



DEPARTMENT OF CARDIO-  
THORACIC AND VASCULAR  
SCIENCES AND PUBLIC HEALTH



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

# The ERTA-Ab study: Anti-endothelin-1 receptor Type A antibodies in pediatric renal transplantation

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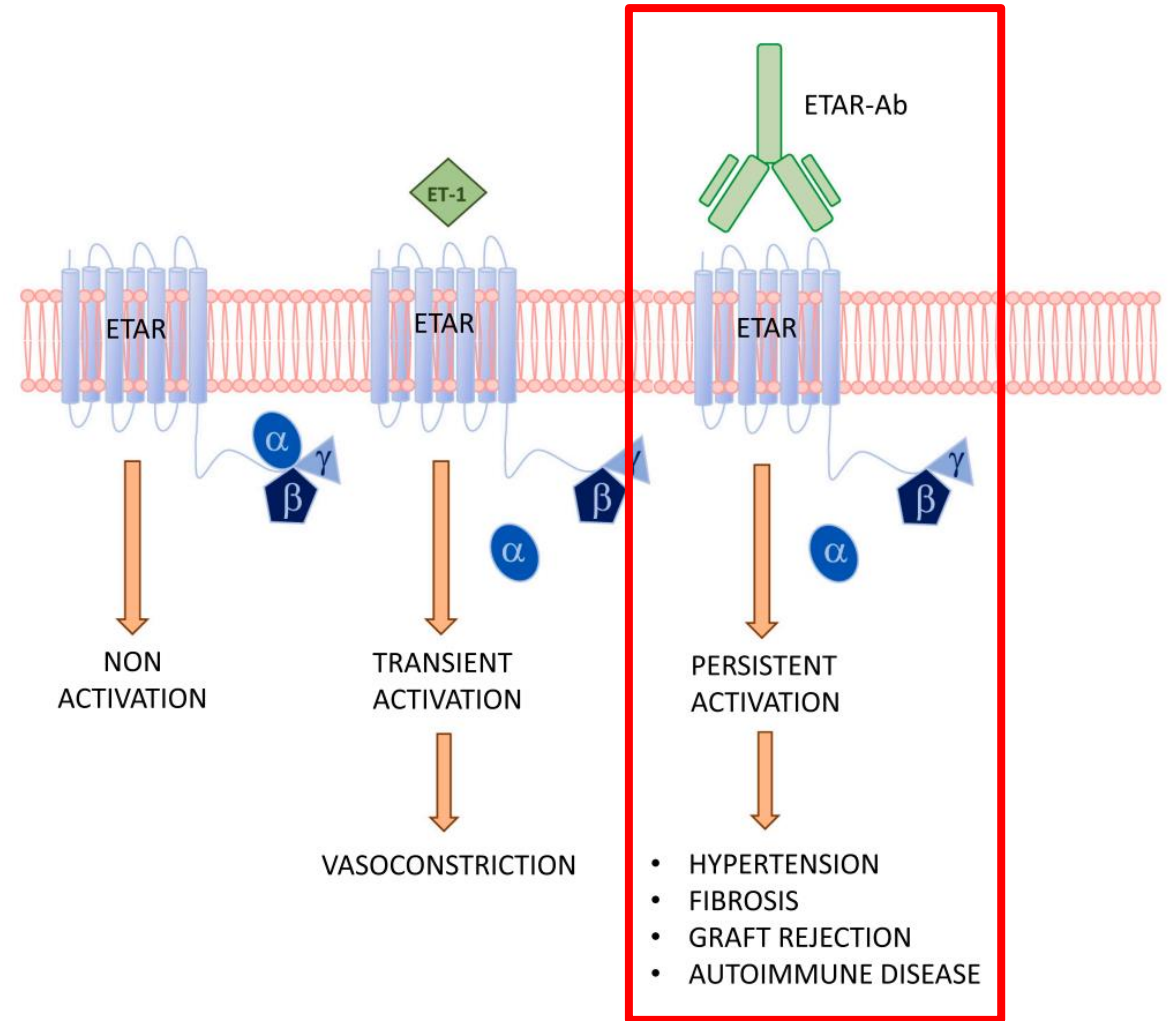
In Person + Live Streaming  
**TTS2024** ISTANBUL TURKEY  
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TTS2024, Istanbul-Turkey  
22<sup>th</sup>-25<sup>th</sup> September 2024



