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BANCHE DEGLI OCCHI
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SIBO
Società Italiana Banche degli Occhi

Azienda Sanitaria Locale
Avezzano Sulmona L'Aquila

Banca degli Occhi di L'Aquila
Centro di riferimento regionale per le donazioni e i trapianti di cornea

Corneal transplantation: HLA and age

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Banca delle Cornee

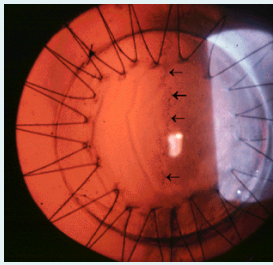
Regione Piemonte

A.S.O. MOLINETTE

Rete Nazionale Trapianti

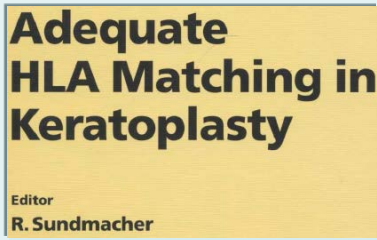
Background

- Immune rejection is an important risk factor and allograft rejection is a major cause of graft failure



- The majority of keratoplasty are performed as HLA not matched, “random” transplants

- Data showed in works from Central European ophthalmologists in long-term corneal transplant survival by HLA matching lead to presume that HLA matching should have a practical value for high risk patients (Sundmacher R (ed): Adequate HLA Matching in Keratoplasty.
- Dev. Ophthalmol. Basel, Karger, 2003, vol. 36)



