Annual Congress 2018

14th to 16th March,
the Brighton Centre, Brighton

Debate: HLA matching matters in children

Presenting the case **for** -
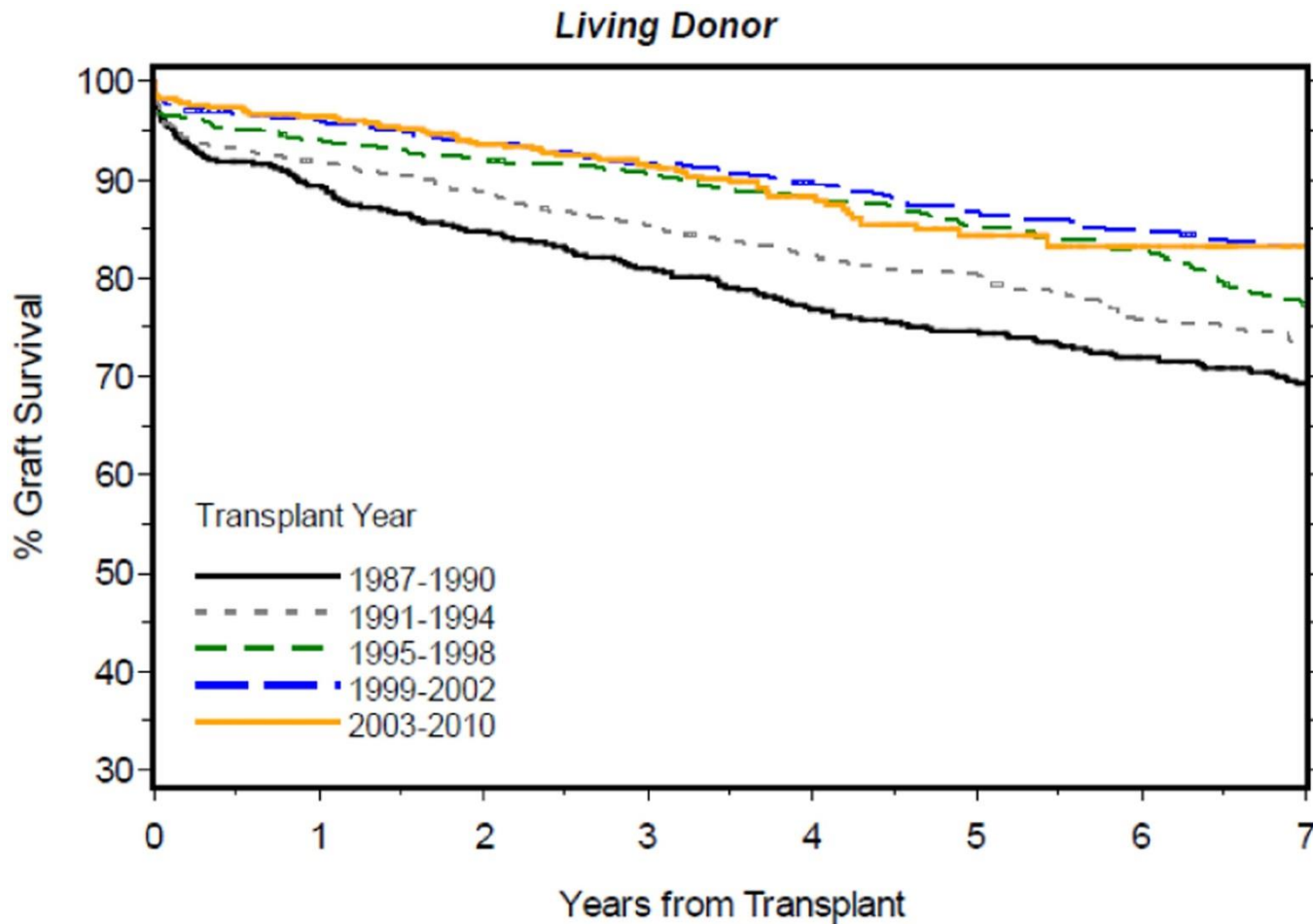
Dr Jon Jin (JJ) Kim, Nottingham
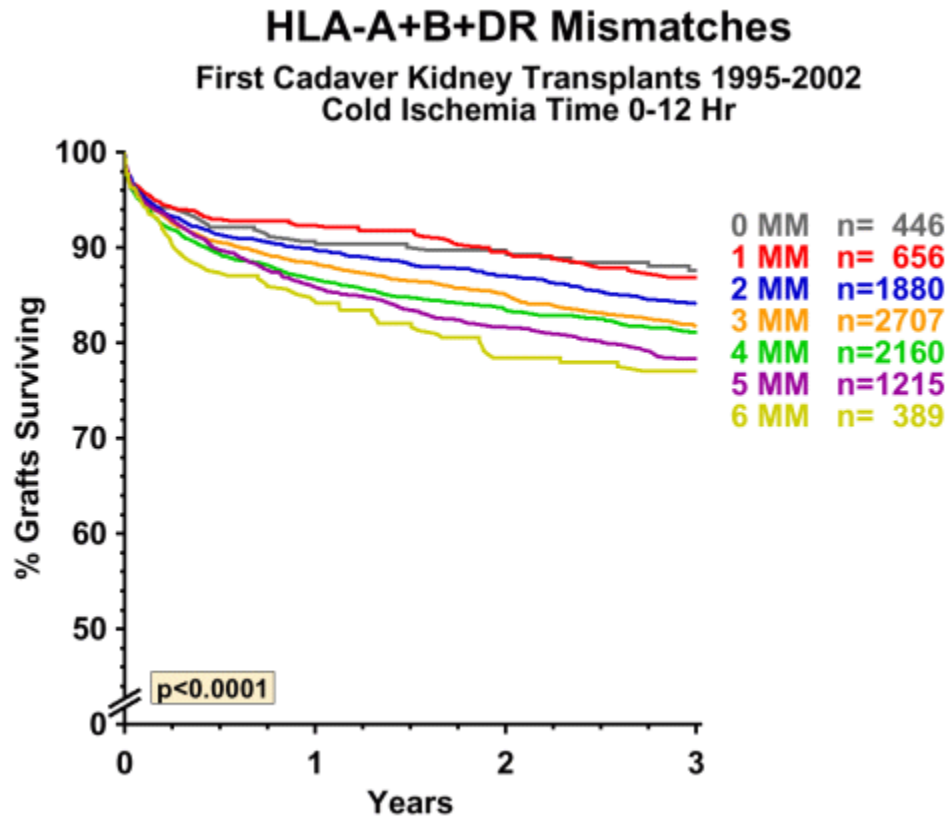
Richard & Ronald Herrick
23 Dec 1954