# Non-HLA antibodies: from basic research to clinical practice

- Non-HLA antibodies such as autoantibodies targeting G-protein-coupled receptor (GPCR) are detected in a variety of clinical conditions.
- In particular, anti-angiotensin II type 1 receptor antibodies (AT1R-Ab), and anti-endothelin-type A receptor antibodies (ETAR-Ab) are the most commonly studied non-HLA antibodies in solid organ transplantation



# Objectives of the study

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- To increase the knowledge on the levels and activity of anti-AT1R and anti-ETAR in paediatric renal transplant recipients.
- Determine whether anti-AT1R and anti-ETAR antibodies provide an additional and independent immunological risk in pediatric renal transplant recipients.

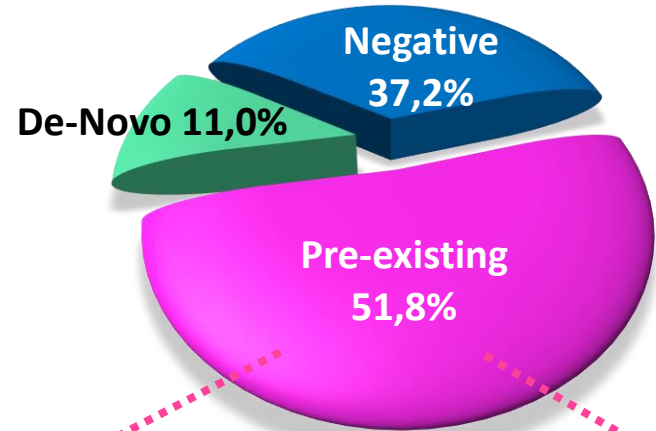
# Transplanted patients enrolled

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Pediatric cohort evaluated	
n° Kidney transplanted patients tested	n = 138
Median age at transplant [min-max]	11 years [2-18 years]
Male / Female	M=95 / F=43
Time of antibody testing	<ul style="list-style-type: none"><li>▸ Pre-transplant</li><li>▸ 6 months</li><li>▸ 12 months</li><li>▸ 24 months</li><li>▸ &gt; 24 months</li></ul>

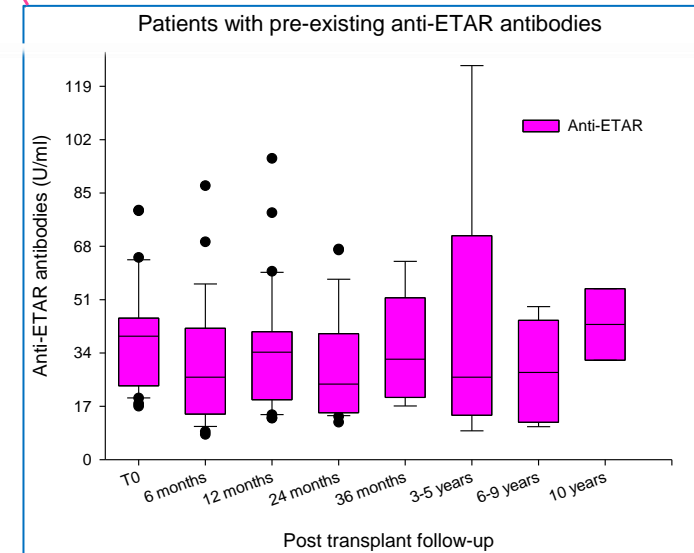
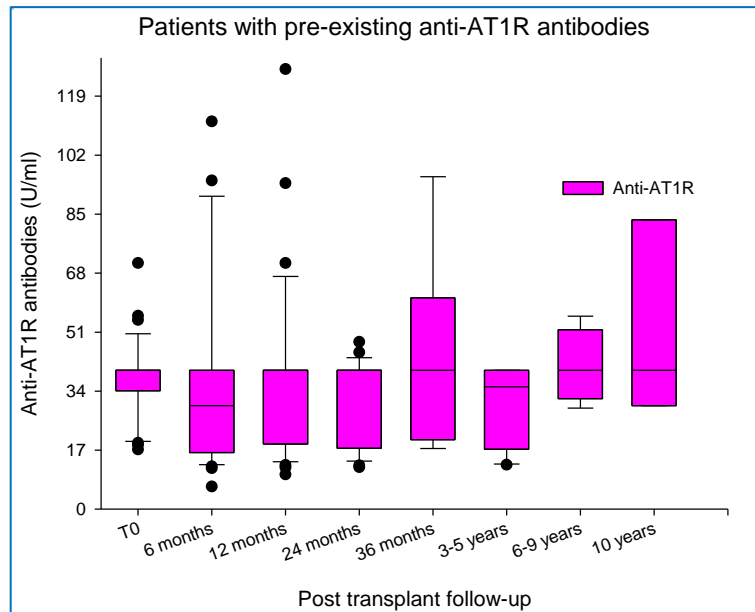
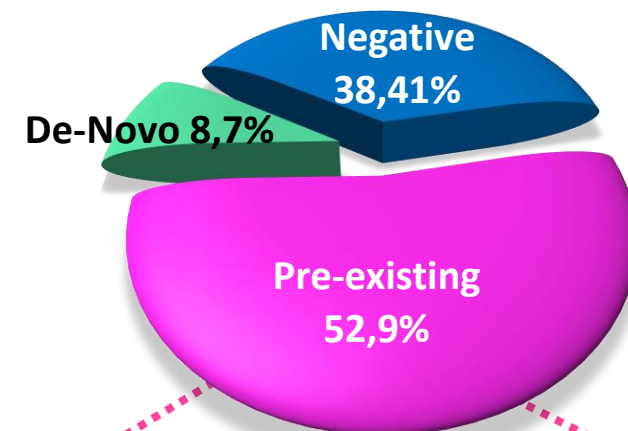
# Antibody monitoring

