

# Anti-CD49d Antibody Treatment Improves Survival and Attenuates Neurocognitive Deficits after Traumatic Brain Injury in Aged Mice

Northwestern Medicine  
Feinberg School of Medicine

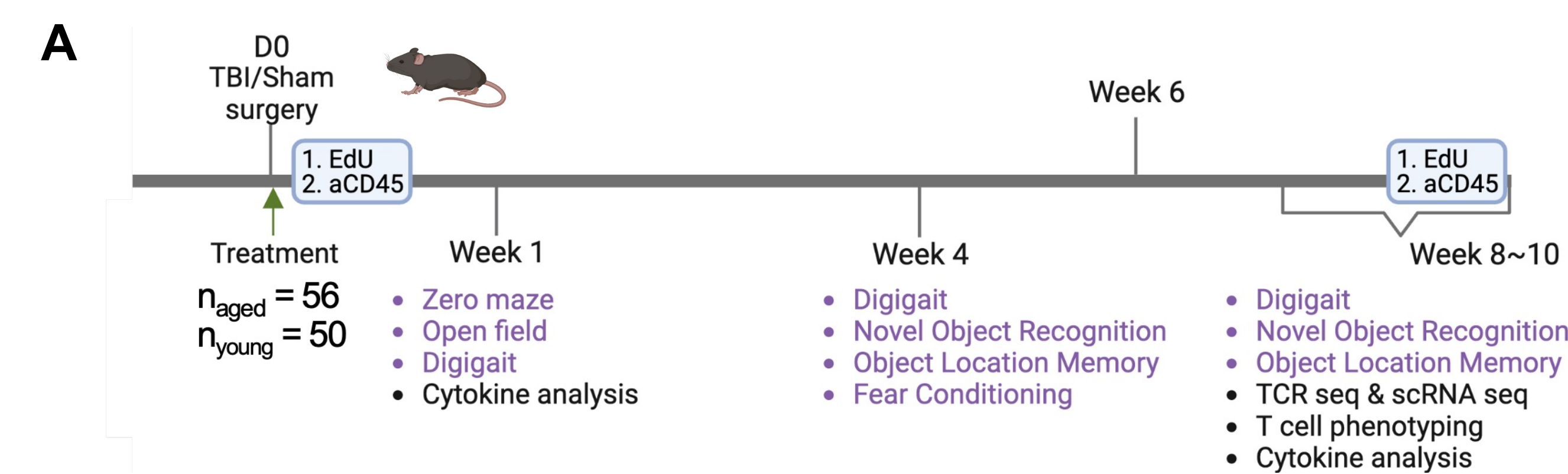
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## Introduction & Hypothesis

Traumatic brain injury (TBI) afflicts approximately seventy million people worldwide yearly<sup>1</sup>. While TBI affects individuals of all ages, the elderly (aged 65 years and older) experience higher mortality and more severe consequences than younger individuals. Recently, studies have found that age introduces T cells into the brain, likely due to the structural and functional alterations of the blood brain barrier (BBB)<sup>2</sup>. Previously, we have observed that aged mouse brains showed significant CD8<sup>+</sup> T cells two months post-TBI. These T cells were largely effector memory (EM) cells. They were more activated and pro-inflammatory<sup>3</sup>. Herein, utilizing anti-CD49d antibody (aCD49d Ab) to reduce the invasion of circulating lymphocytes, we are interested in gaining more insight on the presence and function of these T-cells. We hypothesize that **blocking infiltration of peripheral T-cells into the injured brain would improve neurocognitive outcomes in aged mice after TBI**.