standard risk for rejection

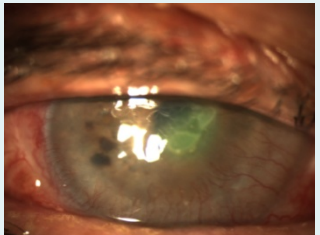
↘

HLA random graft

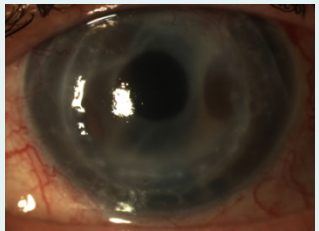
HLA matched graft

↖

high risk for rejection



Deep stromal vascularization



standard risk for rejection

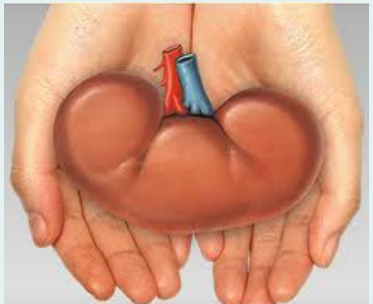
↘

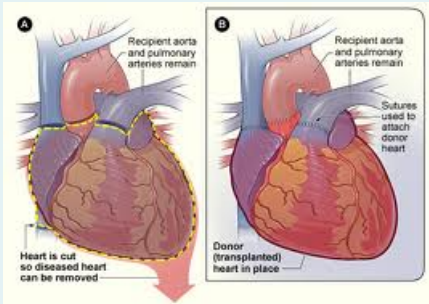
HLA random graft

HLA matched graft