## Anti-AT1R Ab



High prevalence of **pre-existing** AT1R-Ab and ETAR-Ab

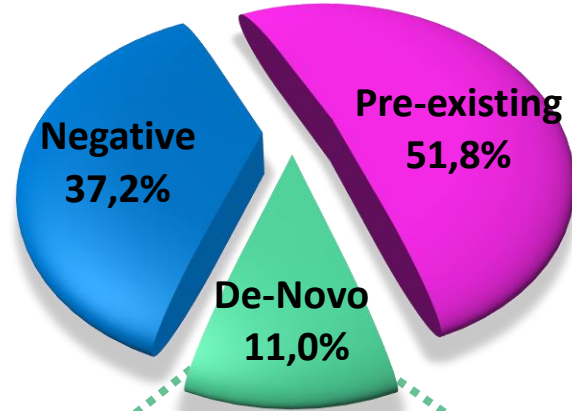
## Anti-ETAR Ab



Cut-off value: 17 U/ml

# Antibody monitoring

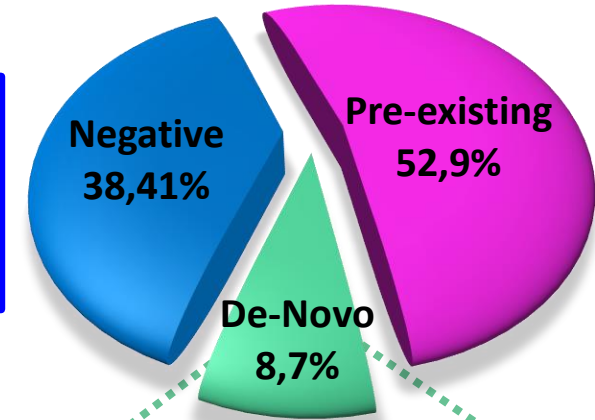
## Anti-AT1R Ab



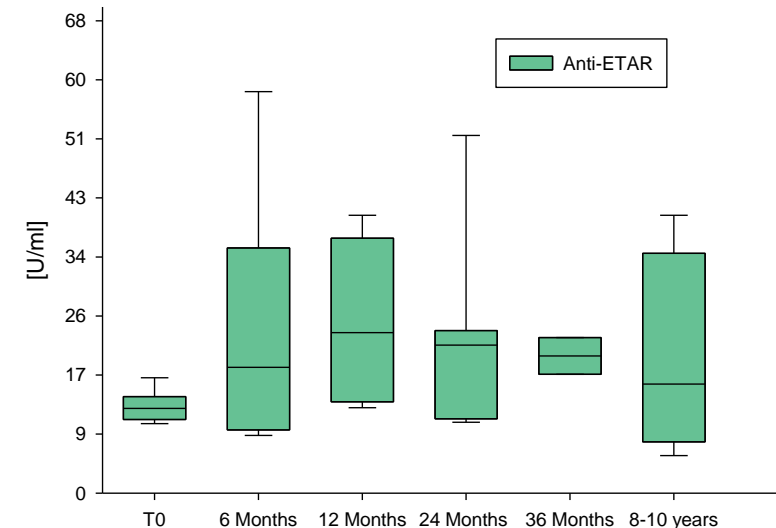
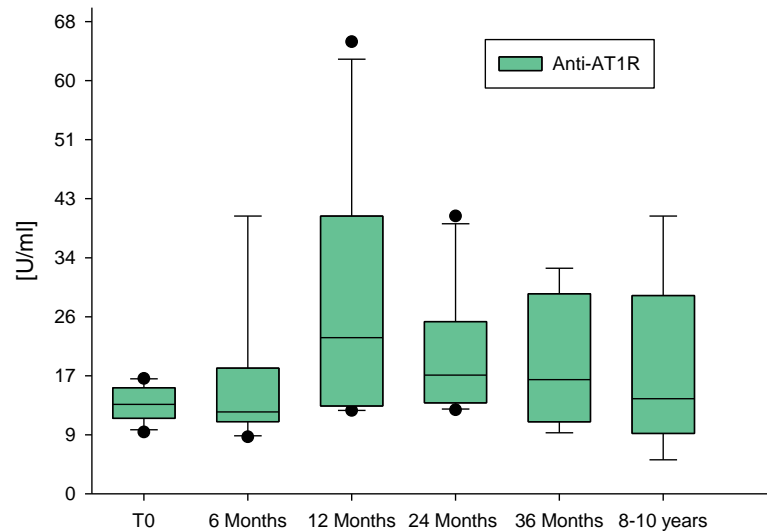
Paediatric patients with de novo anti-AT1R

