

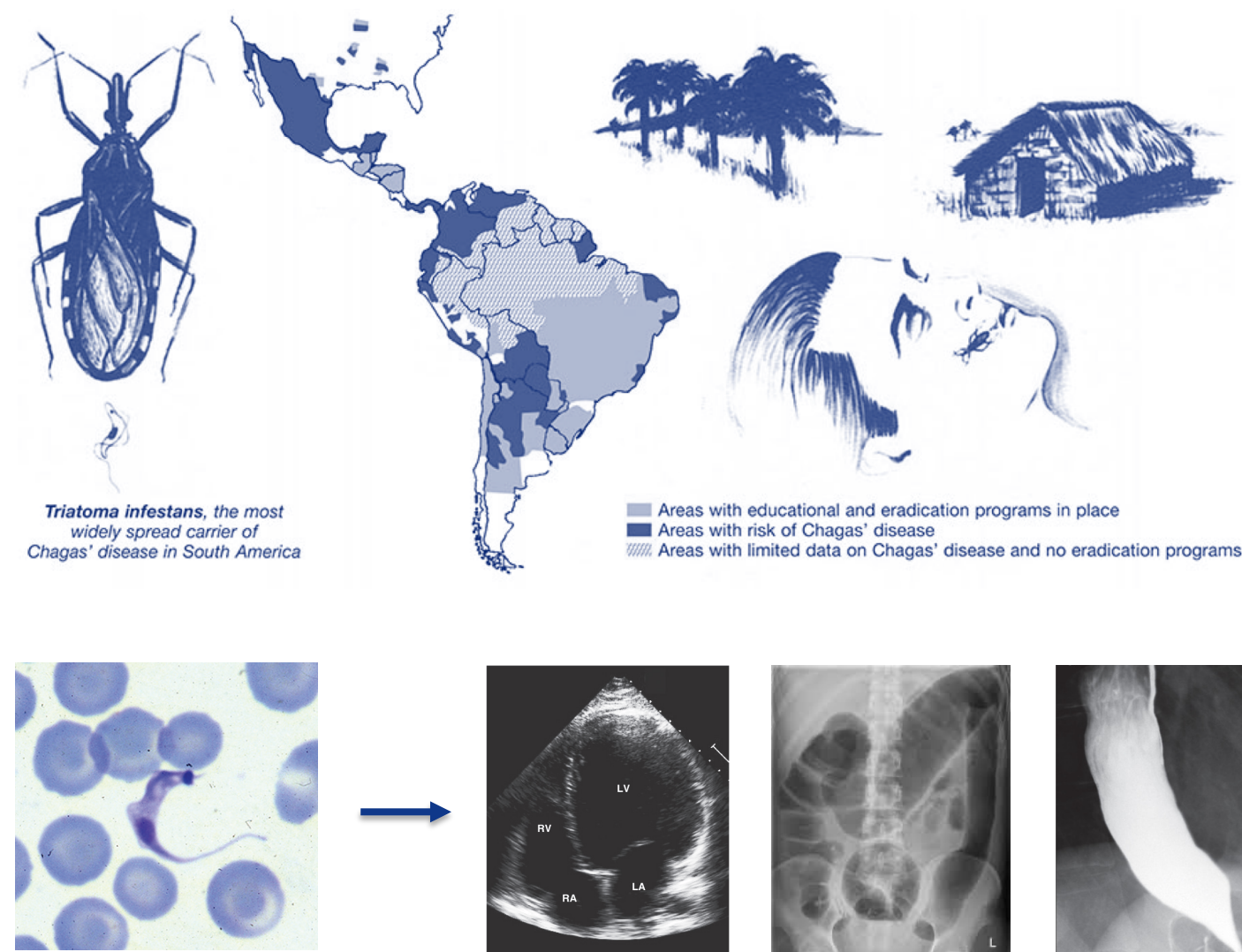
Analysis of Regional Variation in Reactivity to Commercial Serologic Assay for Chagas Disease