↖

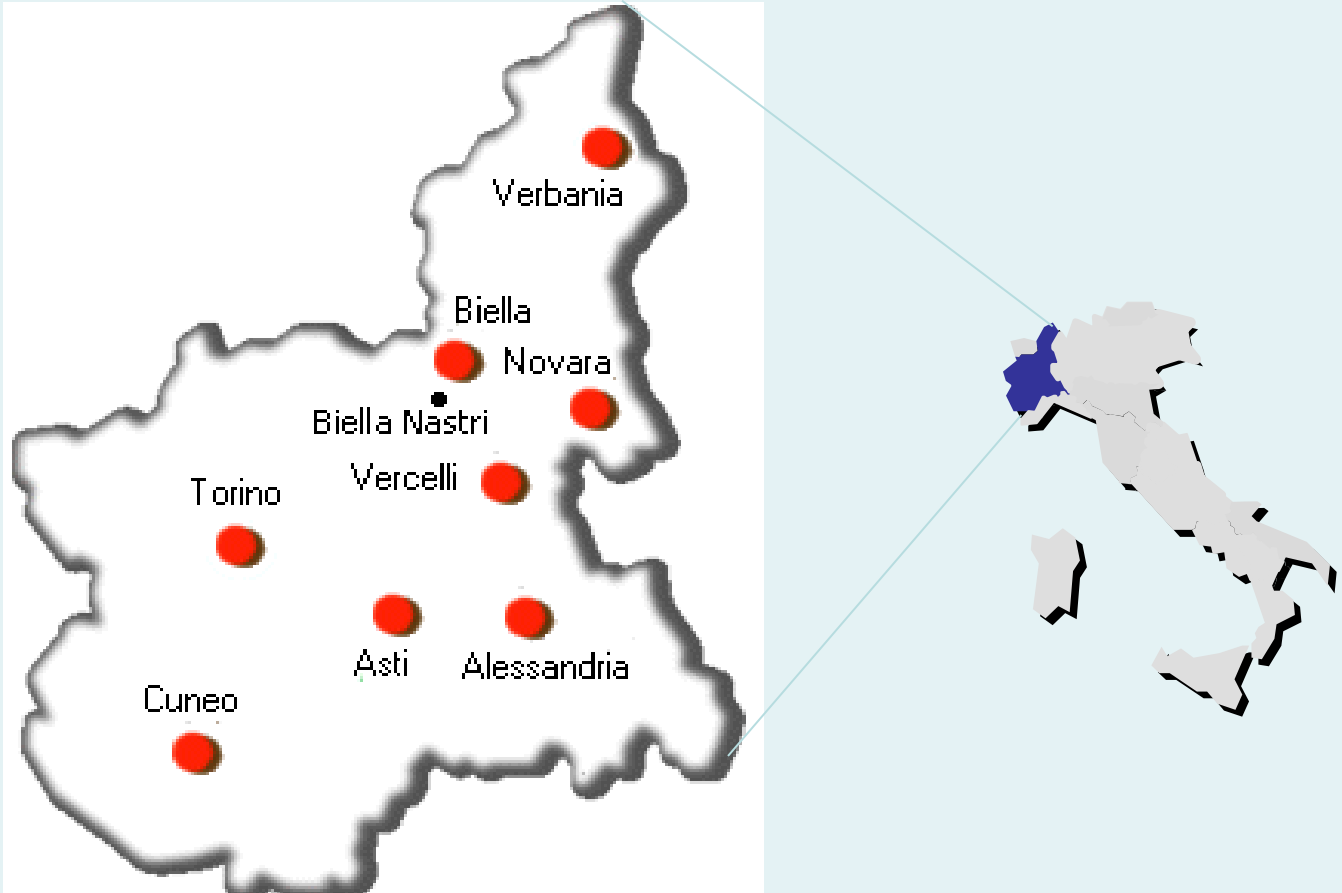
previous organ transplantation





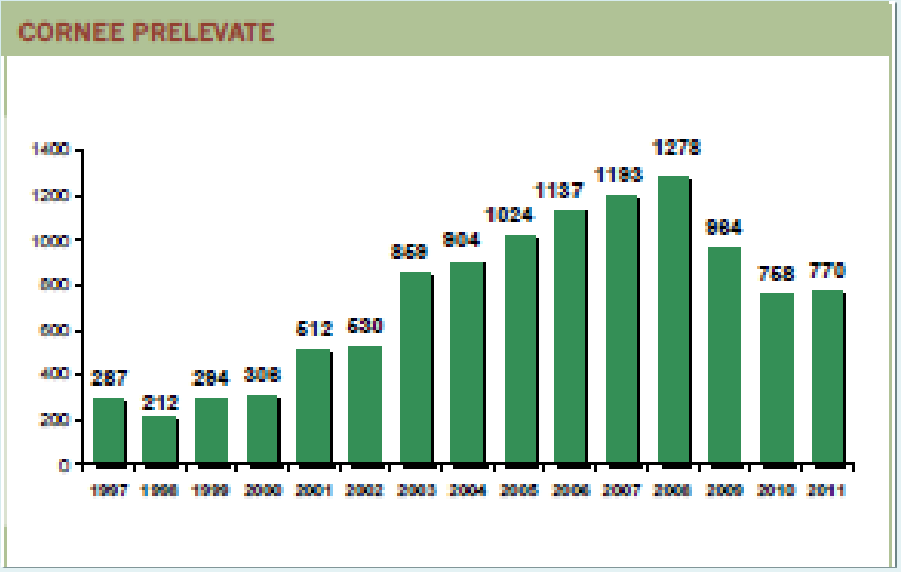
Aim of the study

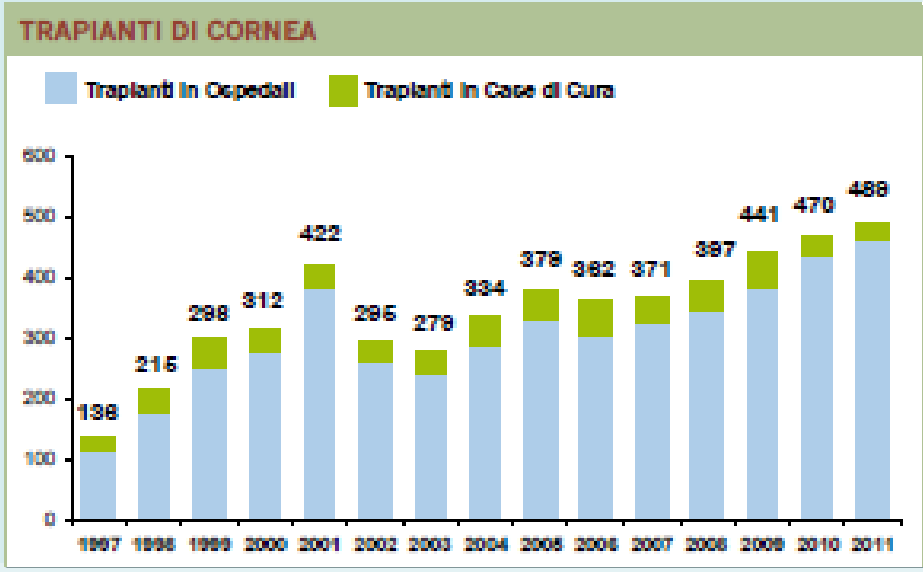
Since 2000 we developed a program for the allocation of HLA matched corneas for high risk patients afferent to Departments of Ophthalmology
in 14 Piedmont Hospitals.