De novo antibodies detected within the first year following transplantation

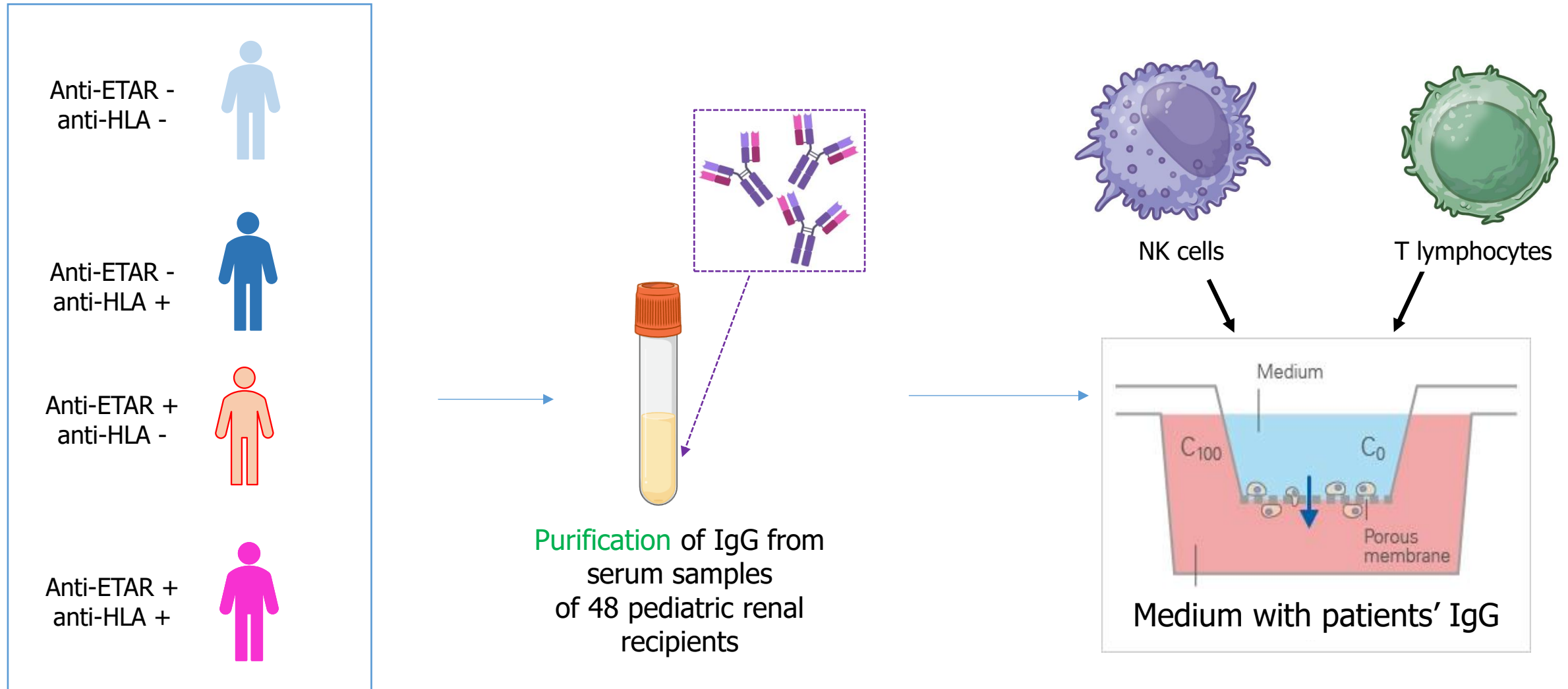
## Anti-ETAR Ab



Paediatric patients with de novo anti-ETAR

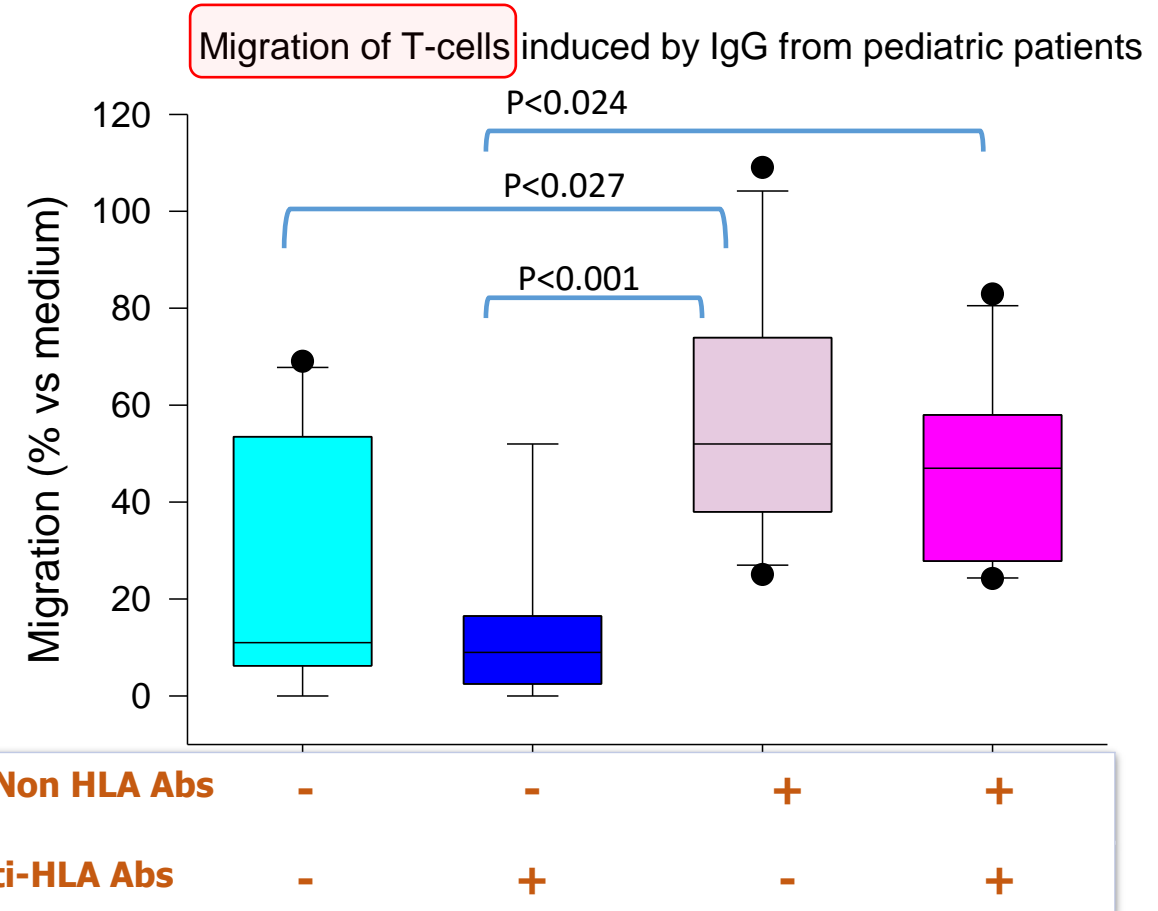
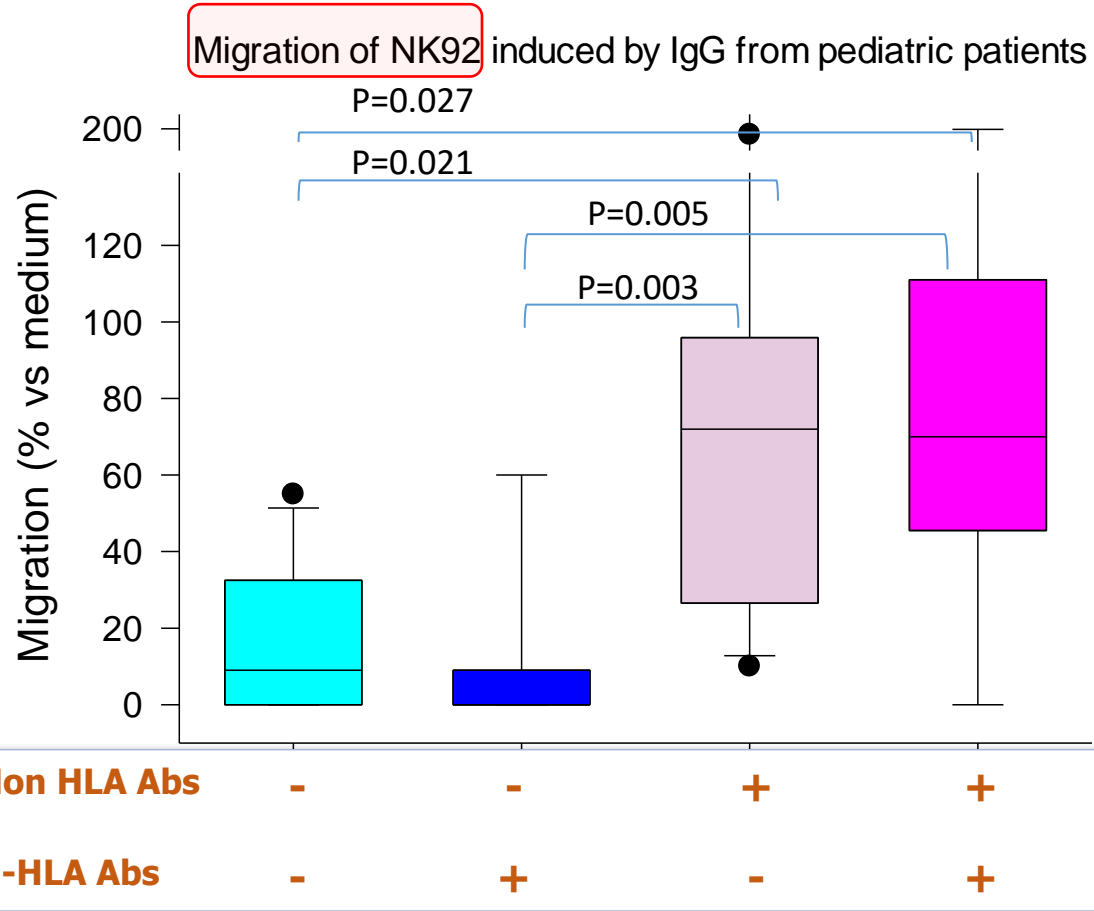


# In vitro testing of the impact of anti-ETAR antibodies on the migration of immune cells



Patients selected based on the levels of anti-ETAR and anti-HLA antibodies

# In vitro testing of functional activity of anti-ETAR antibodies on immune cells



IgG from patients with anti-ETAR antibodies significantly increases T and NK cell migration, regardless of anti-HLA antibody presence.



# Conclusions

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- **Prior to transplantation**, anti-ETAR antibodies [and AT1R Ab] are present in more than 50% of pediatric renal transplant recipients
- **De-novo appearance** of anti-ETAR Ab is detected in 18,5% of pediatric patients with no non-HLA antibodies prior to renal transplantation
- ETAR-Ab are strongly associated with AT1R-Ab
- Anti-ETAR antibodies increase migration of NK and T cell regardless of the presence of anti-HLA antibodies suggesting a possible role of these antibodies on T cell and NK recruitment
- Ongoing studies will clarify whether anti-AT1R and anti-ETAR antibodies increase the risk of TCMR and AMR and may possibly modify the care of pediatric renal transplant recipients



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