

# Characterizing Satellite Quenching in The Local Group



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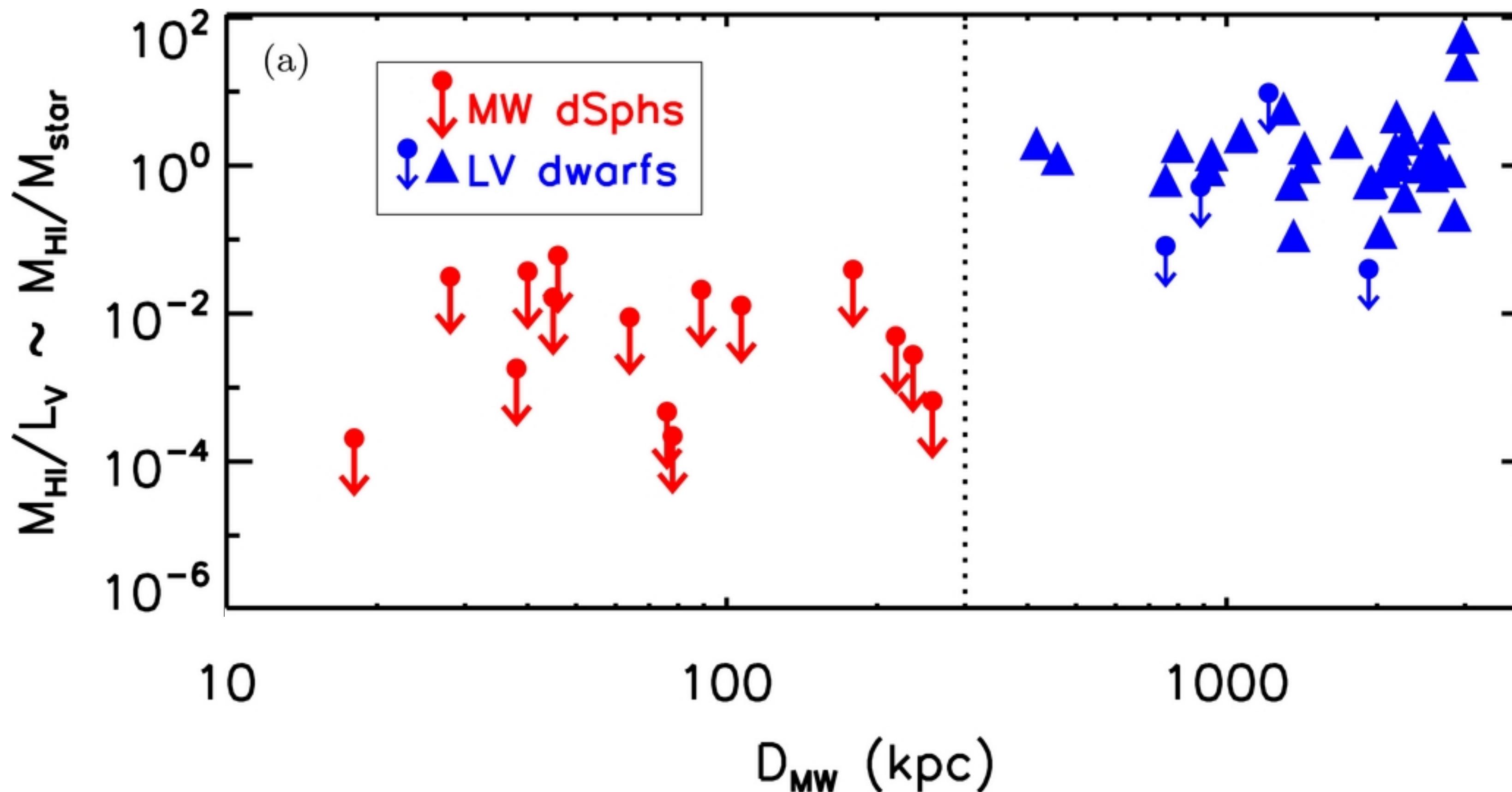
## Collaborators

Michael Cooper, UC Irvine  
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Katy Rodriguez Wimberly, UC Irvine  
Michael Boylan-Kolchin, UT Austin  
James Bullock, UC Irvine  
Shea Garrison-Kimmel, Caltech  
Marcel Pawlowski, AIP  
Coral Wheeler, Caltech

