



# Sleep Fragmentation in 16p11.2 Deletion Mouse Model of Autism

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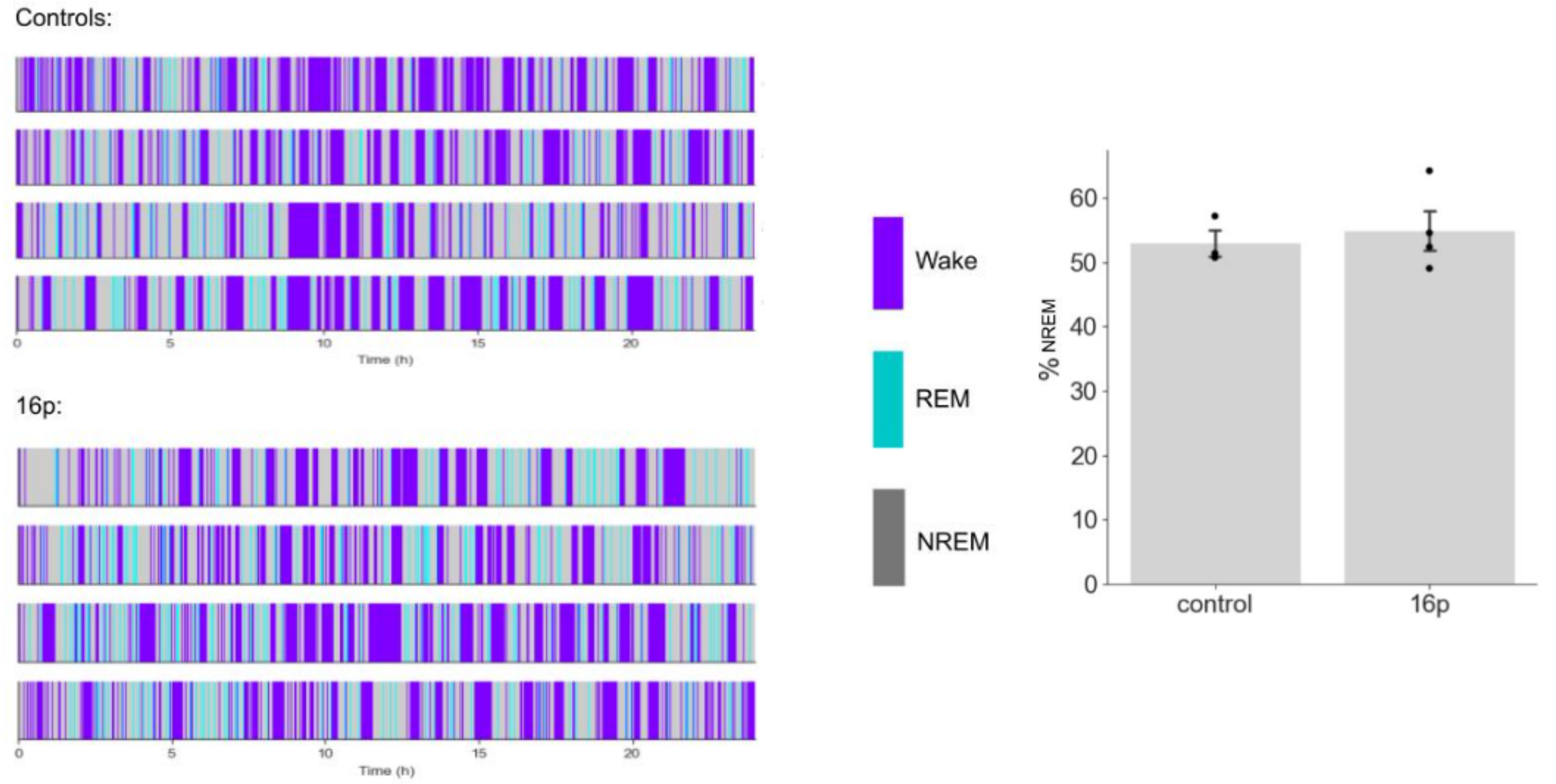