HLA match →
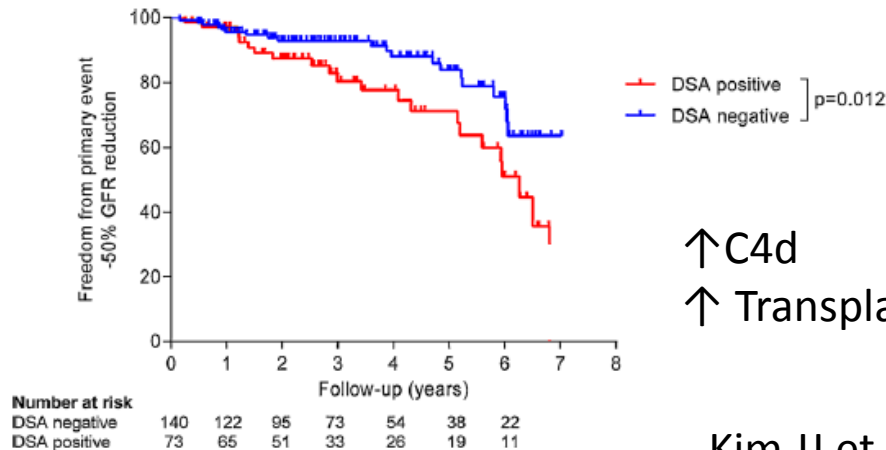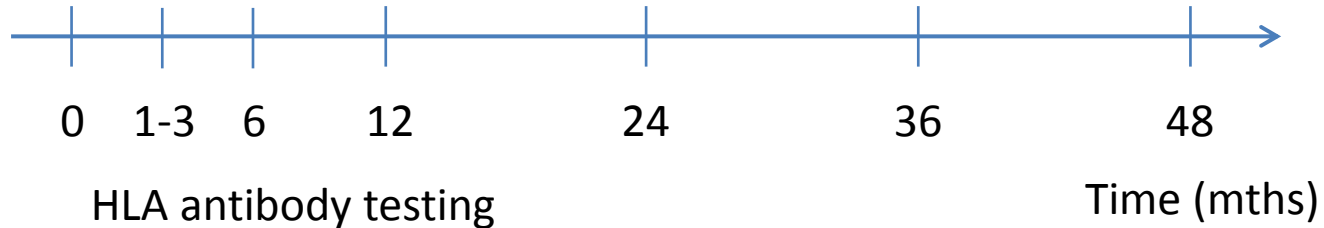Good long
term survival