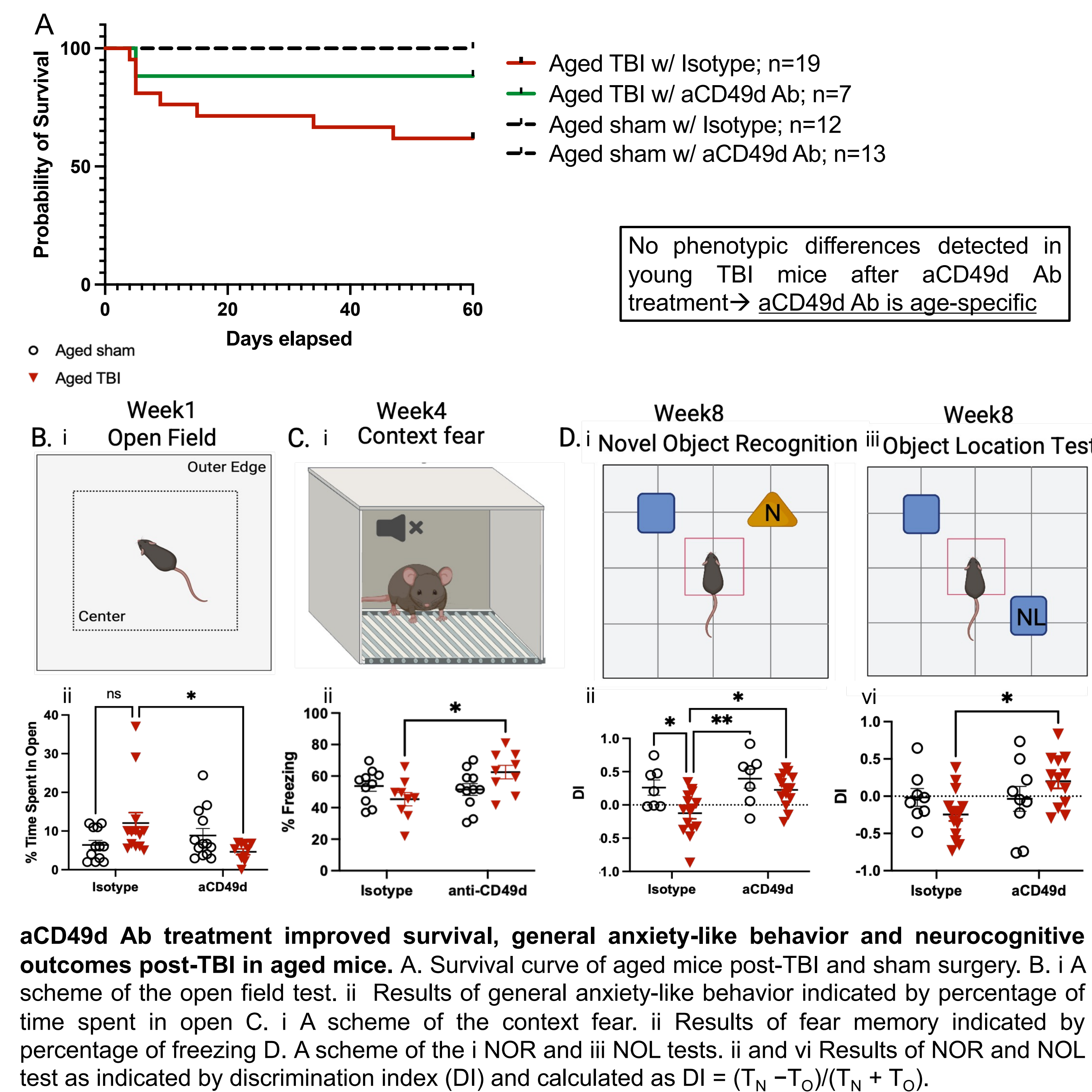
## Methods

### Use of aCD49d Ab to reduce the invasion of circulating lymphocytes to the injured brains

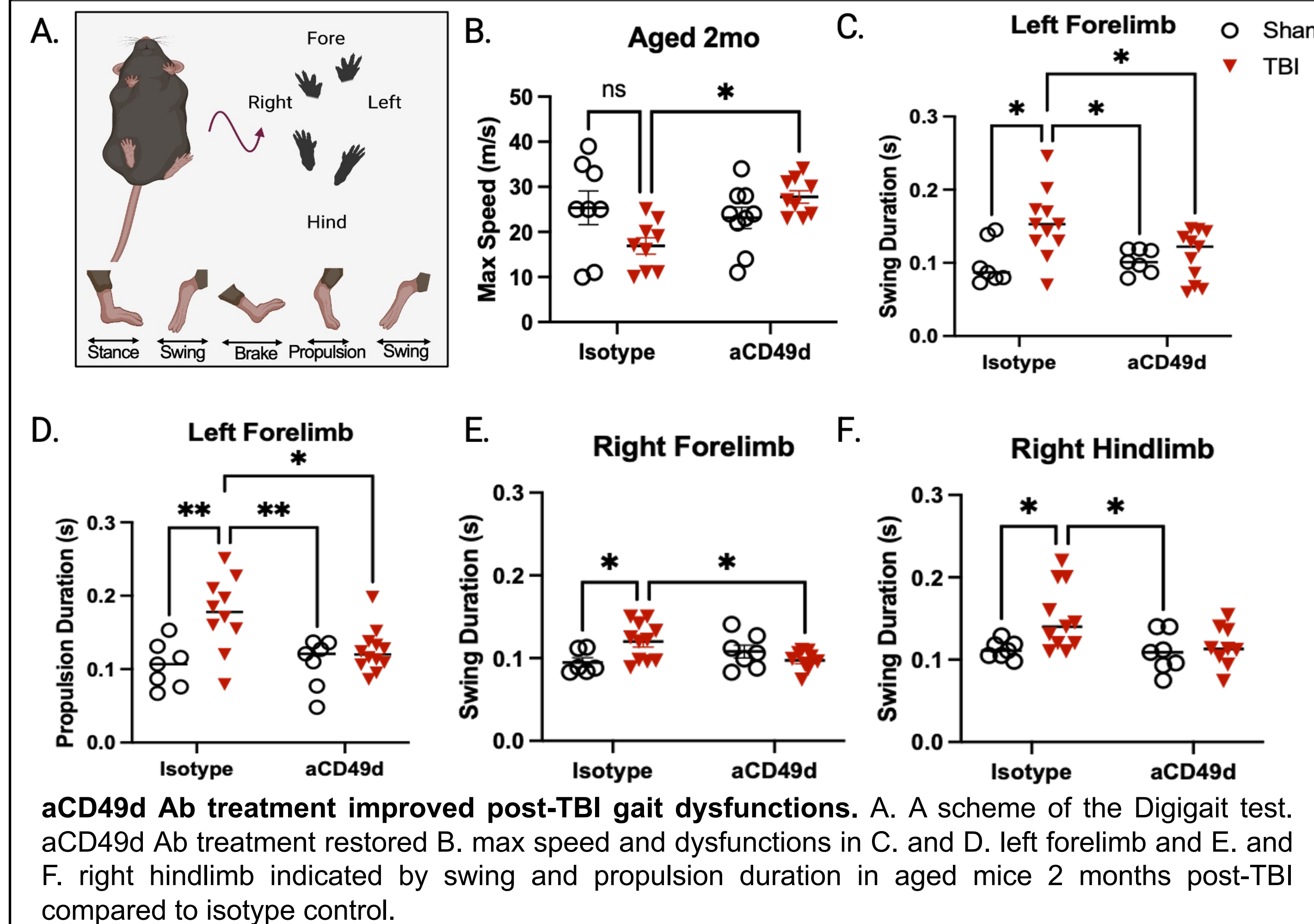