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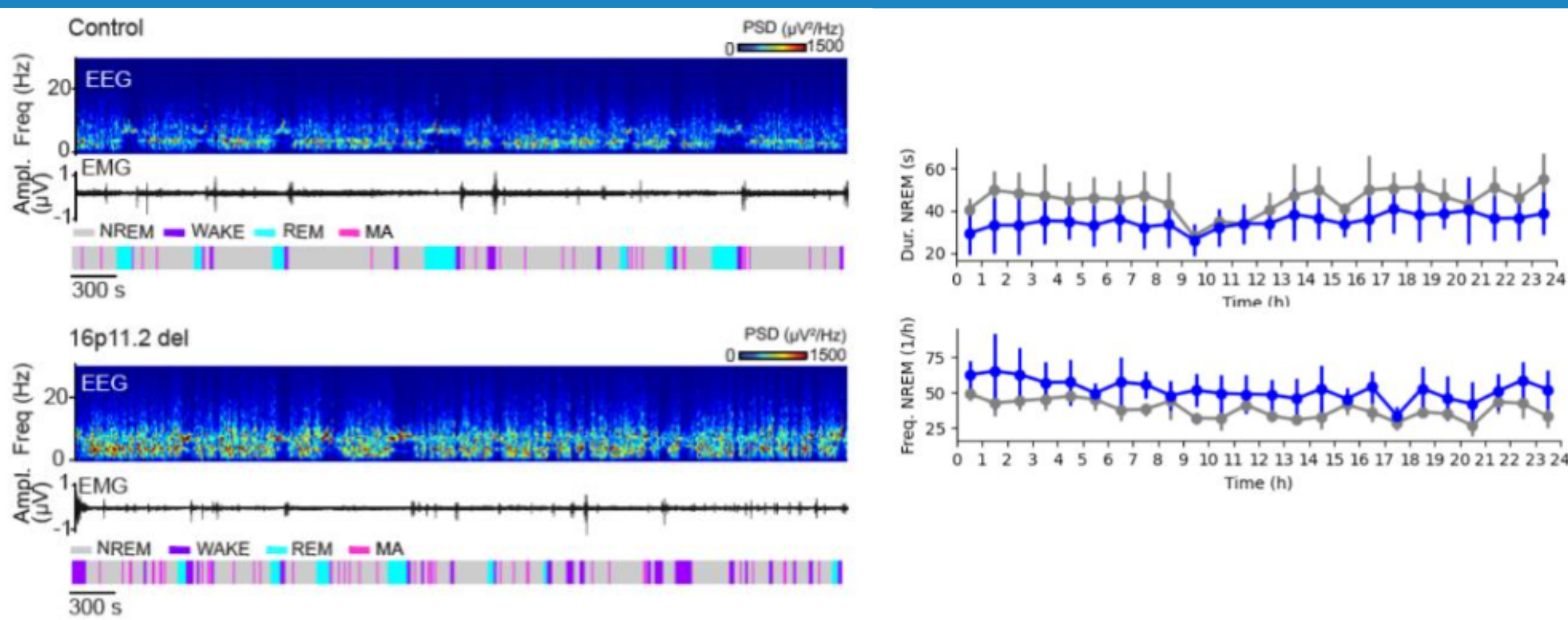
## Objective

- Individuals with autism spectrum disorder often suffer sleep disturbances/deficits
- This study aims to determine if the 16p mouse line is a valid ASD mouse model for studying sleep
- These figures show the 16p mouse line exhibits similar sleep disturbances (like sleep fragmentation increased awakenings) to those seen clinically in ASD patients

