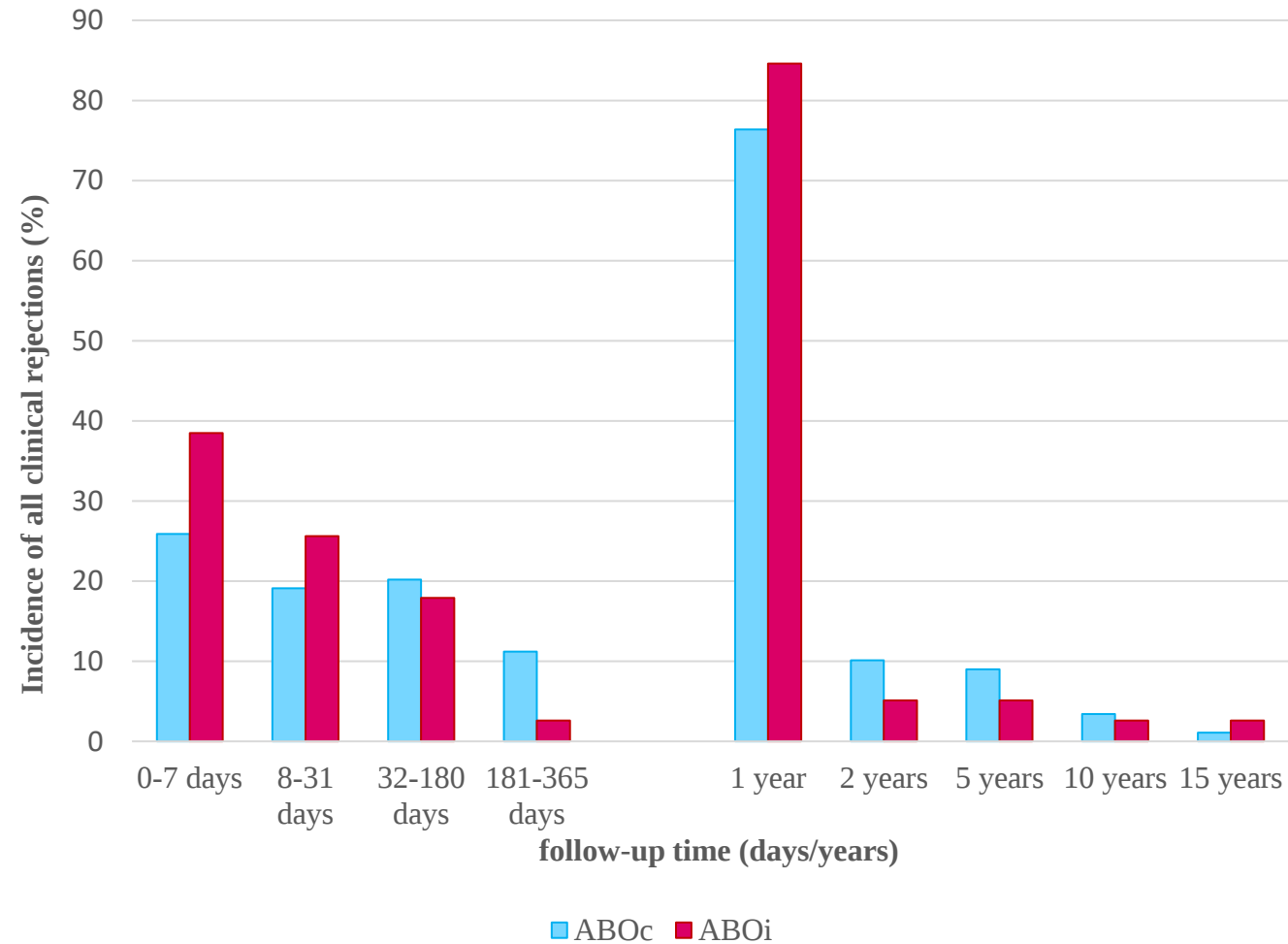
Viral infections

	ABOi n=93		ABOc n=348		p-value
CMV-replication	16	(17,1%)	53	(15,3%)	NS
CMV disease (CMV syndrome)	2	(2,2%)	19	(5,5%)	NS
CMV disease (tissue invasive)	1	(1,1%)	10	(2,9%)	NS
Biopsy proven PyVAN	1	(1%)	16	(4.6%)	NS
Presumptive PyVAN	16	(17.2%)	27	(7.8%)	NS