## Results

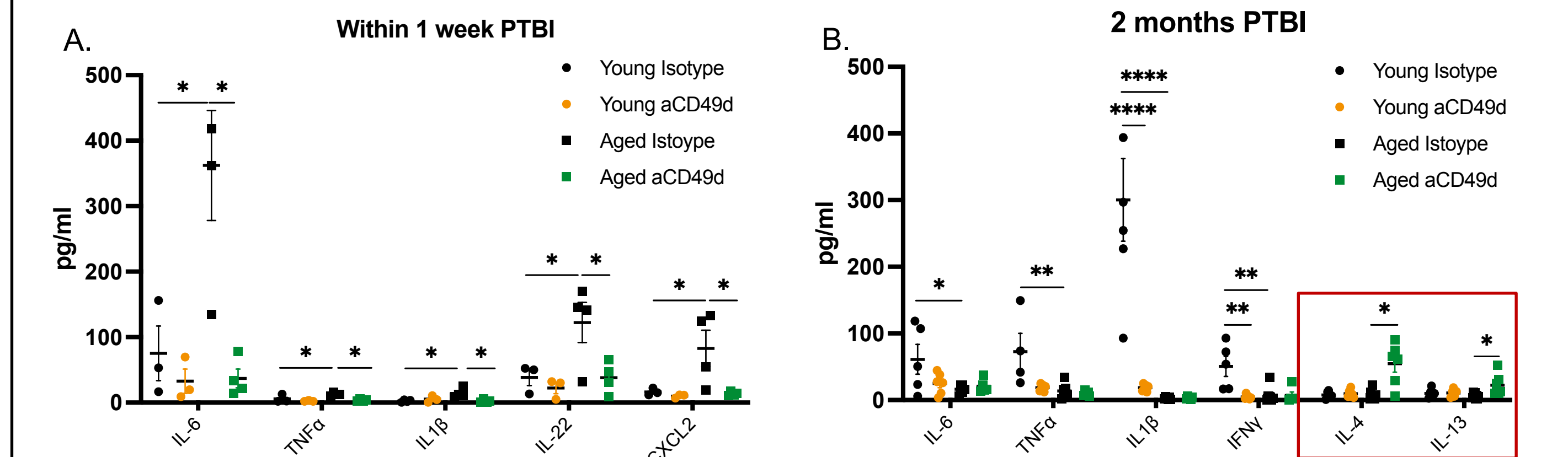
### Does reducing the invasion of lymphocytes improve survival and neurocognitive outcomes post-TBI?