Science in Our Own Backyard with WFIRST  
Wednesday, June 19, 2019

# Local Volume Dwarf Galaxies

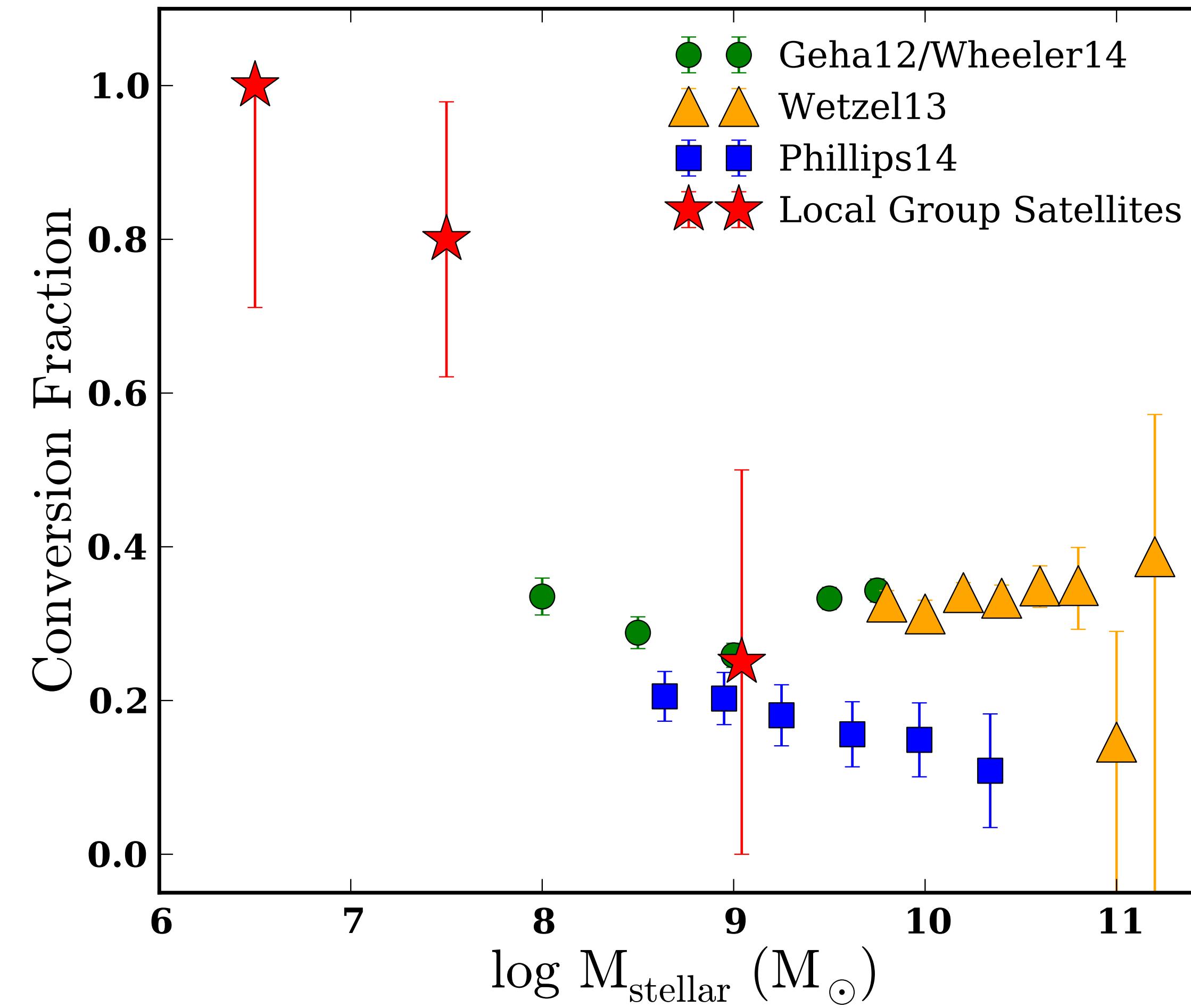
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Spekkens et al. (2014)