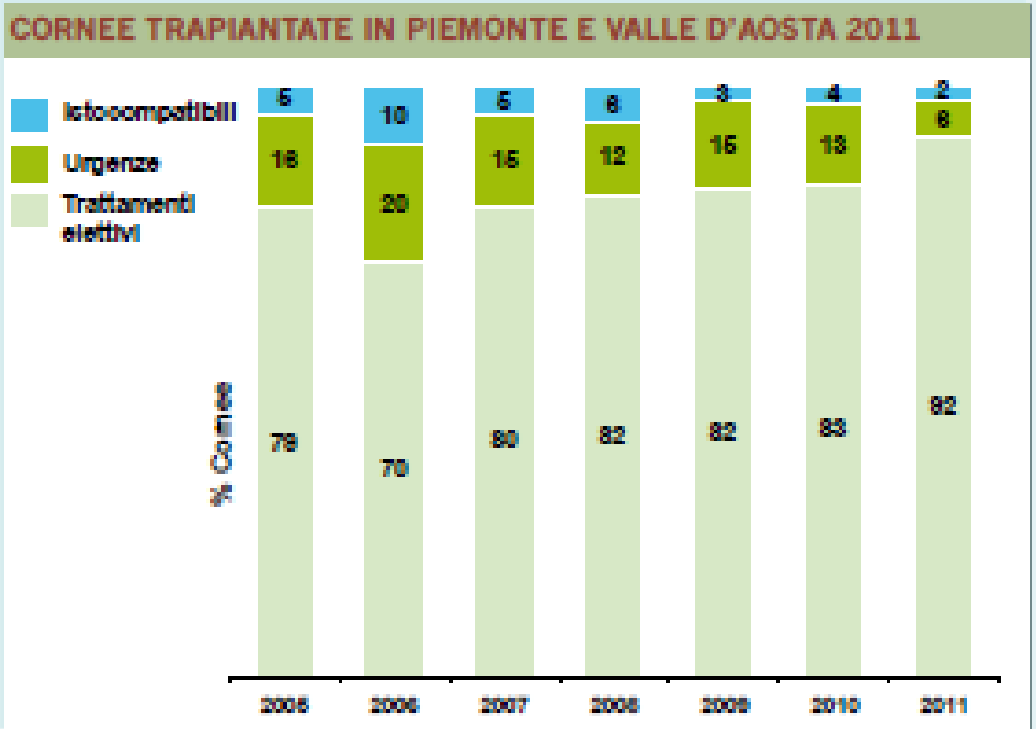
Aim of the study

to establish if a set of coincidental covariates, included HLA matches, is associated with an improved corneal graft survival


CORNEE PRELEVATE
1400
1200
1000
800
600
400
200
0
287
212
284
308
512
630
859
904
1024
1137
1183
1278
984
768
770
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

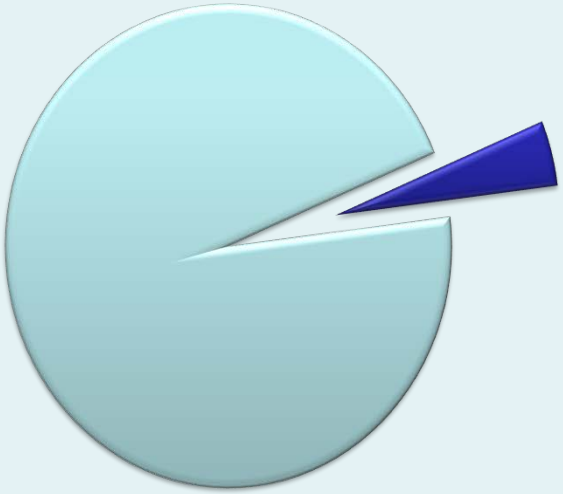

TRAPIANTI DI CORNEA
Trapianti in Ospedali
Trapianti in Case di Cura
600
500
400
300
200
100
0
136
216
298
312
422
295
279
334
378
362
371
397
441
470
488
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Eye Bank


CORNEE TRAPIANTATE IN PIEMONTE E VALLE D'AOSTA 2011
Ictocompatibili
Urgenze
Trattamenti elettivi
% Cornee
5
16
79
10
20
70
5
15
80
6
12
82
3
15
82
4
13
83
2
6
82
2005 2006 2007 2008 2009 2010 2011