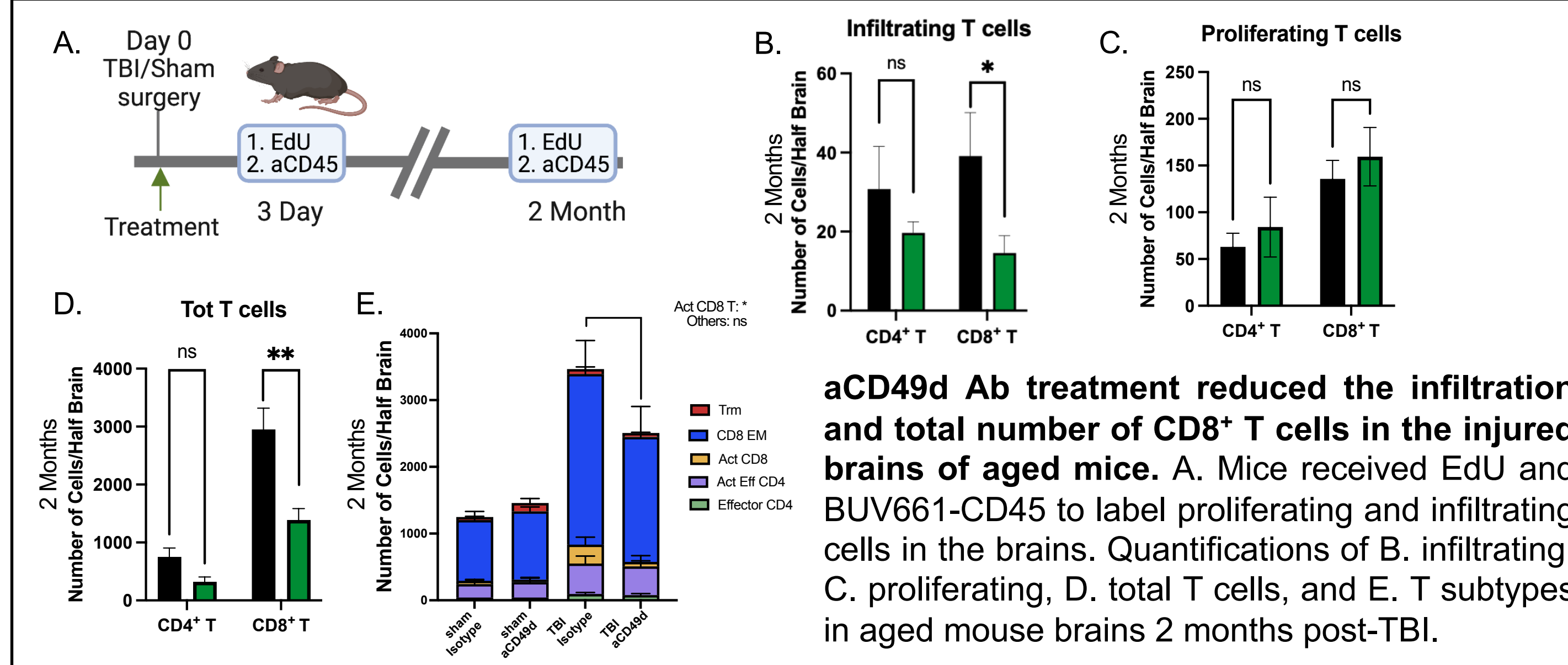
### Does reducing the invasion of lymphocytes improve motor functions post-TBI?