Graft survival by era

Living Donor

Graft survival by HLA MM (deceased donors)

Evolution of de novo DSA in children Great Ormond Street Hospital

0   1-3   6   12   24   36   48

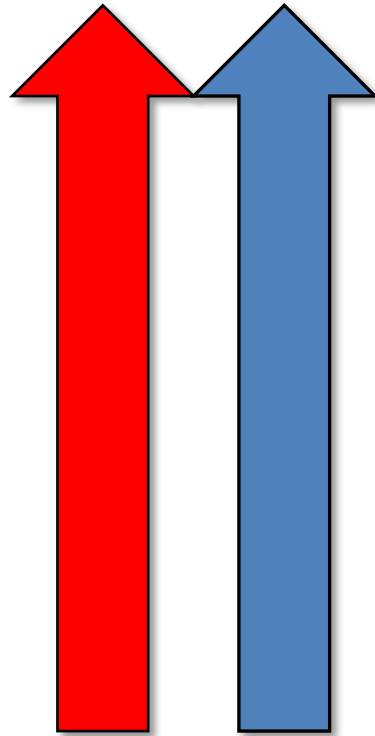HLA antibody testing   Time (mths)

↑C4d
↑ Transplant glomerulopathy

Kim JJ et al AJT 2014

Accept or Not Accept

HLA
Matching
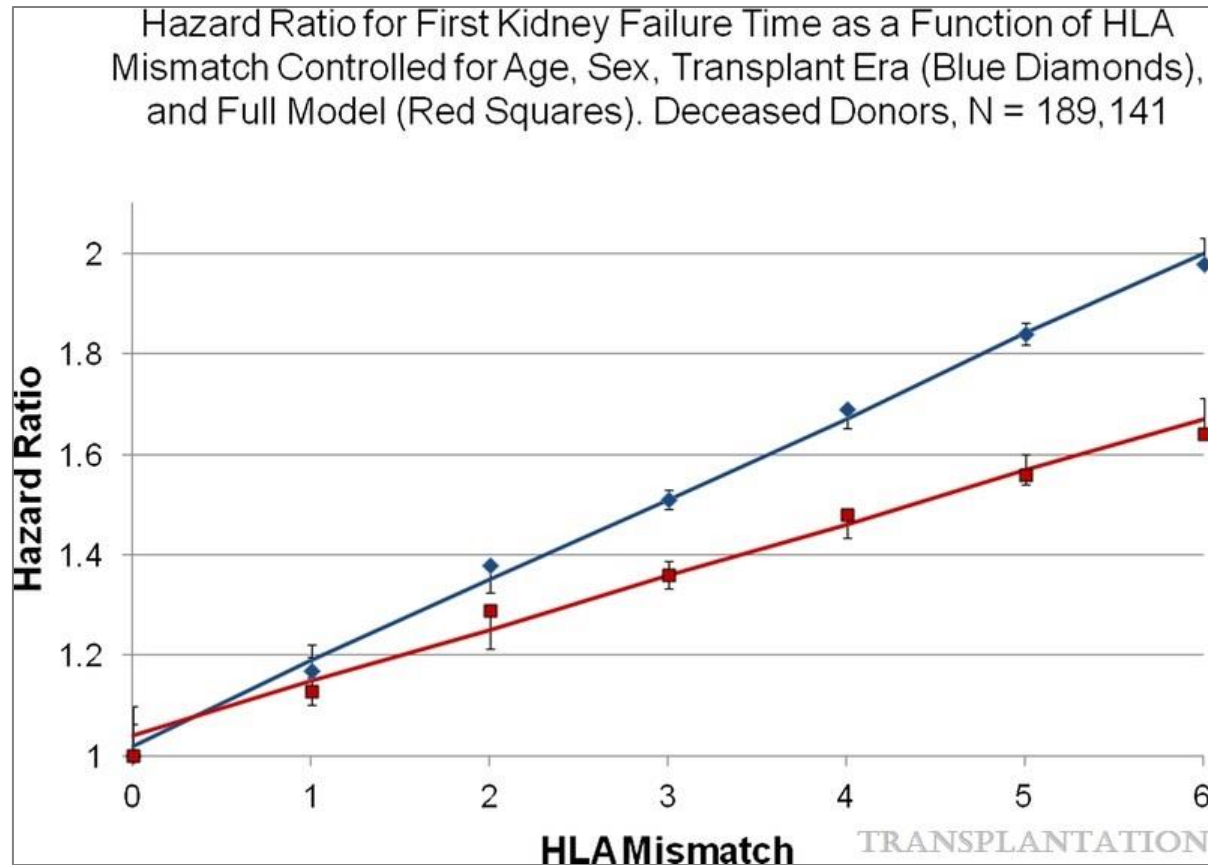
Donor Quality

Age
Hypertension
Cause of death
GFR
BMI

Risk of transplant failure controlled for known confounders

Hazard Ratio for First Kidney Failure Time as a Function of HLA Mismatch Controlled for Age, Sex, Transplant Era (Blue Diamonds), and Full Model (Red Squares). Deceased Donors, N = 189,141