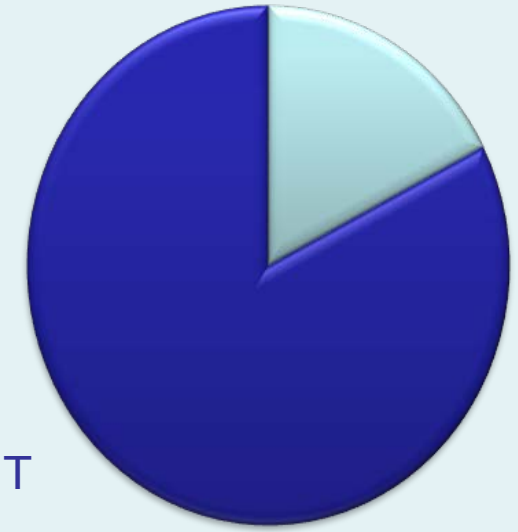
DATASET
CORNEAL TRANSPLANTS SINCE JAN-2000 TO JULY-2011
(MINIMUM FOLLOW-UP: 6 MONTHS)

CORNEAL TRANSPLANTS (4360)



189
HLA MATCHED
CORNEAL TRANSPLANTS

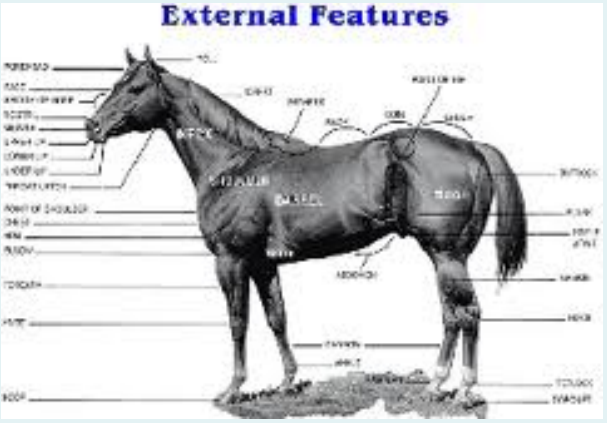
33
FIRST TRANSPLANT



156
RETRANSPLANT

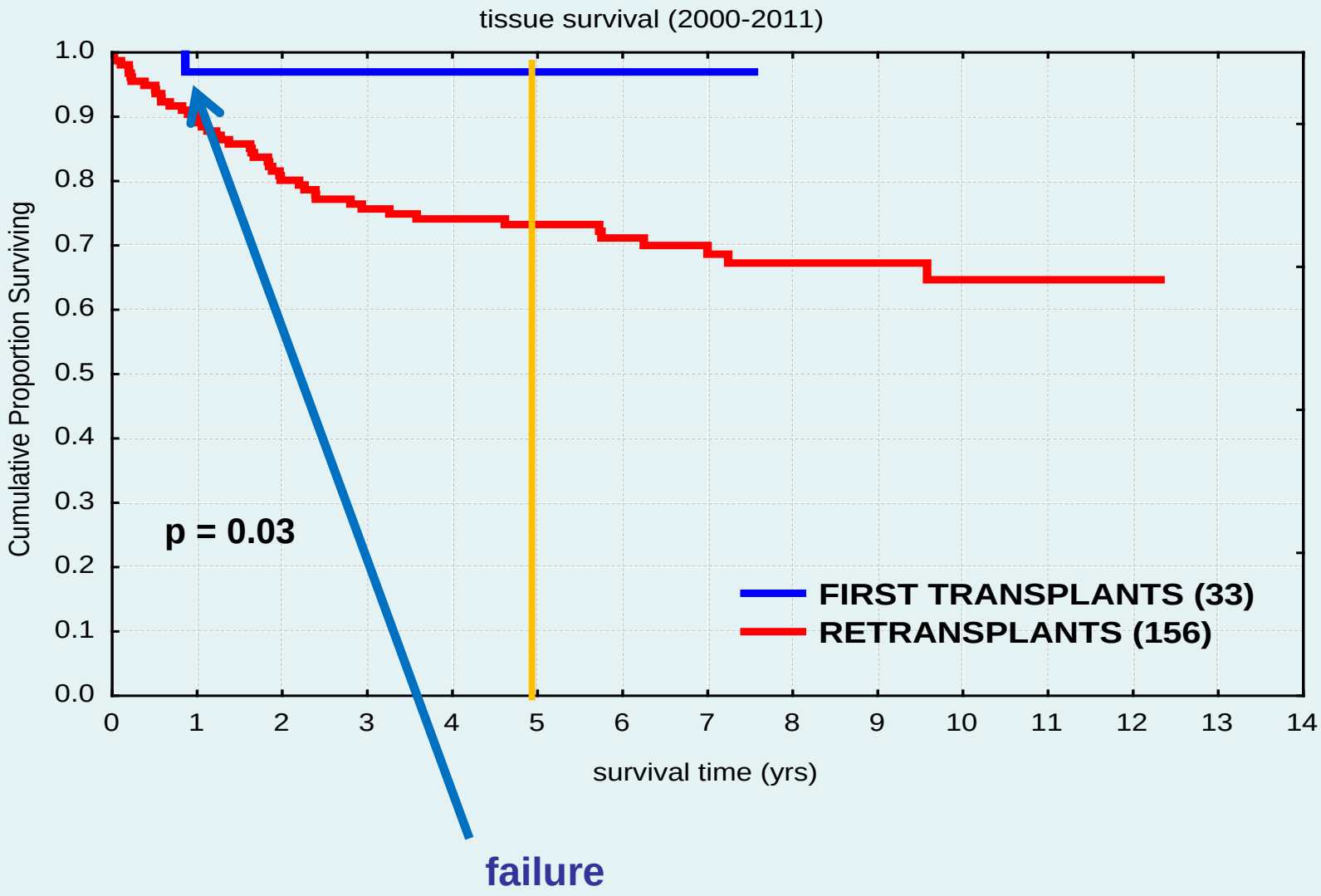
Methods

- All corneal graft recipient-donor pairs were tissue typed by serological and molecular (low resolution) methods for HLA-A, -B and –DR
- allowed MM: Class I ≤3, Class II ≤1 (broad)
- Comparability of donors, patients and graft characteristics (age, gender, graft cell count, pathology, HLA MM, ABO compatibility …) was analyzed by chi-squared test for categorized variables and Mann-Whitney U test for continuous ones
- Unadjusted survival probabilities were estimated by Kaplan Meier method
- Hazards (RR) for relevant covariates were set by multivariate proportional Cox regression
- All tests were two sided and p-value less than 0,05 was taken as statistically significant