## 16p mice and controls spend comparable amount of time in Wake, NREM, and REM sleep



## Fragmented sleep in 16p mice:



Increased number of microarousals in 16p mice vs. controls

NREM bouts are more frequent but shorter in 16p mice compared to controls

## Approach

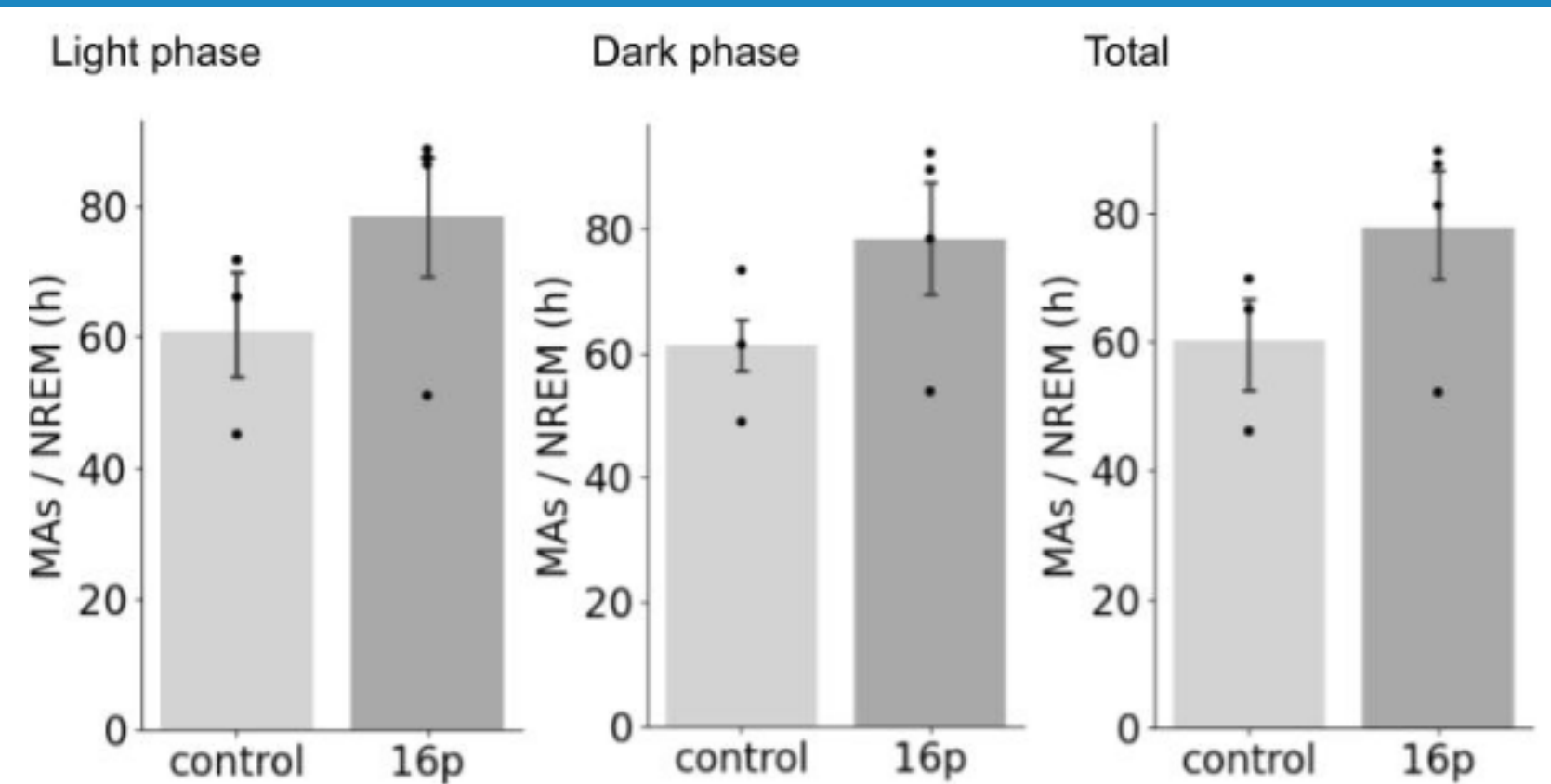
- The 16p knockout mouse has a deletion at chromosomal region 16p11.2, and studies have shown they display hyperactivity and sex-related bias of sleep symptoms
- Used electroencephalogram (EEG) and electromyography (EMG) recordings of 16pXB129 mice and control
  - 24 hour baseline recordings