Cox multivariate regressions were performed with the survival time of kidney allografts from deceased donors as the dependent variable and HLA mismatch as the primary explanatory variable with 0 mismatch as the reference. Blue diamonds represent the observed HRs for HLA mismatch for a reduced model with age, sex, and transplant era as covariates, whereas the red squares represent the observed HR values for the full model as presented inTable 2. The solid blue line is the fitted line for the reduced model with an intercept of 1.02 (0.98, 1.07), P < 0.0001, and a slope of 0.16 (0.15, 0.17), P < 0.0001, while the red line is fitted to the full model observed values with intercept of 1.04 (0.98, 1.10), P < 0.0001, and slope of 0.11 (0.09, 0.12), P < 0.0001. Error bars are the 95% confidence intervals for the respective points on the fitted lines.
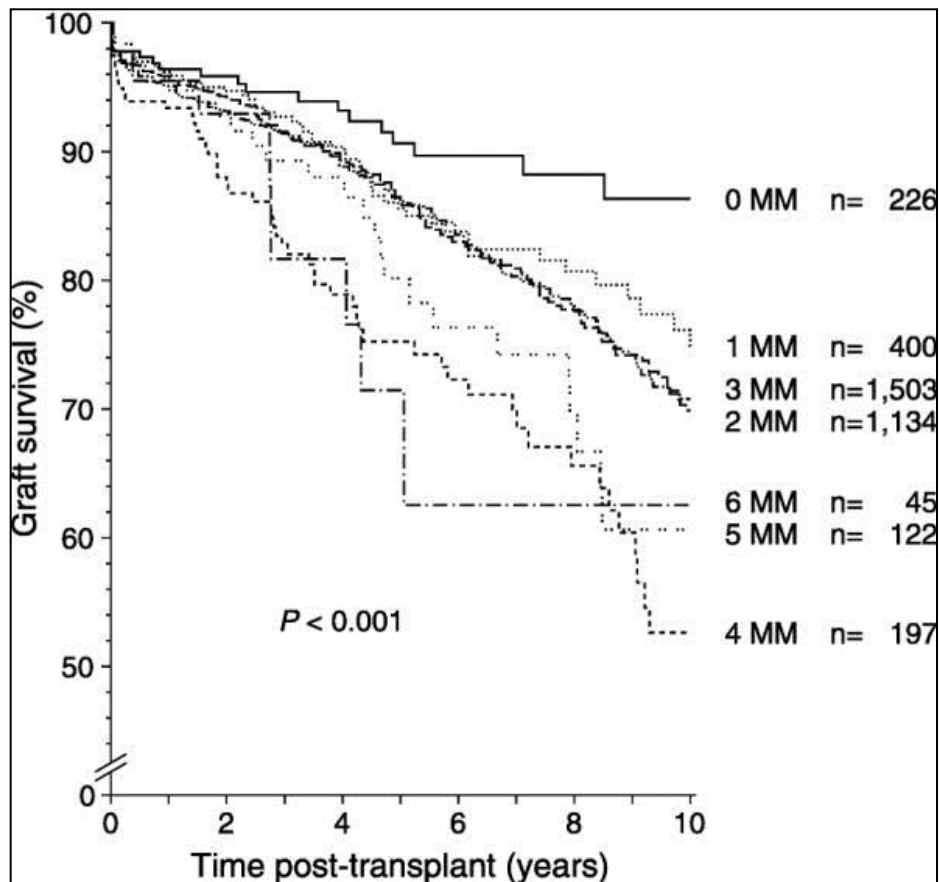
Scenario