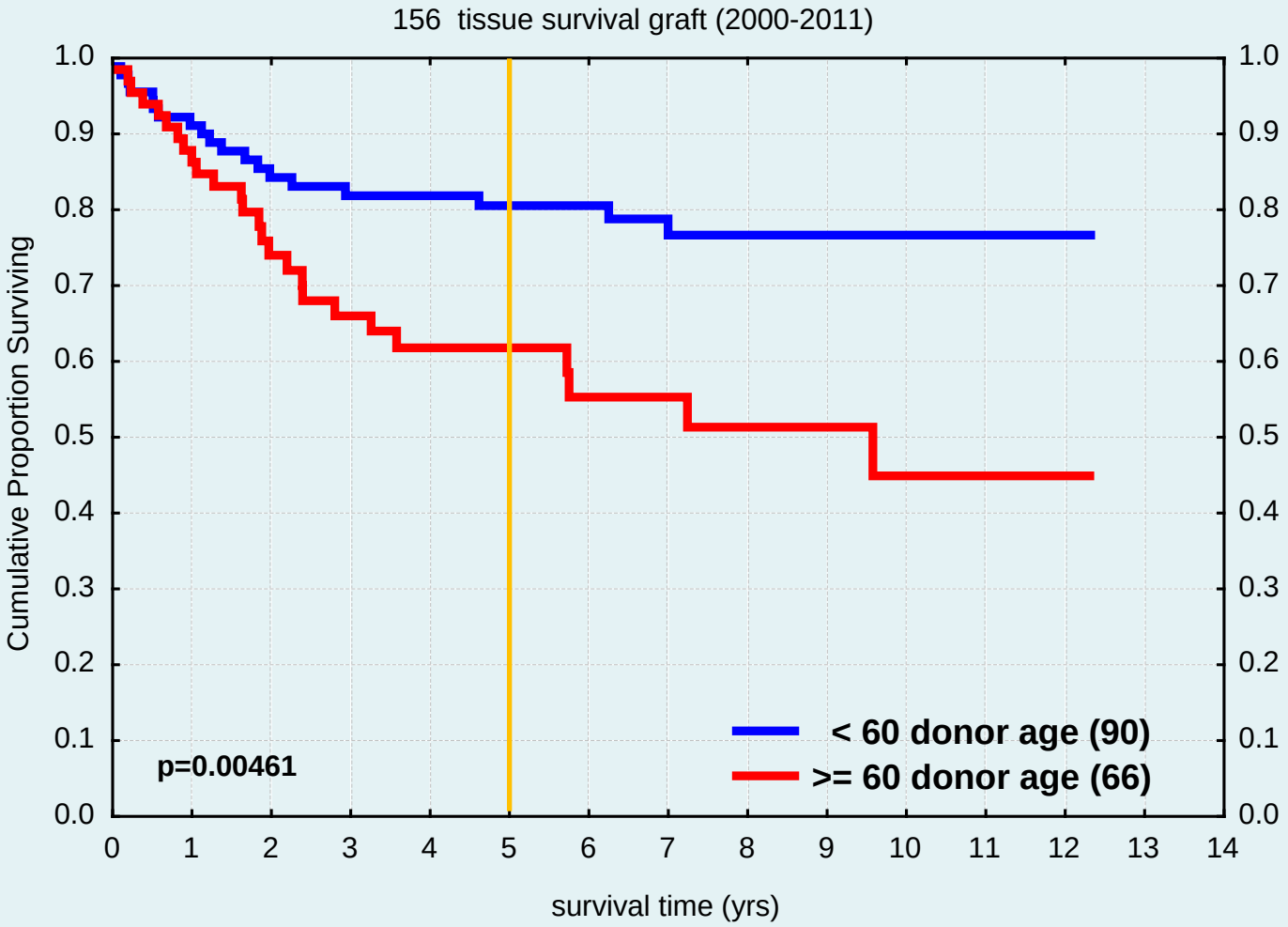


	FIRST TRANSPLANT	RETRANSPLANT	p value
Median donor age	50 yrs	57 yrs	p = 0.031

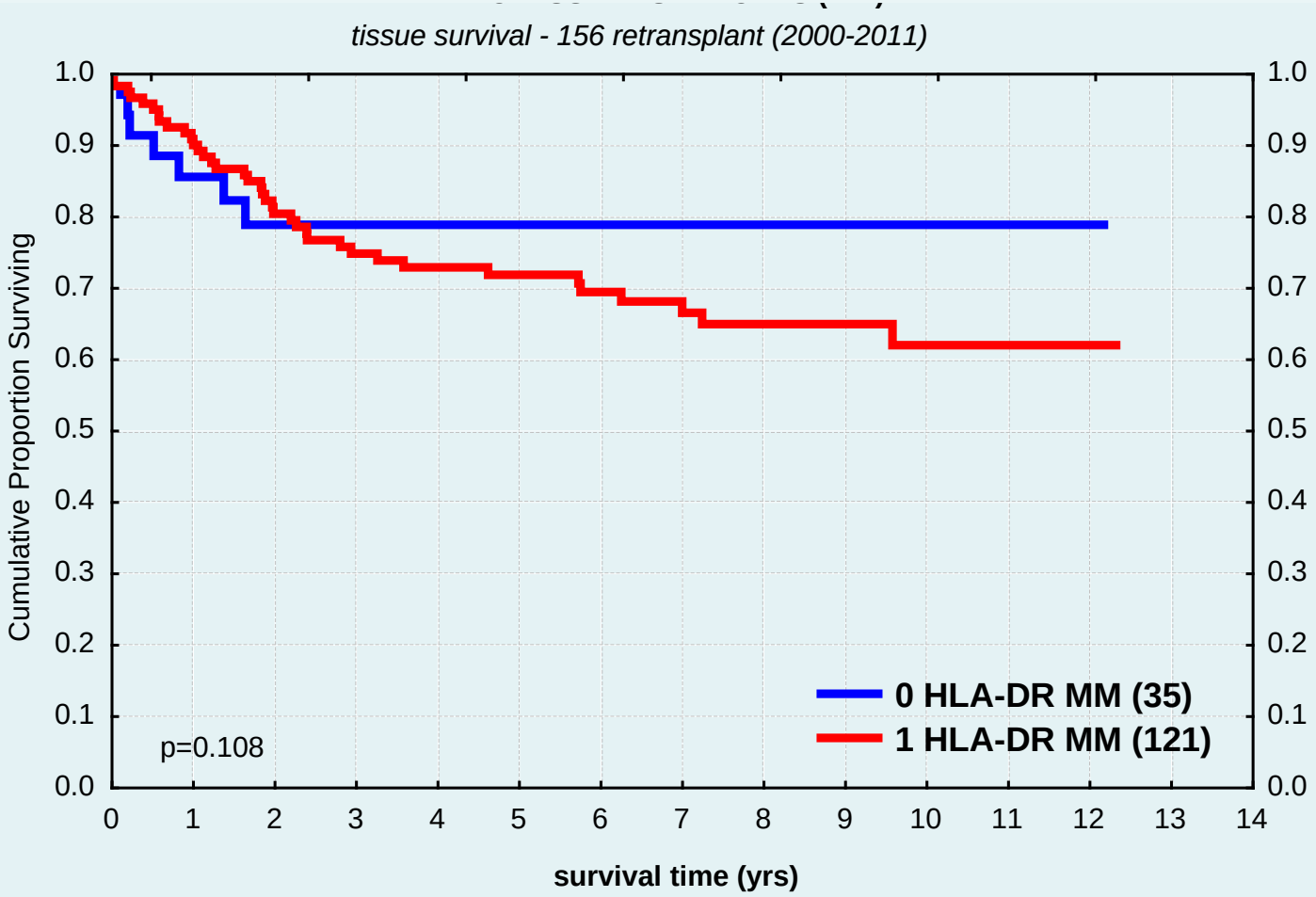
Kaplan Meier univariate survival analysis
First Transplants – Retransplants



