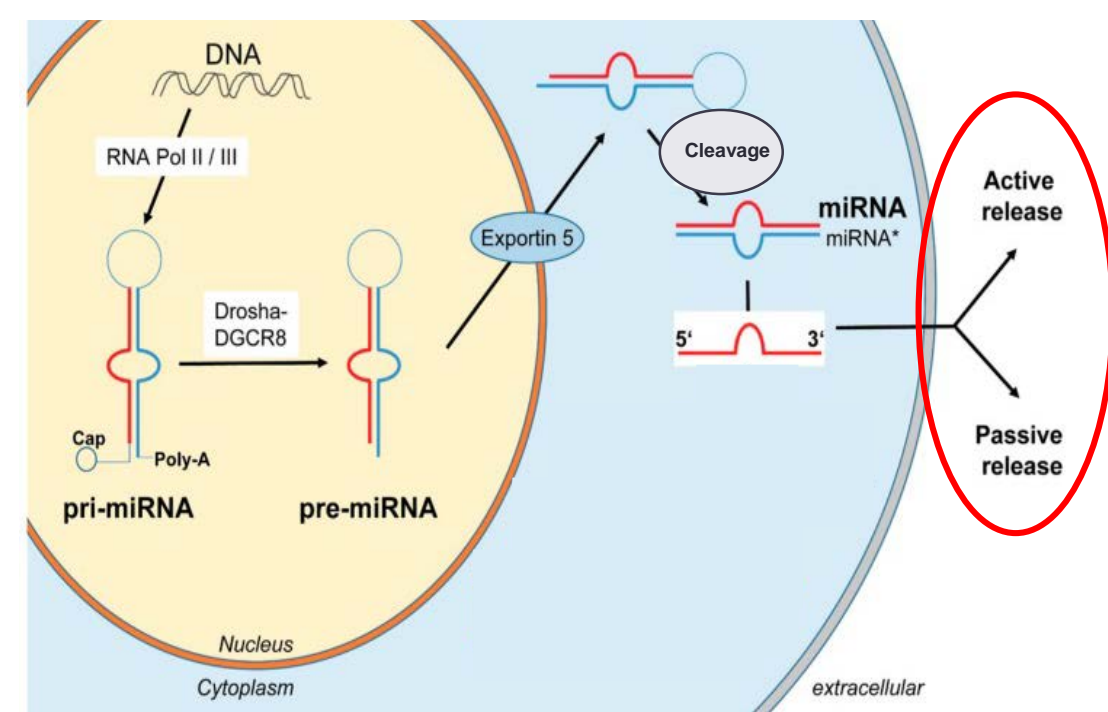


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## BACKGROUND

- Of the 1.15 million people living with HIV (PLWH) in the US, ~40% have an alcohol use disorder (AUD)
- Antiretroviral therapy (ART) has significantly reduced mortality, and HIV infection has emerged as a chronic disease with associated comorbidities such as myopathy and insulin resistance
- Chronic alcohol and HIV independently and synergistically contribute to significant skeletal muscle (SKM) derangements such as atrophy, weakness, and dysfunction
  - Impaired SKM function and mass is a predictor of mortality and decreased quality of life in PLWH
  - Chronic alcohol exposure causes alterations in the epigenome, including microRNAs (miRNA/miR), which is correlated with decreased myogenic potential of satellite cells
- Muscle-specific miRNAs (myomiRs) 1, 133a, 133b, and 206 regulate skeletal muscle function
  - Circulating myomiR abundance is a function of regenerative and degenerative status of the muscle, overall muscle mass, and tissue myomiR expression levels



**Figure 1:** MiRNAs are synthesized and processed inside the cell and can be released into circulation actively or passively.

## HYPOTHESIS

Alcohol-mediated decrease in circulating myomiRs correlates with a decrease in SKM mass and function.