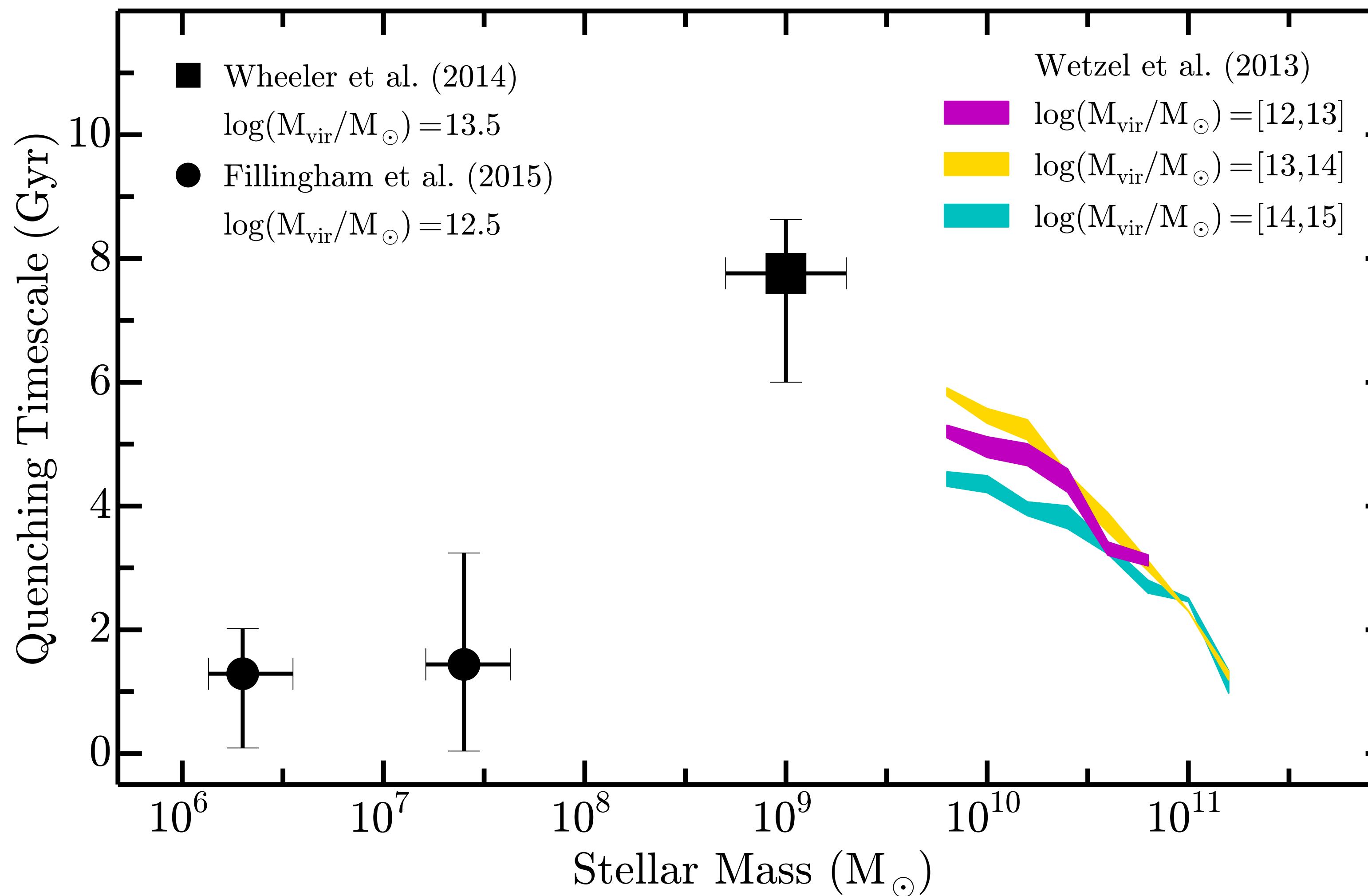
# Satellite Quenching Efficiency

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