

# Phenotyping Immune Sensitization Reveals Pattern-Based Association with Post-Lung Transplant Complications

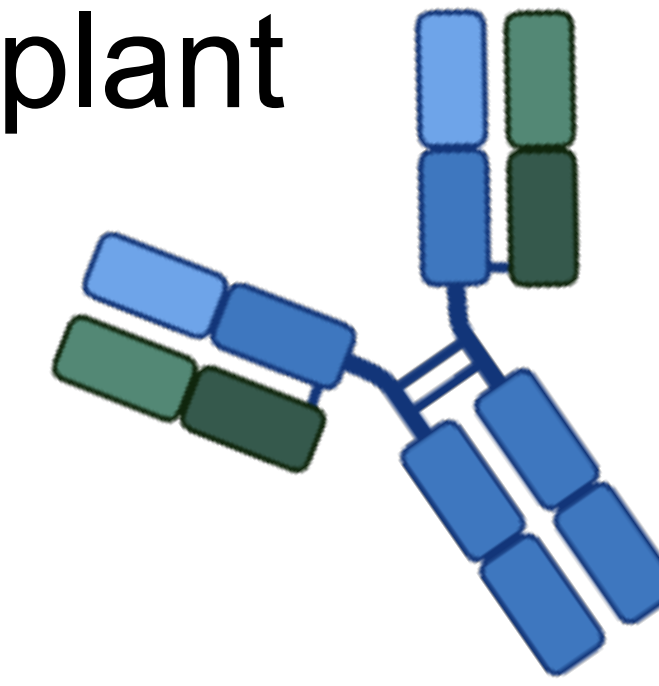
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## Introduction