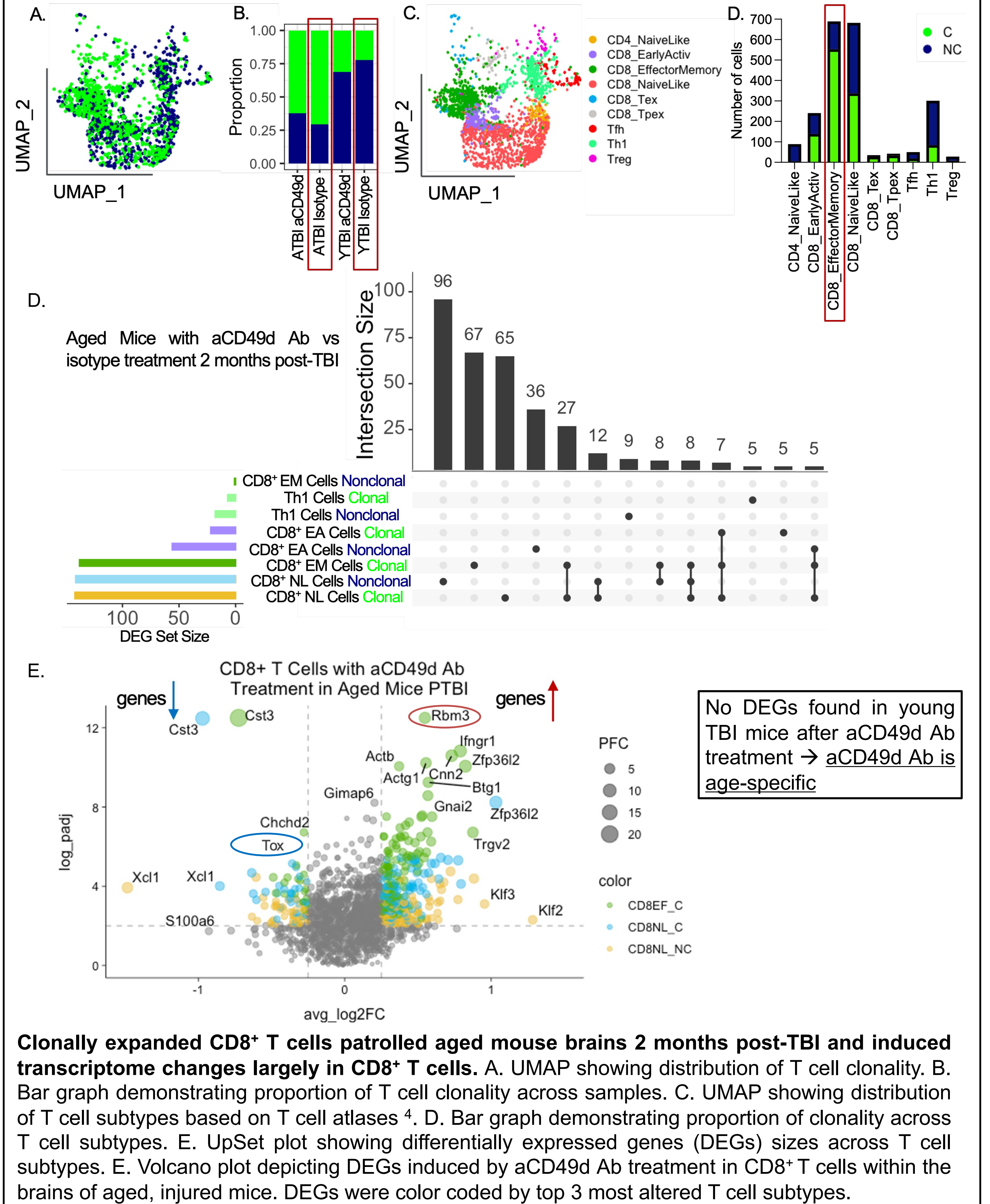
### How's peripheral inflammation affected by aCD49d Ab?



### Does reducing the invasion of lymphocytes change T cell numbers in the injured brains in a long term?



### Does reducing the invasion of lymphocytes change T cell transcriptomes?



## Conclusions