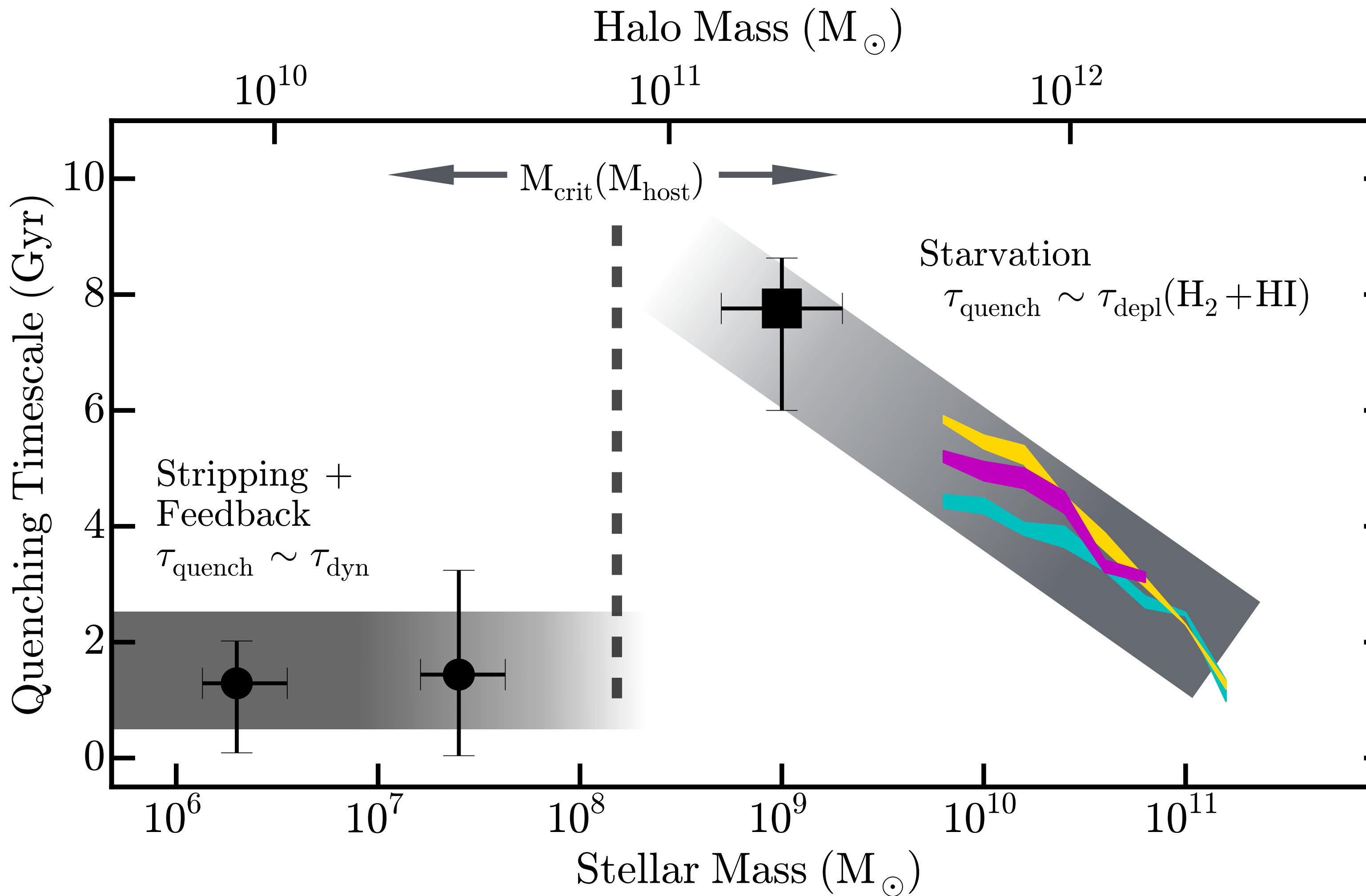
**Wheeler et al. (2014)**  
Phillips et al. (2015)