- 10 yr old Roy
  - PUV, bilateral VUR and dysplasia
  - Crea 600, Urea 33, K6, growth faltering
  - On the waiting list for 3 months
- Single mum, lorry driver, 3 other kids

- Uncle, 50
  - 2,2,1 mismatch, blood group compatible
  - Generally fit and well (BMI 29)

What to do?

- LRD from uncle (HD in interim)?

- Try paired exchange?

- Something else?

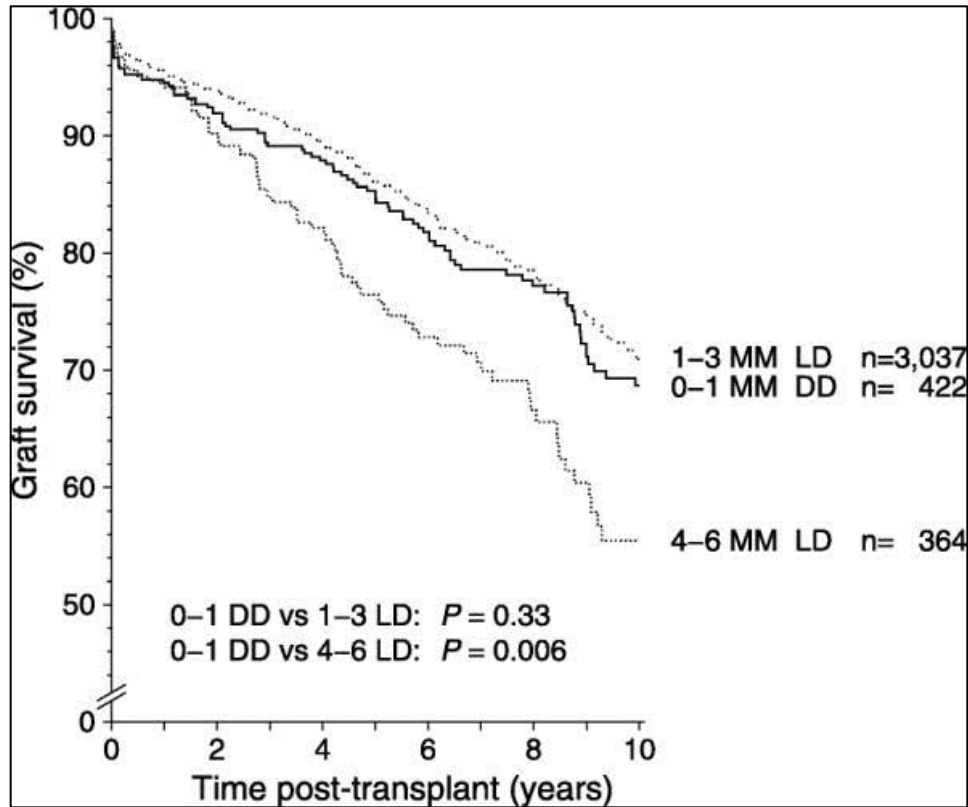# HLA mismatch in paediatric living donors