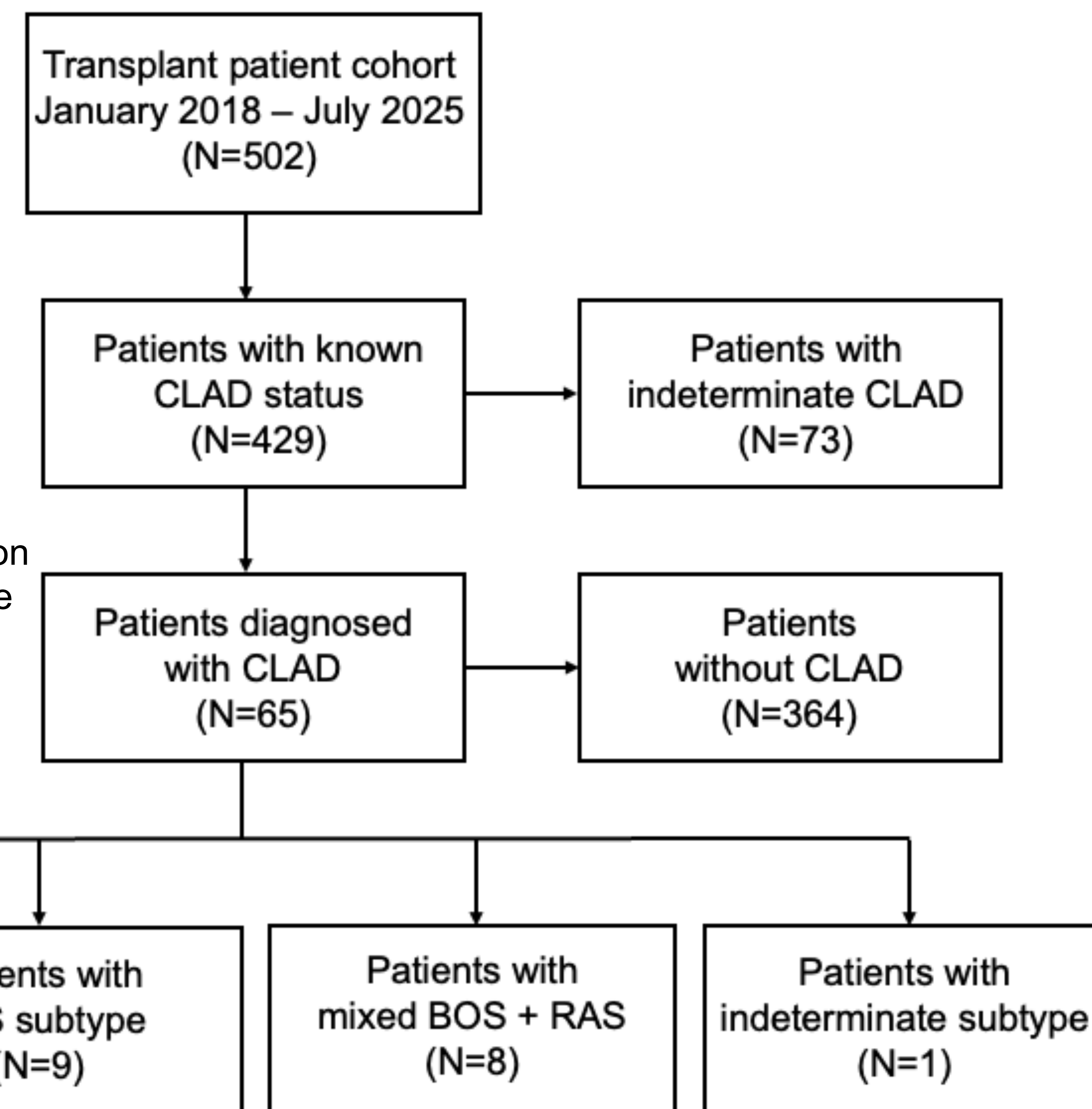
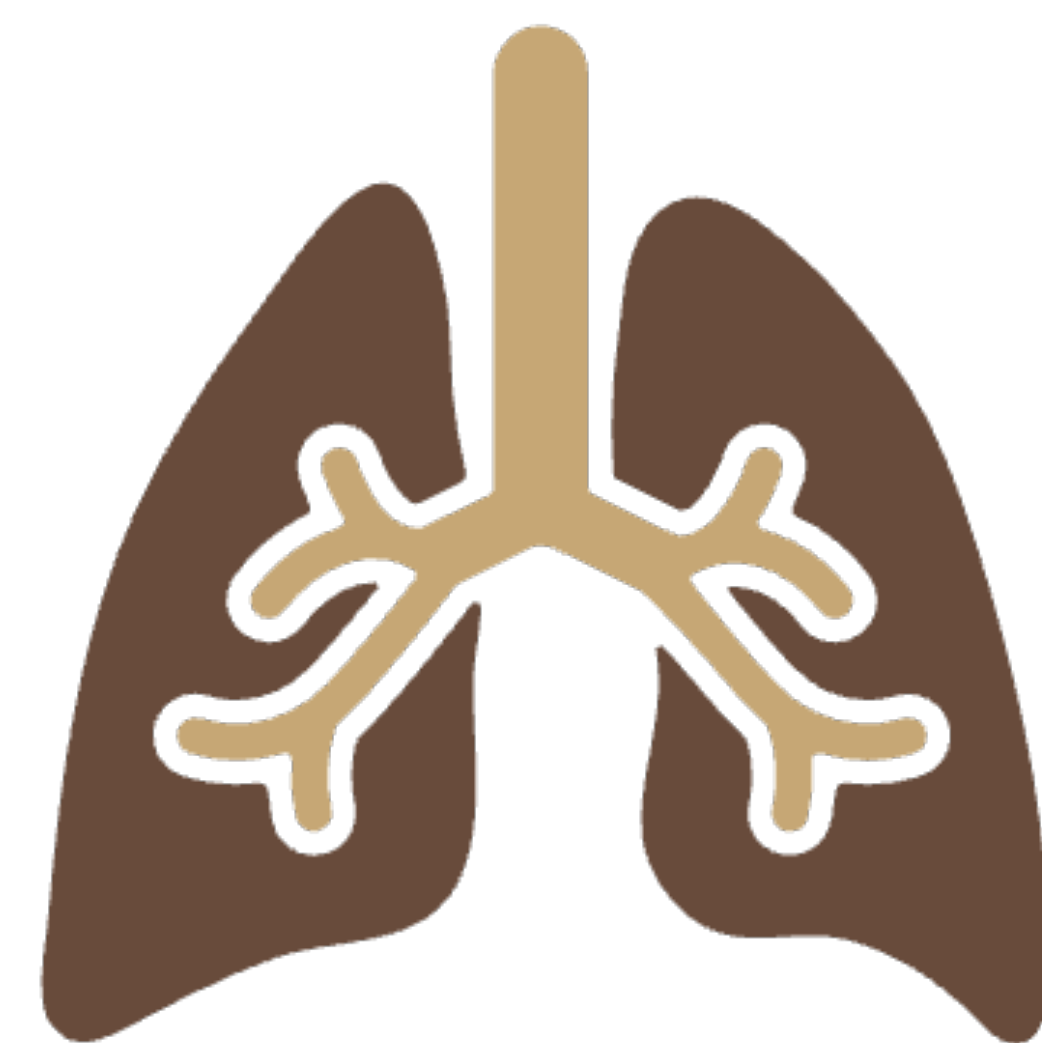
- Immune exposures, such as elevated PRA, de novo DSA, AMR, and ACR have been linked to worsened lung transplant outcomes<sup>1-3</sup>
- Prior work investigated these variables in isolation. Yet, patients present with a combination of these risk factors.