# Satellite Quenching Timescales



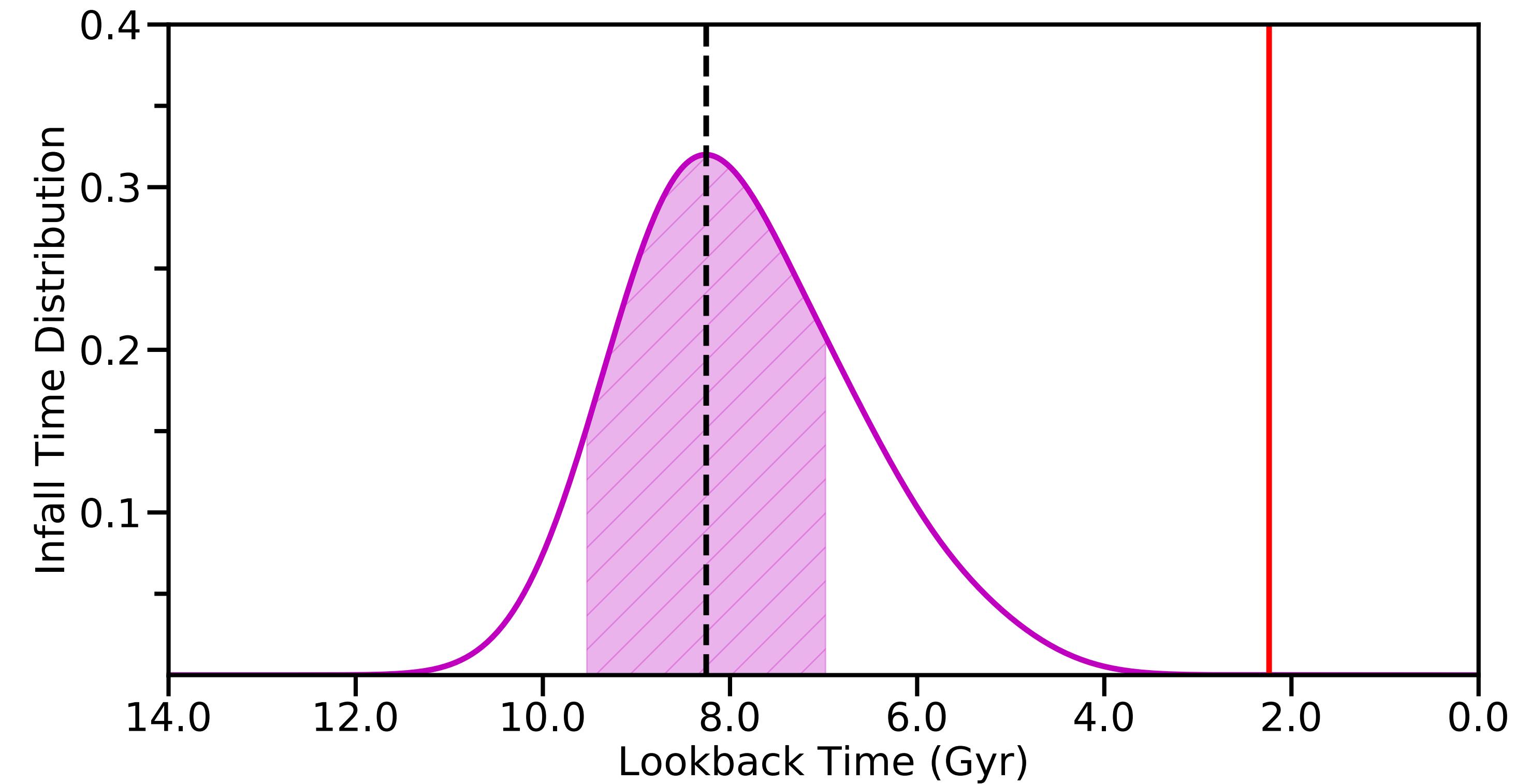
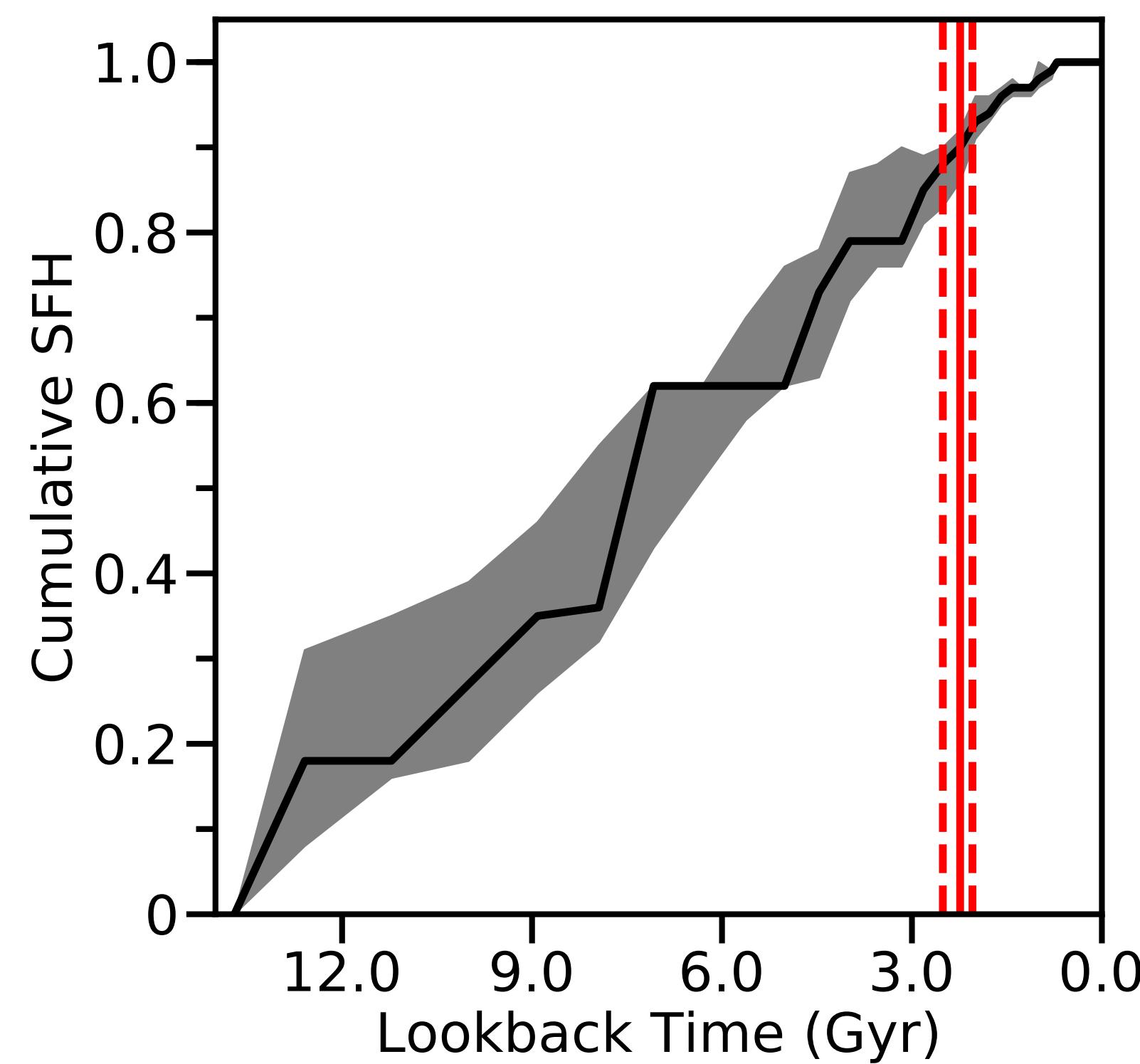
**Fillingham et al. (2015)**  
Wetzel et al. (2013, 2015)  
De Lucia et al. (2012)