FIGURE 1 . Influence of HLA-A+B+DR matching on graft survival of first pediatric kidney transplants from LDs performed 2000 to 2015 (log rank P value with trend). Sum of HLA-A, -B, -DR MMs between donor and recipient were added for analysis.
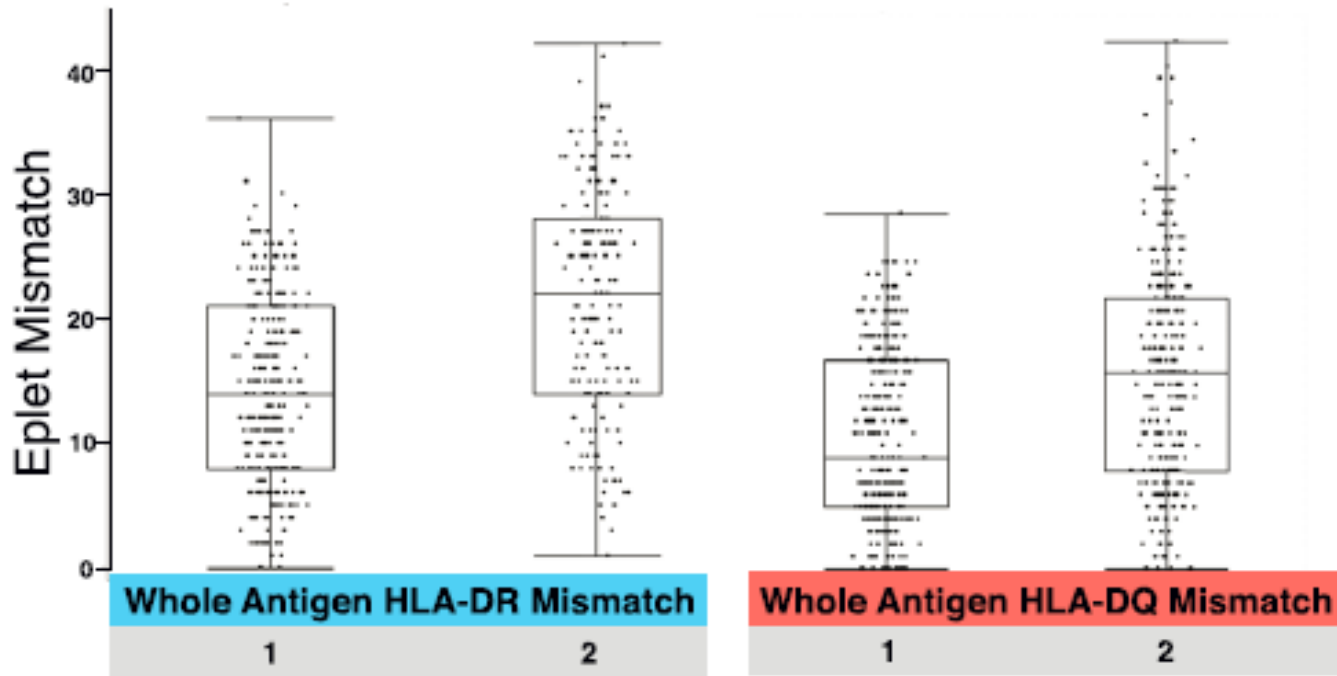
Living donor v Deceased donor