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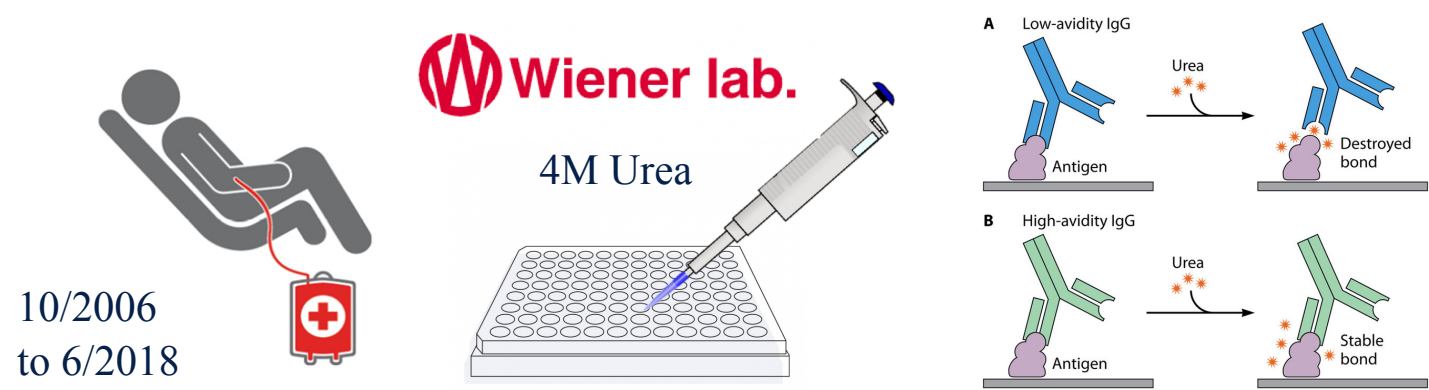
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Introduction



- Chronic CD is estimated to affect 300,000 people living in the United States, predominantly immigrants from continental Latin America
- Diagnosis of chronic CD requires concordant positive results by two distinct anti-*T. cruzi* IgG serological assays
- Previous studies have shown **lower reactivity** to commercial serologic assays among people born in Mexico than those from Central and South America
- No study has yet determined whether this observed difference in reactivity is due to **lower total antibody concentration** or **lower antibody binding avidity**

Methods



Patient Demographics by Region of Origin

	Mexico n = 52	Central America n = 47	South America n = 44	
	Number (%)	Number (%)	Number (%)	P-value
Sex				0.13
Male	25 (48)	22 (47)	13 (30)	
Female	27 (52)	25 (53)	31 (70)	
Missing	0 (0)	0 (0)	0 (0)	
Years of Age [IQR]	42 [36, 49]	46 [32, 50]	50 [40, 60]	
Ethnicity				
Hispanic	45 (87)	39 (83)	28 (64)	0.03
Non-Hispanic	0 (0)	0 (0)	2 (5)	
Missing	7 (13)	8 (17)	14 (32)	

P-value from Pearson χ -squared test

Avidity Index by Region of Origin, Stratified by Baseline Reactivity

	Mexico		Central America		South America		
Baseline OD450	Number	Median AI	Number	Median AI	Number	Median AI	P-value
0.70 – 1.20	16	22.7%	4	20.8%	6	23.5%	0.59
1.20 – 1.70	13	51.6%	16	53.0%	8	67.8%	0.89
1.70 – 2.20	9	88.9%	17	90.4%	19	100%	0.22