Kaplan Meier univariate survival analysis Retranplants



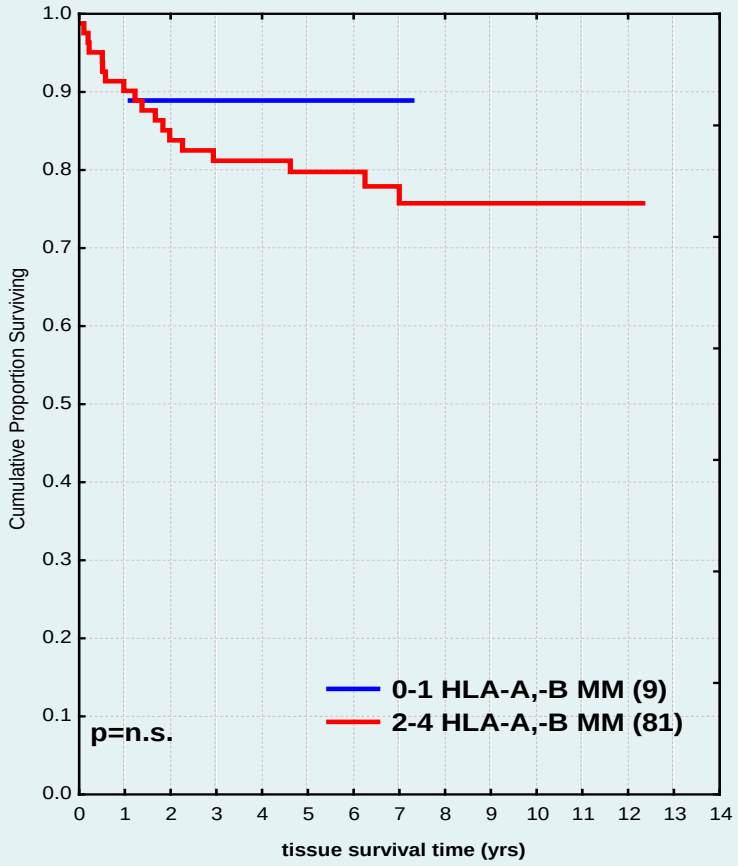
Kaplan Meier univariate survival analysis Retransplants HLA Class II MISMATCHES



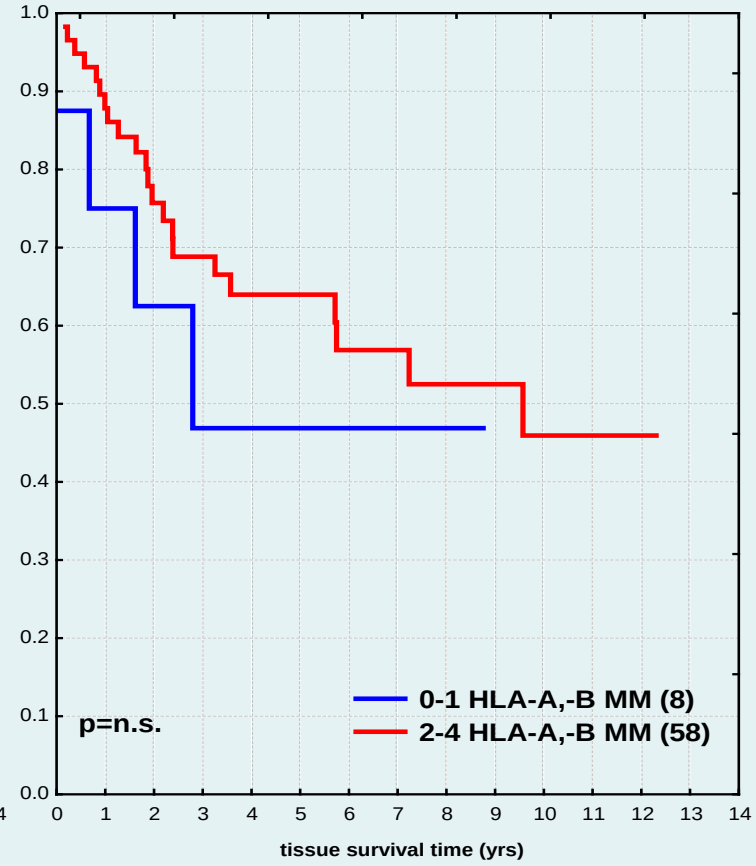
- **influence of HLA class I (loci A and B) matching seems not to be relevant for graft survival**
- **HLA class II MM (locus DRB1) shows a better trend for survival (0 HLA-DR MM)**