# Environmental Quenching



Fillingham et al. (2015, 2016)

# Fornax



Quenching Times

Star Formation Histories - HST, WFIRST

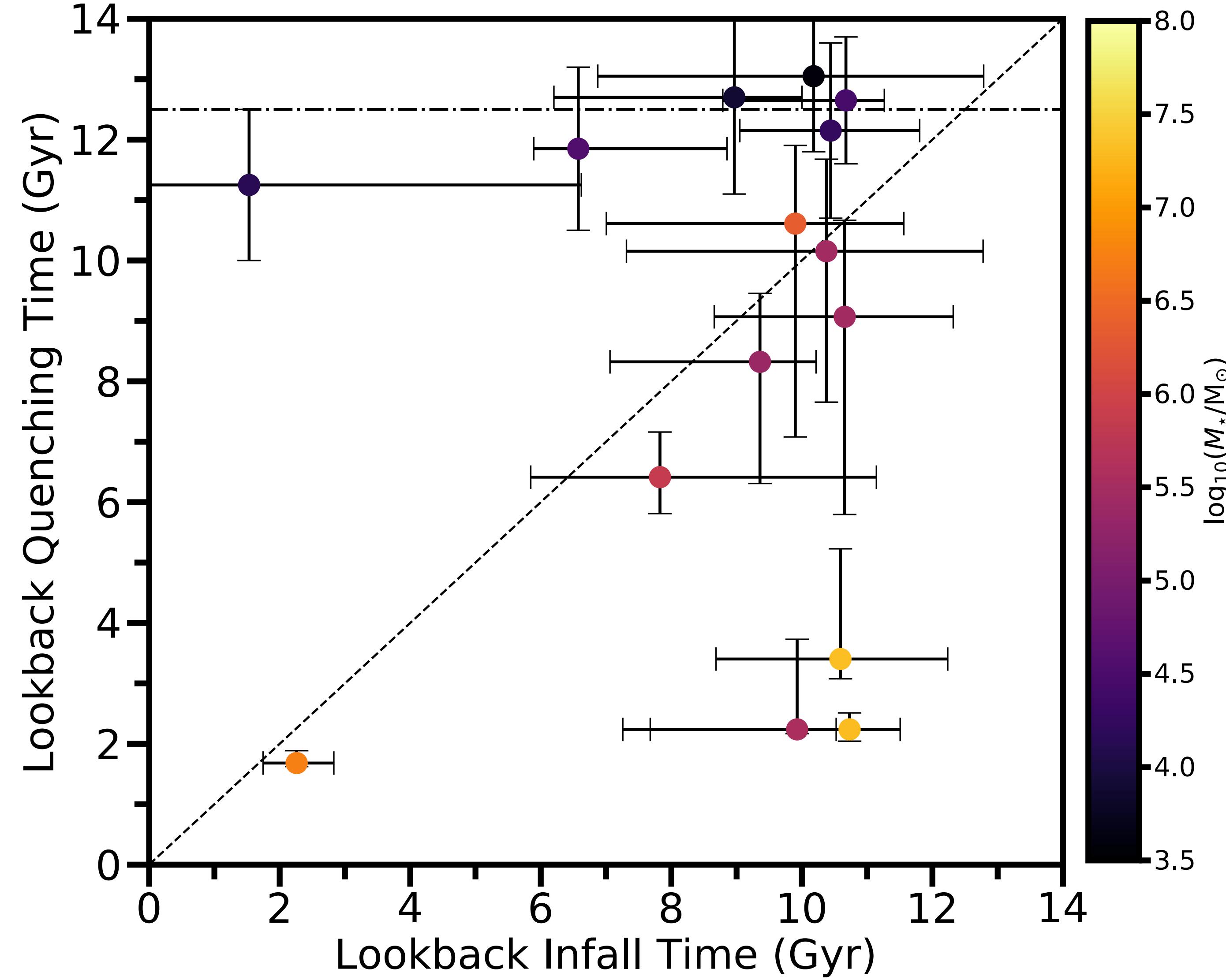
Infall Times