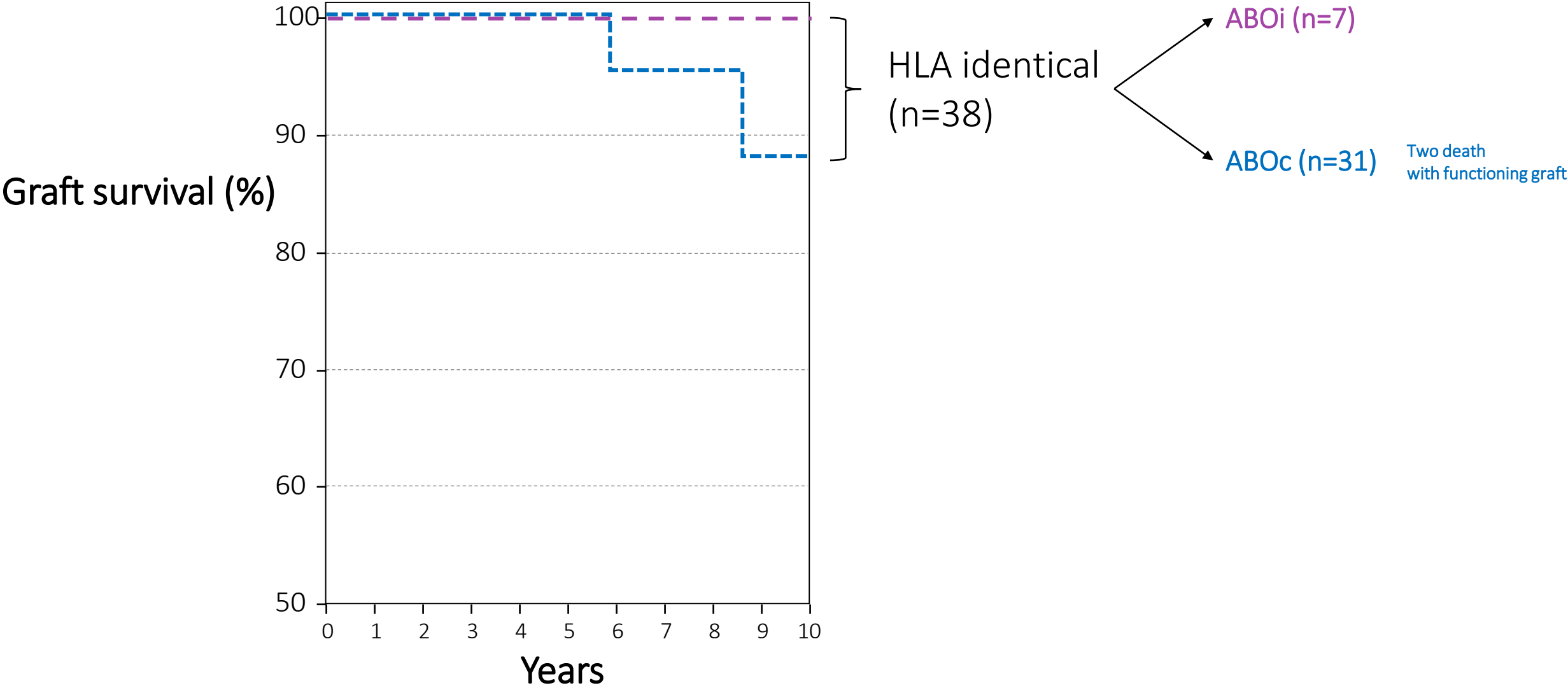
Antibodies and CD19

Blood group antibody titers		Before transplantation	At one year	
	IgG and IgM $\leq$ 1:8	25 (26.9%)	81	(90%)
	IgG >1:8 + IgM $\leq$ 1:8	11 (11.8%)	4	(4.5%)
	IgG $\leq$ 1:8+ IgM > 1:8	22 (23.7%)	1	(1.1%)
	IgG and IgM > 1:8	35 (37.6%)	2	(2.2%)
	missing	0	2	(2.2%)
CD19 cell count at one year (cells/ul)				
	$\leq$ 80		74	(79,6%)
	not measured		13	(14%)

Results 2005 – 2023: Rejections



Is blood group incompatibility a risk at all?



Conclusions

ABO incompatible kidney transplantation **without DSA** is

- Successful, safe, and fast
- Increases the number of transplantations

Thank you, Céline Fontana !!!

DANKE