Kaplan Meier univariate survival analysis
Retranplants HLA CLASS I MISMATCHES

DONOR AGE <60 YRS



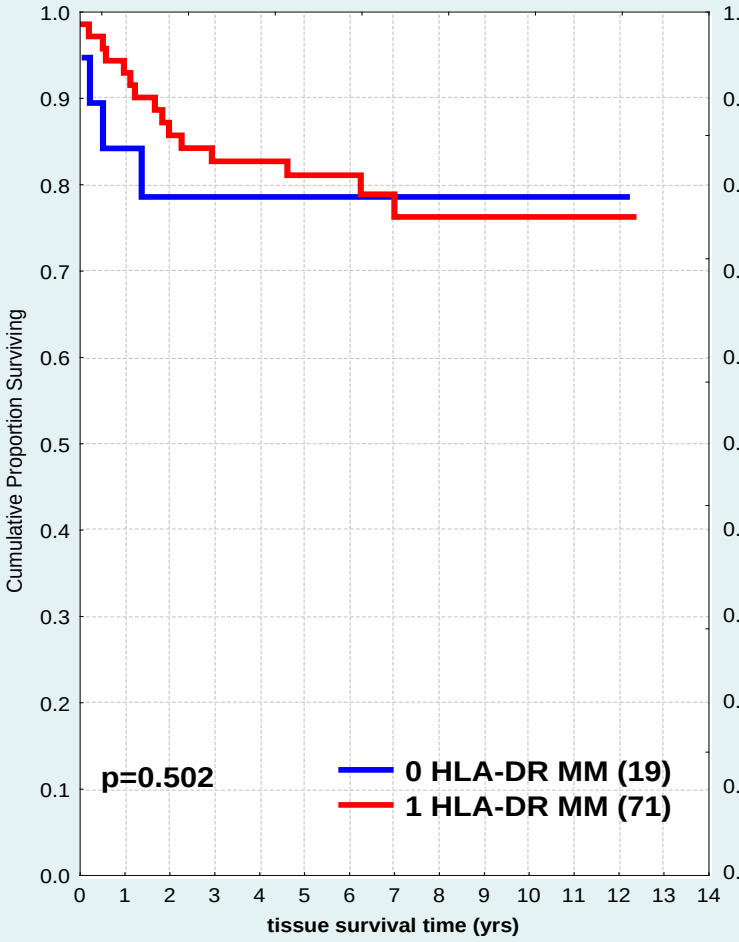
DONOR AGE ≥60 YRS



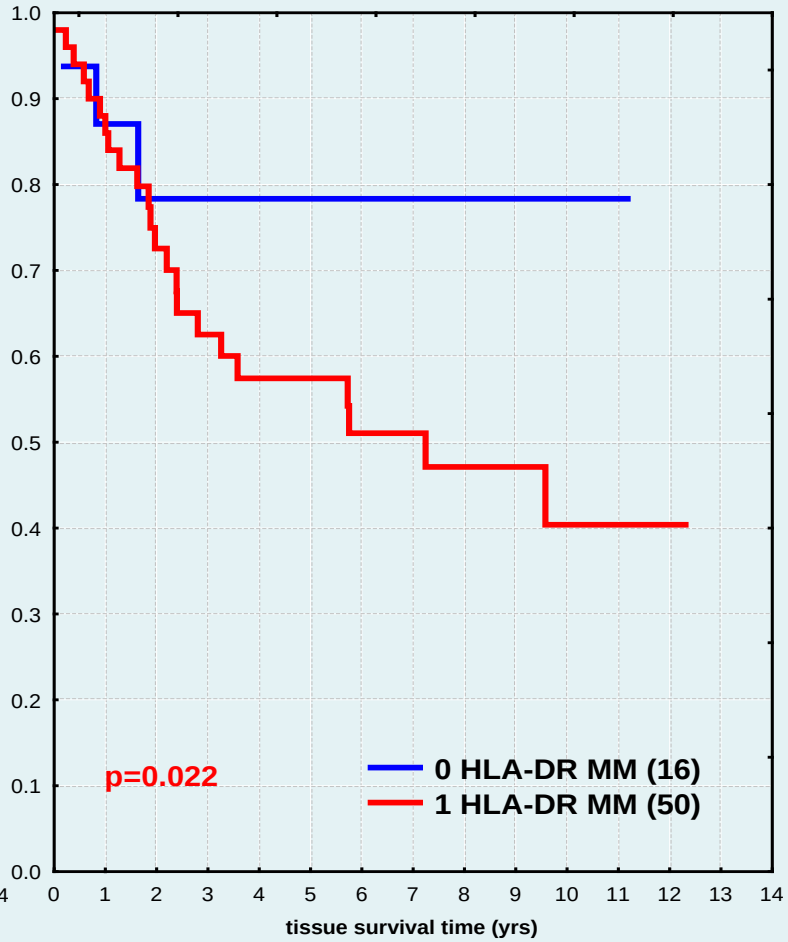
influence of HLA class I (loci A and B) suggests a better trend for survival for younger donors (0-1 HLA-A, -B MM), BUT not statistically significant

Kaplan Meier univariate survival analysis
Retranplants HLA CLASS II MISMATCHES

DONOR AGE <60 YRS



DONOR AGE ≥60 YRS



HLA-DR MM seems to be important for donor age ≥60 yrs

PROPORTIONAL HAZARD COX REGRESSION RETRANSPLANTS

N=189	ß	s.e.	RR (eß)	Wald stat	p
First transplant	0.2778	0.1265	1.3202	4.8205	0.0281
HLA CLASS I MM	-0.1140	0.4753	-0.8922	0.0576	0.8104
HLA CLASS II MM	0.3512	0.4116	1.4207	0.7280	0.3936
DONOR AGE<60	0.9083	0.3015	2.4802	9.0773	0.0026

- **underlines the outcome of the univariate analysis,**
- **relative risk (RR) =2.48 for donor aged ≥60yrs,**
- **relative risk (RR) =1.32 for failure.**

Conclusions

The successful results in first HLA matched corneal transplants suggest that the fundamental idea of our transplantation program is correct.

The result of our analysis of retransplants shows that:

1. **HLA class I (loci HLA-A and –B) MM is not relevant for our cohort in overall age;**

2. **HLA class II (locus HLA-DR) MM trend suggests a relevant role according to MM number, but we don’t reach statistically significance, for poor data set in overall age;**

3. **according to donor age, HLA class I MM might be relevant for graft from younger donors, and HLA class II MM for graft from older donors.**

TO BE DONE: a major dataset for graft and follow-up to assess the trend of the results obtained in this preliminary study, including the role of HLA matching vs. non HLA matching in cornea transplantation.

to Be Careful with my
Criticism and
Liberal with my Praise;
to Build up and
not Destroy

Thank you