## Objective

To characterize the long-term post-transplant complications using composite immune sensitization patterns

## Patient Cohort

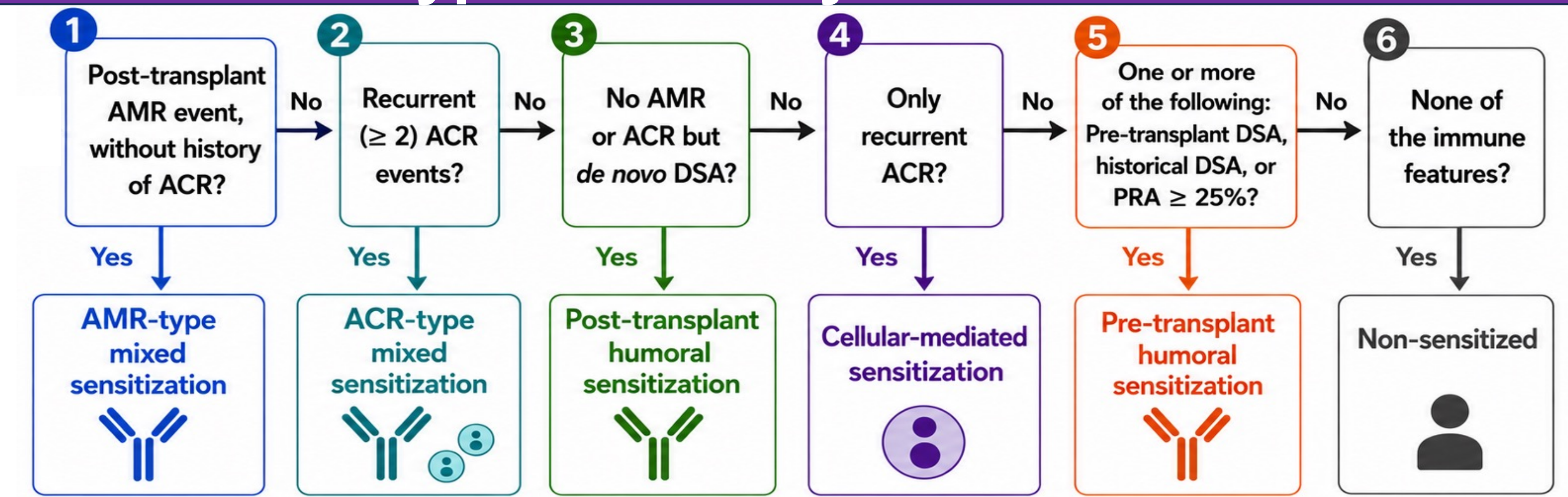


CLAD: chronic lung allograft dysfunction  
BOS: Bronchiolitis obliterans syndrome  
RAS: restrictive allograft syndrome

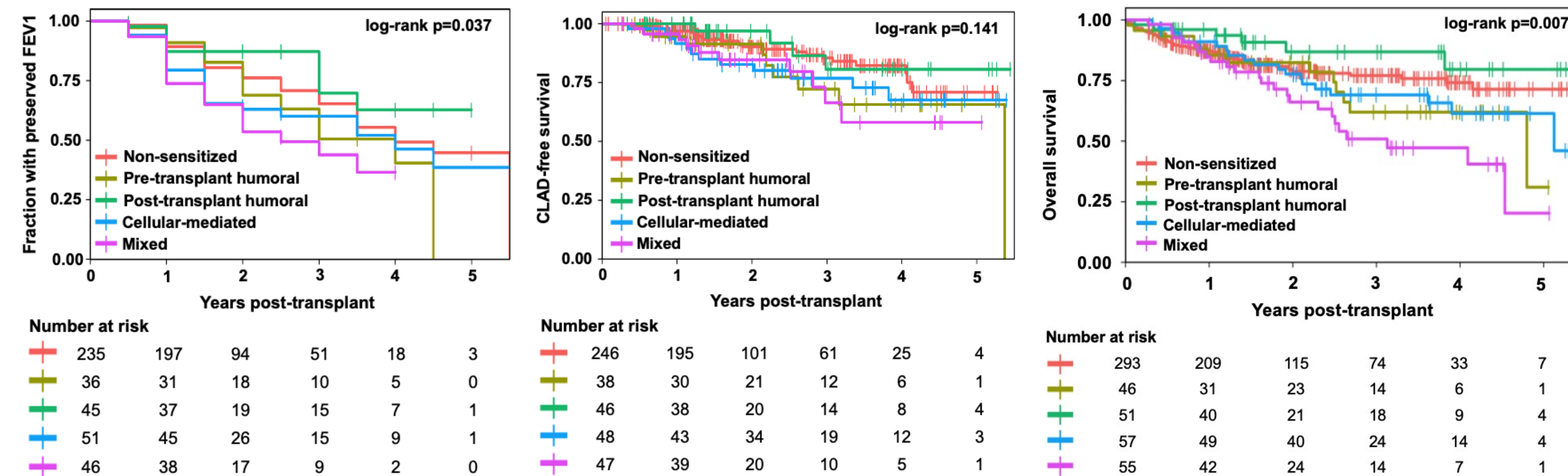
## Phenotype Hierarchy

### Immune features

- PRA ( $\geq 25\%$ )
- Historical DSA
- Pre-transplant DSA
- De novo DSA
- Recurrent ACR
- AMR



## Results



## Conclusion

- Patients with mixed sensitization, particularly AMR-driven, were associated with worse post-transplant outcomes
- Composite sensitization profiles may provide greater assessment of post-operative complication risk compared to isolated, binary immune exposures

## References

- Hadjiliadis D, Chaparro C, Reinsmoen NL, et al. *J Heart Lung Transplant*. 2005;24(7 Suppl):S249–54.
- Alnababteh M, Sun J, Meda R, et al. *J Heart Lung Transplant*. 2025;44(11):1766–73.
- Bery AI, Hachem RR. *Ann Transl Med*. 2020;8(6).
- Icons in the “Introduction” and “Patient Cohort” sections were made in BioRender.com.