## METHODS

- Plasma samples collected from a cohort of subjects from the LSUHSC HIV Outpatient Program with and without AUD (New Orleans Alcohol and HIV (NOAH) study)
  - RNA extracted
  - qPCR utilized to determine absolute miRNA levels
- Measures of AUD severity, muscle hand grip strength, and 4-meter walk test, and lean mass collected
  - TLFB=timeline follow back, 30-day drinking history
  - AUDIT=Alcohol Use Disorder Identification Test; AUDIT>8 associated with harmful or hazardous drinking
  - PETH=phosphatidylethanol, a membrane phospholipid formed in the presence of alcohol
  - LDH=lifetime drinking history
  - Participants were categorized as “low,” “mid,” and “high” based on TLFB and corresponding AUDIT scores

## ACKNOWLEDGMENTS:

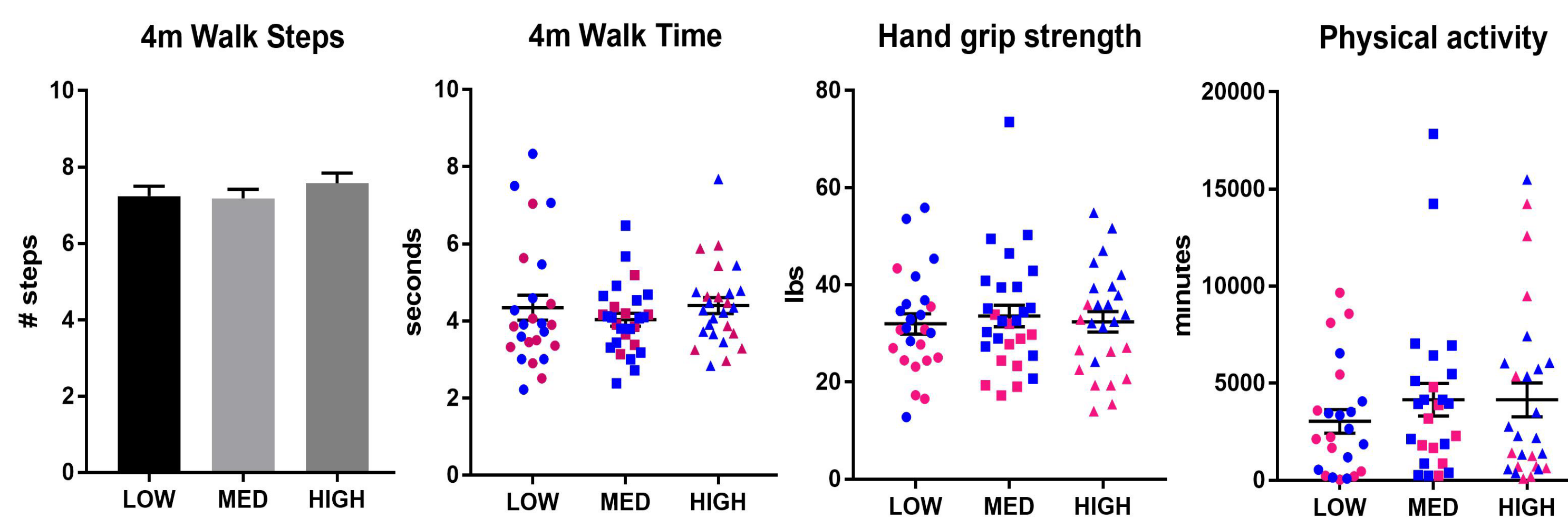
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## RESULTS

