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## Background

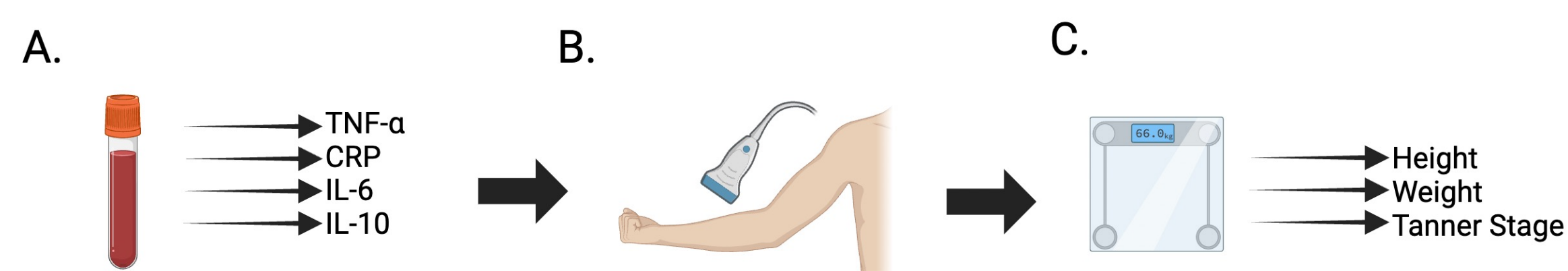
- Children with Cystic Fibrosis (CF) often have higher pro-inflammatory and lower anti-inflammatory cytokine levels compared to healthy individuals. This may contribute to subclinical changes in vascular health.<sup>1,2,3,4</sup>
- Endothelial function, a marker of vascular health, may be lower in children with CF compared to healthy controls.<sup>4</sup>
- No studies have explored the relationship between inflammatory markers and endothelial function in children with CF.

## Objectives

1. Compare flow mediated dilation (FMD) and inflammatory markers in CF and healthy participants.
2. Examine the relationship between FMD and: (a) pro-inflammatory; and (b) anti-inflammatory markers in CF and healthy participants.

## Methods

- Participants aged 7-17 y with a single diagnosis of CF for  $\geq 1$  y and healthy controls aged 7-17 y with no medical diagnoses completed a single visit that included:



**A. Inflammatory markers:** Serum from fasted blood analyzed by multiplex for TNF- $\alpha$ , CRP, IL-6, and IL-10.

**B. Endothelial function:** Assessed using ultrasound to measure brachial artery FMD.

**C. Anthropometric measures:** Weight (kg), height (cm), Tanner stage (1-5) for pubertal status.

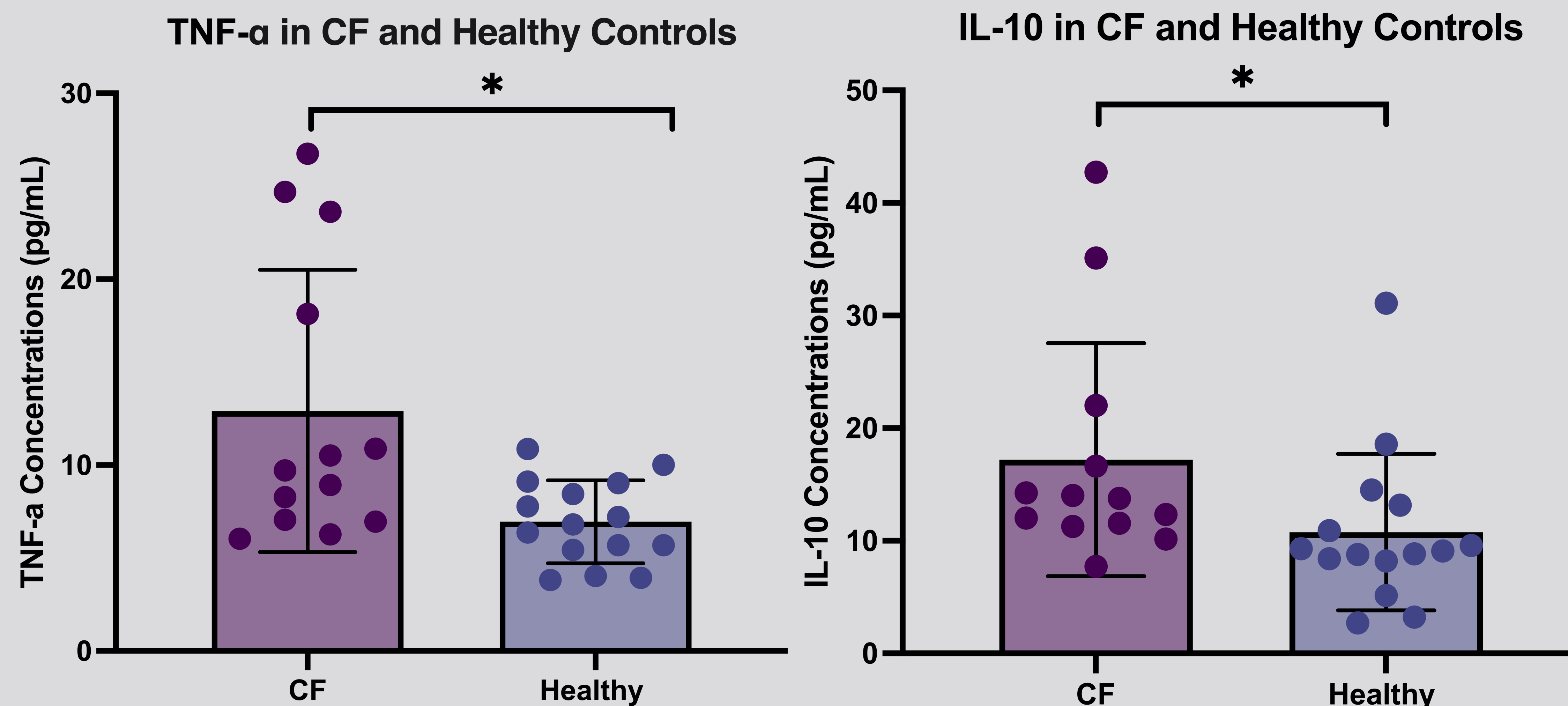
## Results

- Children with CF had significantly higher levels of TNF- $\alpha$  ( $p=0.002$ ) and IL-10 ( $p=0.019$ ), but there were no differences in CRP, IL-6, or FMD ( $p>0.05$ ) compared with controls.
- None of the measured cytokines predicted FMD.

## Discussion

- IL-10, an anti-inflammatory marker, was elevated in CF suggesting a potential mechanism to counter inflammation.
- The absence of associations between cytokine levels and FMD may be due to our relatively healthy cohort and limited variability in outcomes. Future work should include a wider range of disease severity followed over time.

## Children with CF have higher TNF- $\alpha$ and IL-10 levels compared to healthy controls; however, neither were predictors of endothelial function.



Figures represent concentrations of TNF- $\alpha$ , a pro-inflammatory marker, and IL-10, an anti-inflammatory marker. Bars are the mean, error bars represent standard deviation, and circles are individual participant data. The asterisk (\*) denotes a significant difference between CF and healthy controls ( $p<0.05$ ).

## References

1. Ventura C et al, Sao Paulo Med, 2018.
2. Bernardi D et al, Pediatr, 89, 40-47, 2013.
3. Nixon S et al, 157, 1764-1769, 2012.
4. Zanolini L et al, J Hypertens, 38(9) 1682-1698, 2020
5. Derella C et al, Journal of Cystic Fibrosis, 18(6), 772-777.

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