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## Conclusions

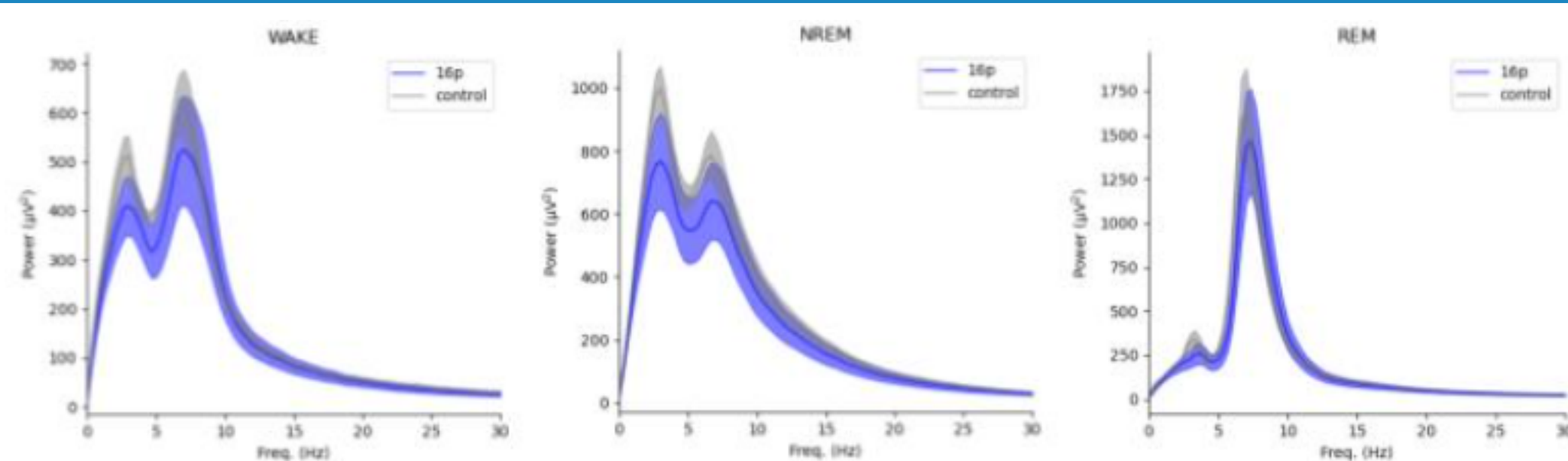
- There was no difference in NREM percentage between 16p mice and controls
- While there is no difference in NREM percentage, microarchitecture of sleep in 16p mice is more fragmented compared to controls
- Exploring neural circuit mechanisms contributing to this sleep fragmentation is a future direction

## Microarousals and infraslow rhythm

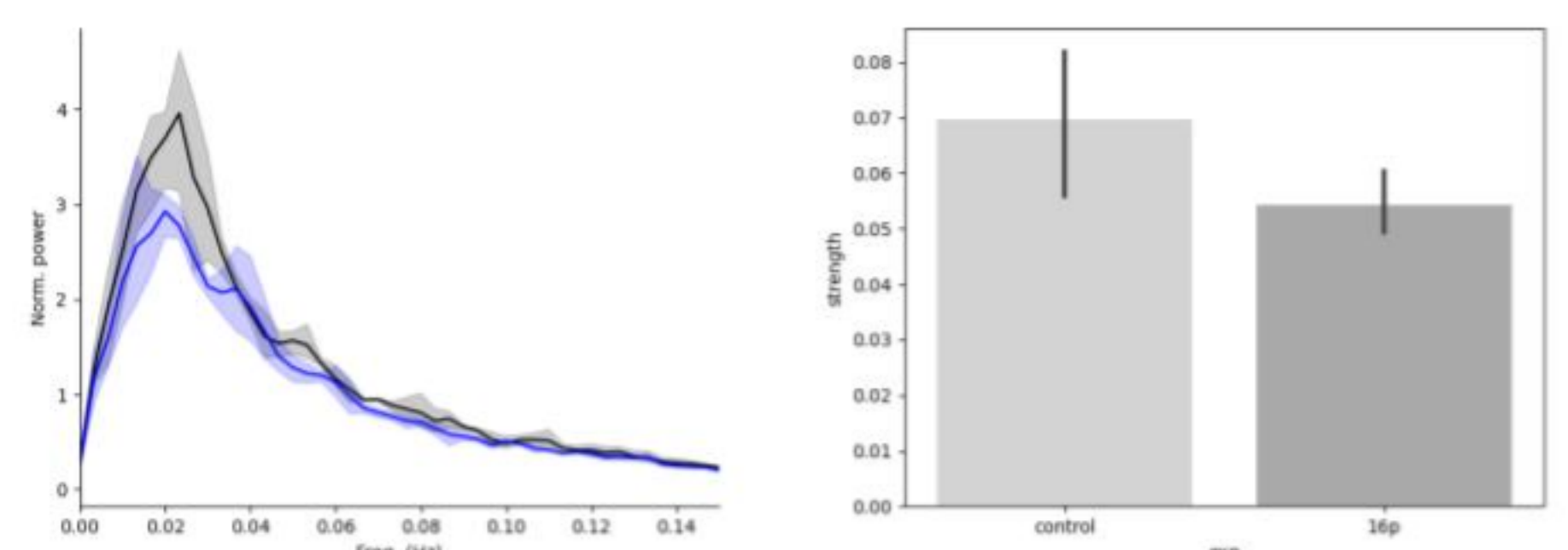


More microarousals in 16p mice during light and dark phase

## Sleep spectra



Similar delta, theta, and sigma power during Wake, NREM, and REM sleep



Infraslow rhythm is weaker in 16p mice

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