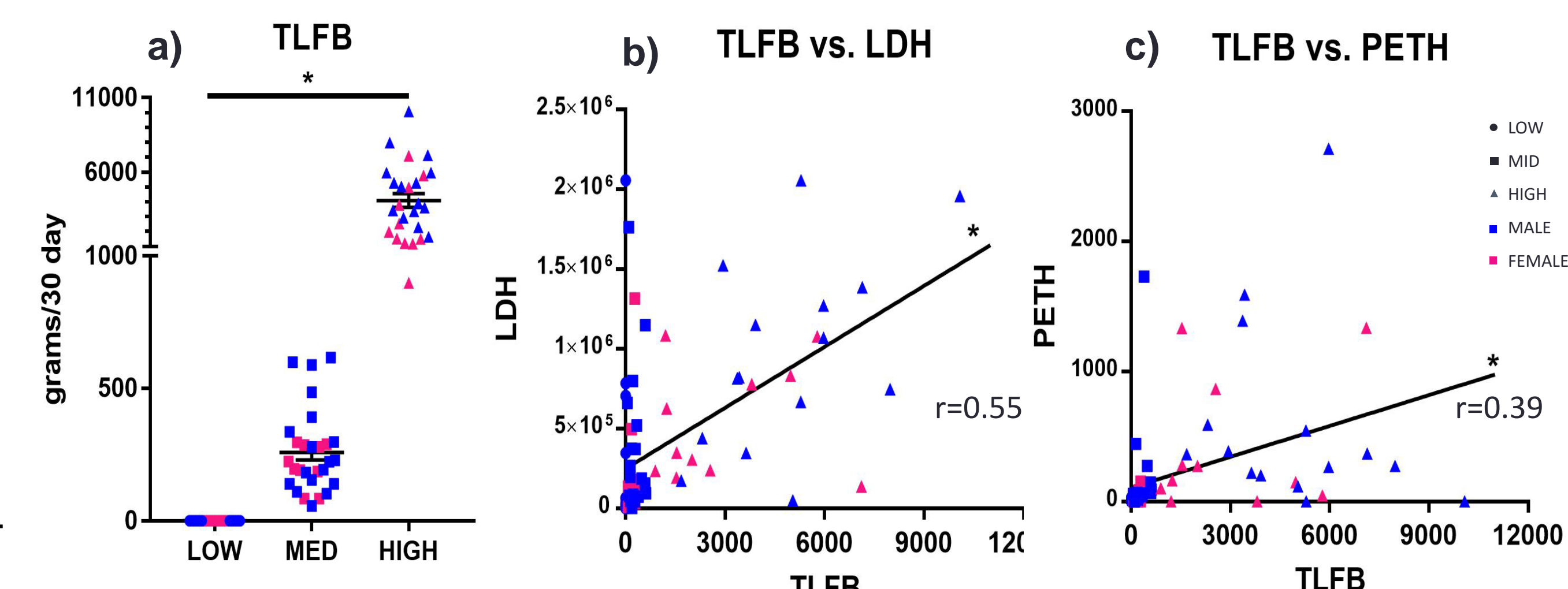
	TLFB 30-day range (g)*	AUDIT*	PETH* (ng/mL)	Gender (% male)	Age (yrs)	BMI (kg/m <sup>2</sup> )	Lean mass (kg)	Fat mass (kg)	W/H ratio	Total physical activity (min)
Low	0	1 ± 0.2	3 ± 2	52	49 ± 1.5	30 ± 1.0	56.3 ± 2.5	29.7 ± 2.6	0.94 ± 0.02	3036 ± 602
Mid	56-616	9 ± 0.8	138 ± 64	64	49 ± 1.3	29 ± 2.3	60.3 ± 2.3	29.2 ± 4.9	0.94 ± 0.02	4152 ± 837
High	898.8-10080	24 ± 1.4	522 ± 128	58	47 ± 1.4	26 ± 1.3	55.9 ± 2.8	19.9 ± 2.7	0.96 ± 0.01	4146 ± 879

**Table 1:** Demographic data of study participants. Values are AVG ± SEM unless otherwise noted. \*P<0.05 One-way ANOVA.