AI: Avidity Index = Urea OD450/Baseline OD450
P-value by Kruskal-Wallis H Test

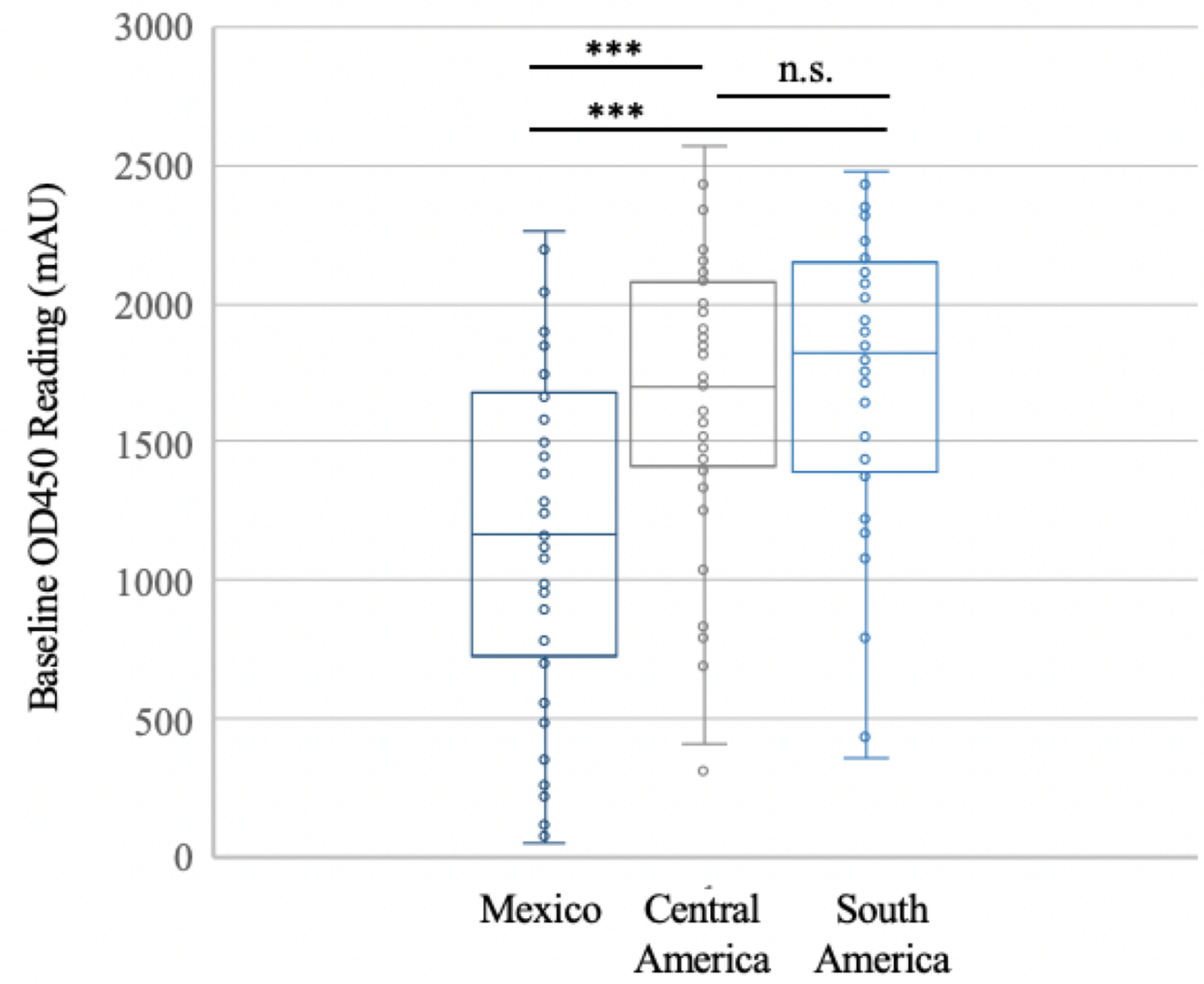
Discussion

- Significantly **lower baseline reactivity** from samples of patients born in Mexico and from those born in Central and South America ($p < 0.001$)
- No difference in binding avidity** by region of birth among samples with comparable baseline reactivity. ($p > 0.05$)
- Strengths: healthy blood donor samples, size of sample set, testing with an ELISA assay in wide clinical use
- Limitations: confounding effect of baseline reactivity on AI requiring stratification, AI values above 100%
- Future directions: ongoing studies using label-free immunoassay methodology

Conclusion

By demonstrating **no difference in binding avidity**, the results of this study suggest **total anti-*T. cruzi* IgG concentration is the more significant contributor** to observed differences in commercial assay reactivity by region of origin and should be considered in future assay development

Baseline Reactivity By Region of Origin



***: $p < 0.001$
n.s.: $p > 0.05$

References

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