FIGURE 3 . Graft survival of first pediatric kidney transplants. Comparison of well-matched DD grafts (0-1 MM DD) with good (1-3 MM LD) and poorly (4-6 MM LD) matched LD grafts. P values for log rank test of Kaplan-Meier analysis.
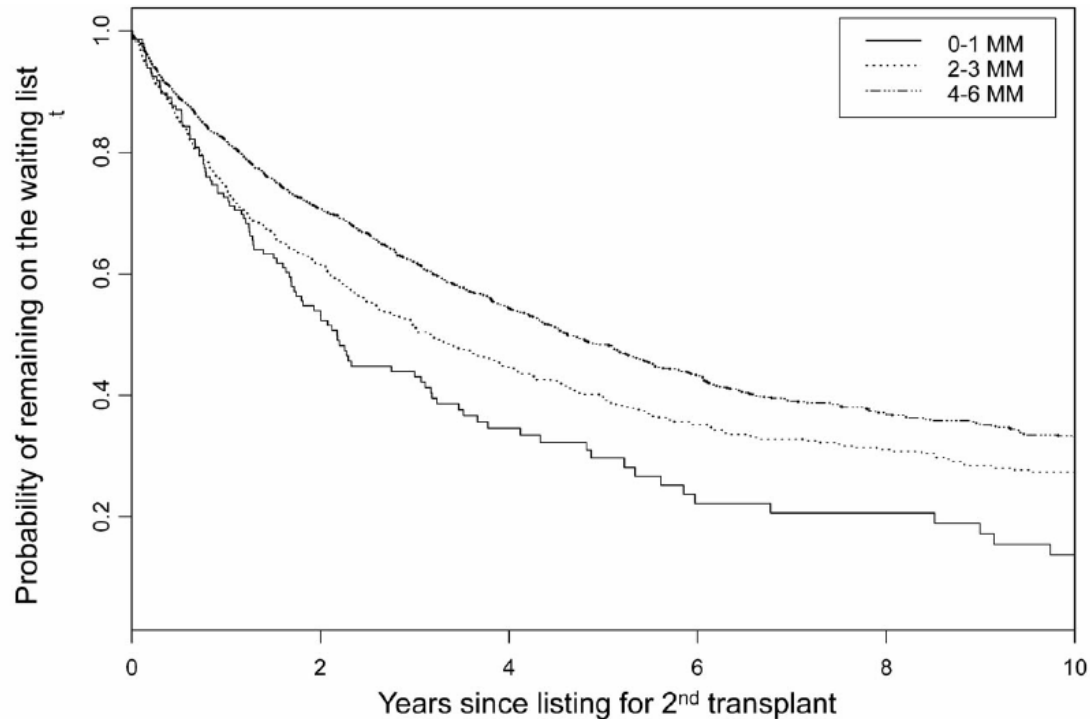
More detailed HLA matching using Eplets
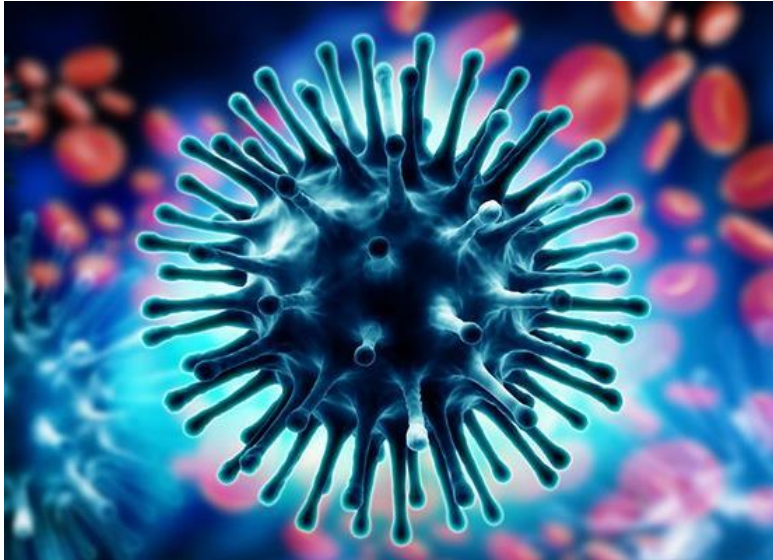
Eplet v Antigen matching for HLA-DR and DQ
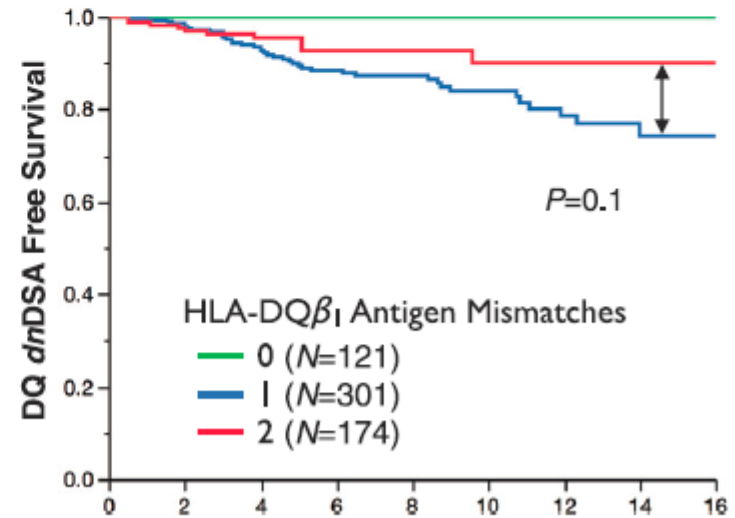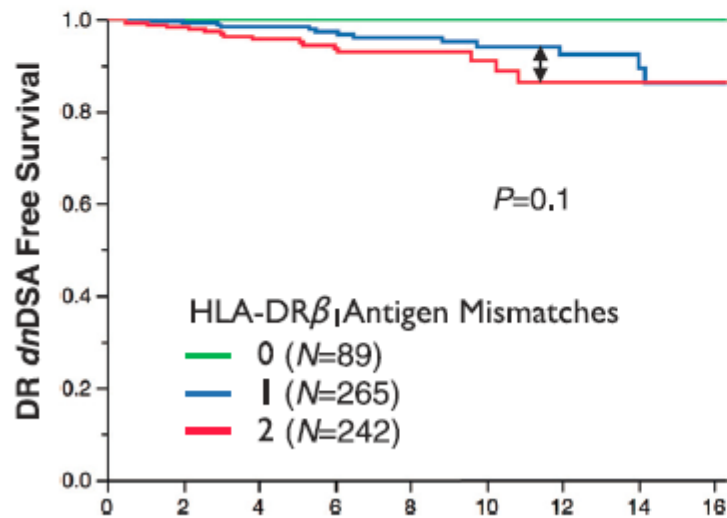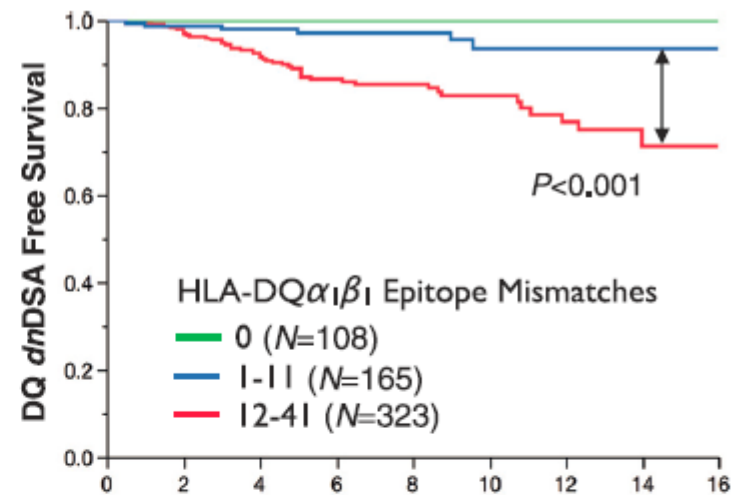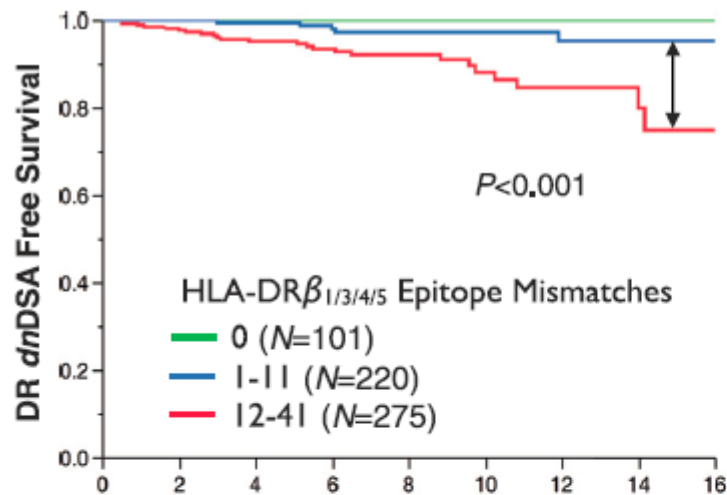
Impact of HLA MM on waiting time for 2nd transplant

Immunosuppression burden

Summary

- Increased HLA MM directly and proportionally increases the risk of graft failure
  - Deceased Donor and Living Donor

- Failed transplants with increased MM have higher sensitisation and longer waiting times

- **YES! HLA matching matters in children**

"Remember to look up at the stars and not down at your feet. Try to make sense of what you see and wonder about what makes the universe exist. Be curious. And however difficult life may seem, there is always something you can do and succeed at. It matters that you don't just give up."
Stephen Hawking, 1942 ~ 2018