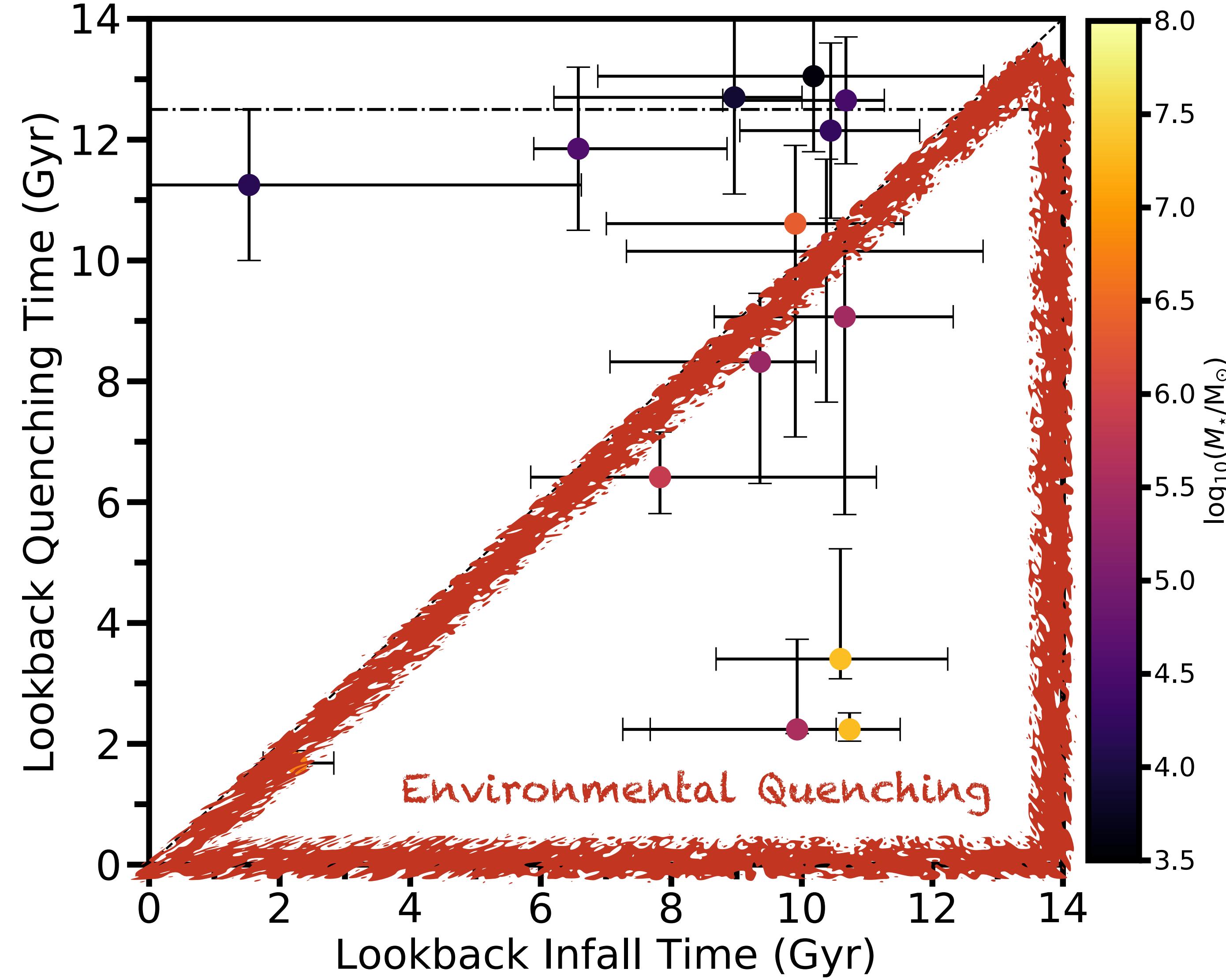
Proper Motions - Gaia, HST, WFIRST

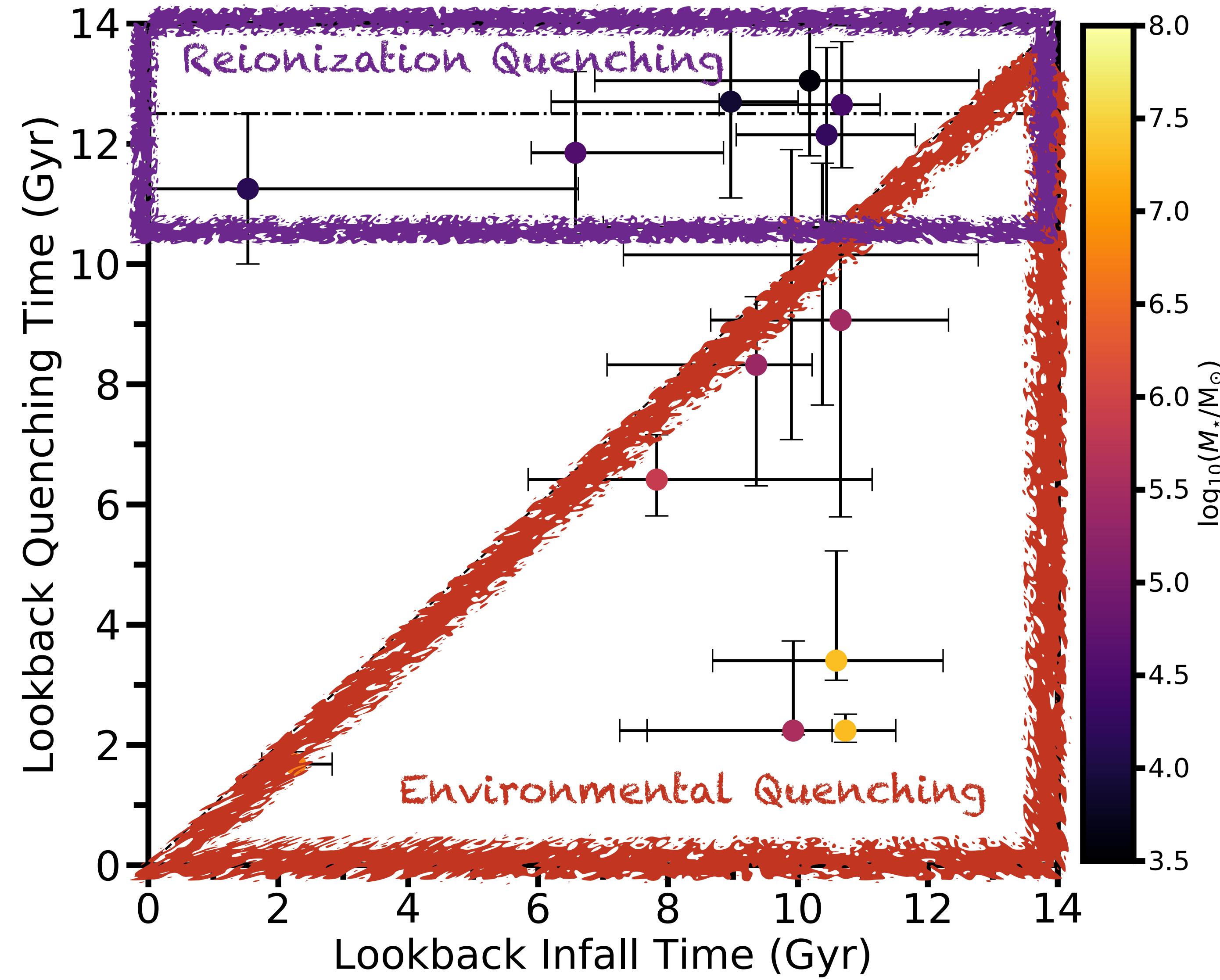
Fillingham et al. (MNRAS submitted, arXiv:1906.04180)