## RESULTS

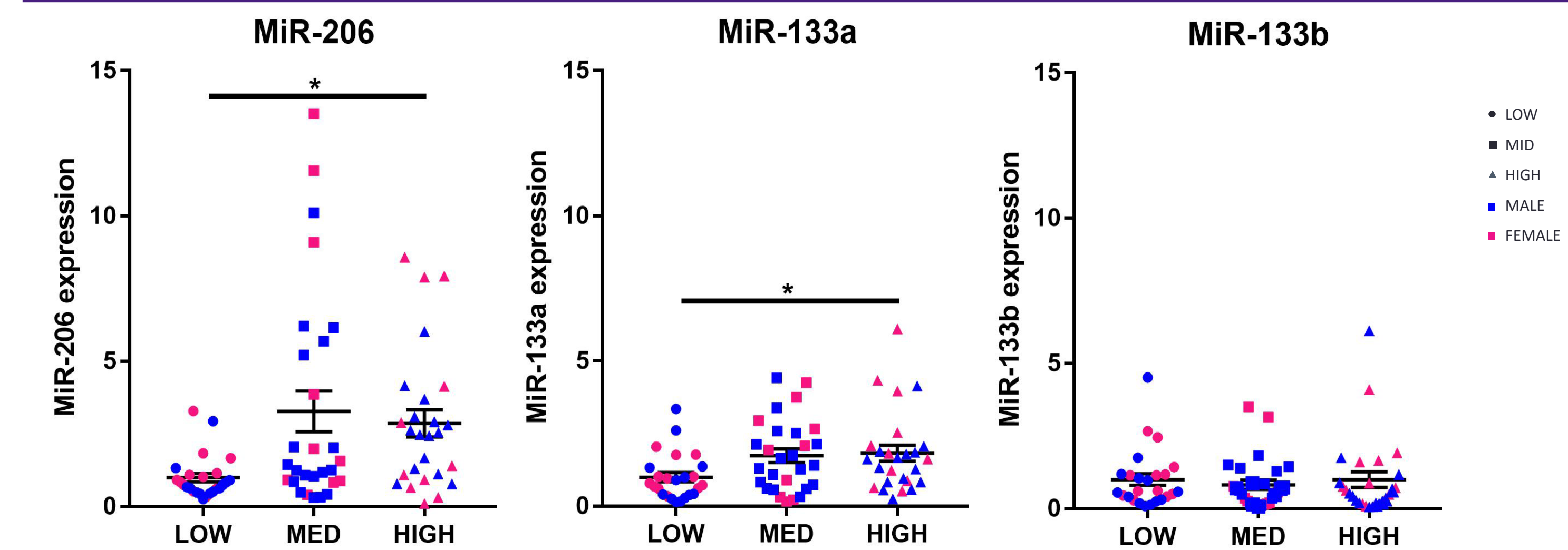


**Figure 2:** Physical ability measures for each group. There were no significant differences between groups.

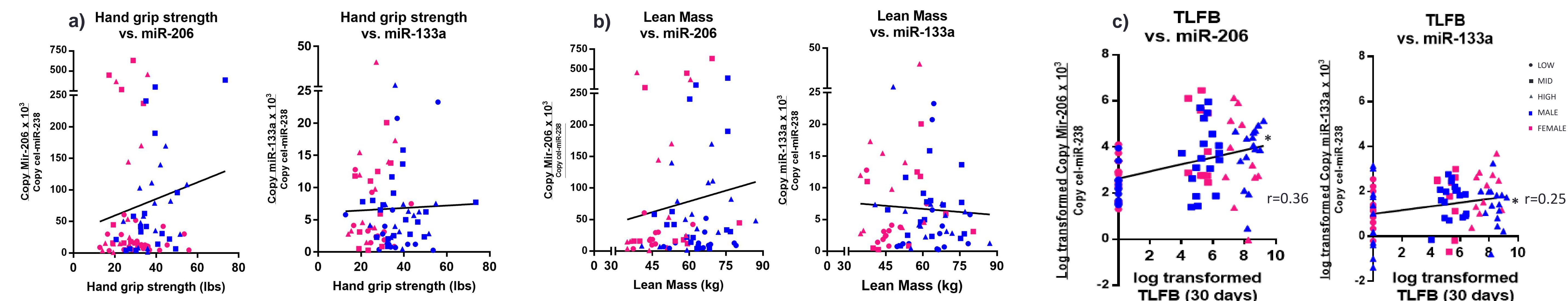


**Figure 3:** Timeline follow back scores for each group. (a) TLFB is significantly higher in MED and HIGH groups compared to LOW. TLFB positively correlates with (b) LDH and (c) PETH. \*p<0.05.

## RESULTS



**Figure 4:** MiR-206 expression was significantly different between groups. MiR-133a and MiR-133b were not significantly different between groups. MiR-1 was not detectable. \*p<0.05 One-way ANOVA.



**Figure 5:** There was no significant correlation between miR-206 and miR-133a expression and (a) hand grip strength or (b) lean mass. There was a significant correlation between both miR-206 and miR-133a and (c) TLFB.

## CONCLUSIONS

- Skeletal muscle-enriched miRs 133a and 206 were significantly increased in mid- and high-drinkers, while miR-133b was unchanged.
- miR-206 and miR-133a were not correlated with measures of skeletal muscle function or mass, but they were positively correlated with 30-day drinking history.
- BMI, total physical activity, and LDH are confounding factors, and further analysis will control for these variables.
- Whether a composite miRNA score correlates with skeletal muscle mass and function will be determined.
- Identifying a biomarker for SKM function could provide a path towards improving clinical outcomes in PLWH.