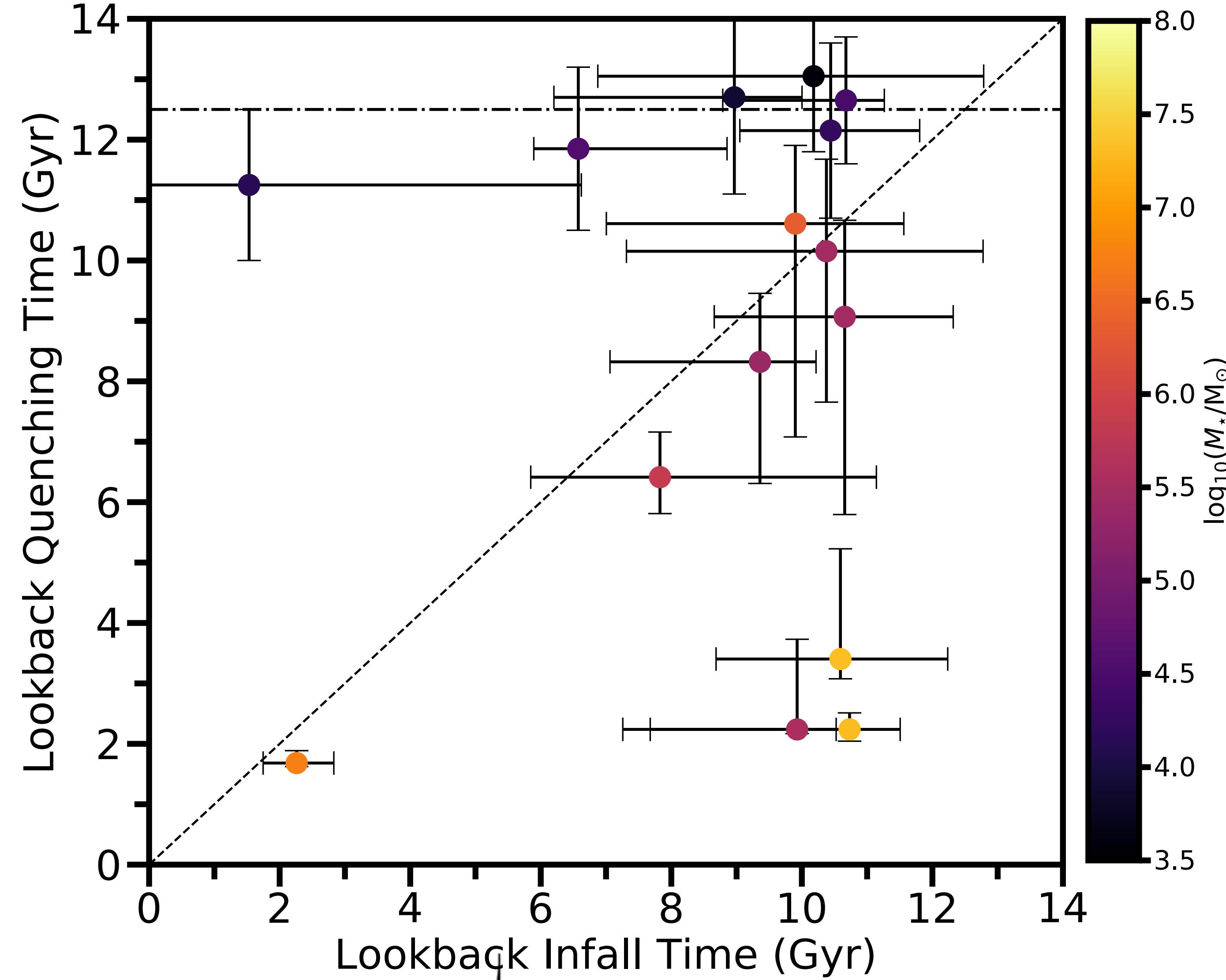
Weisz et al. 2014

Brown et al. 2014

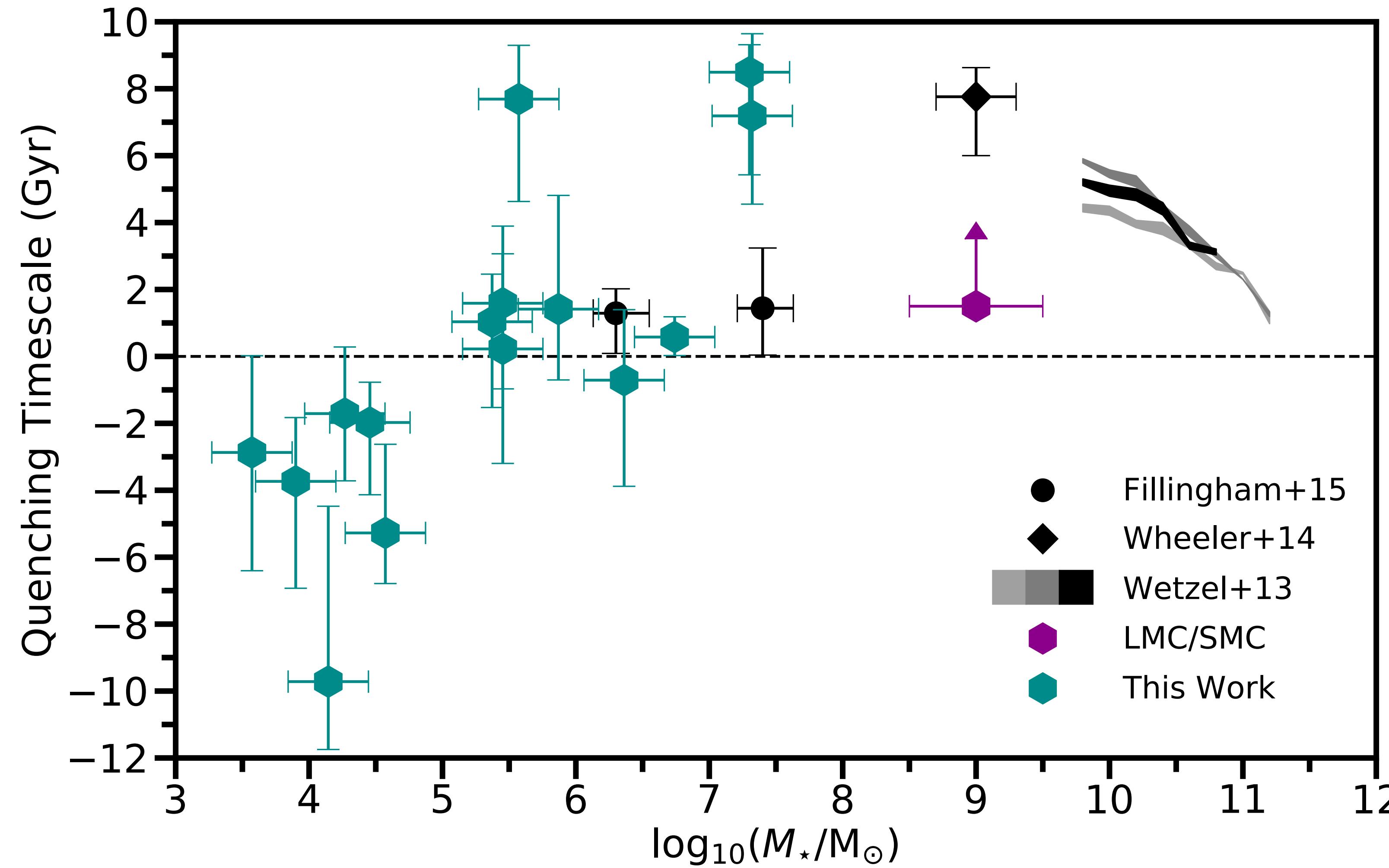




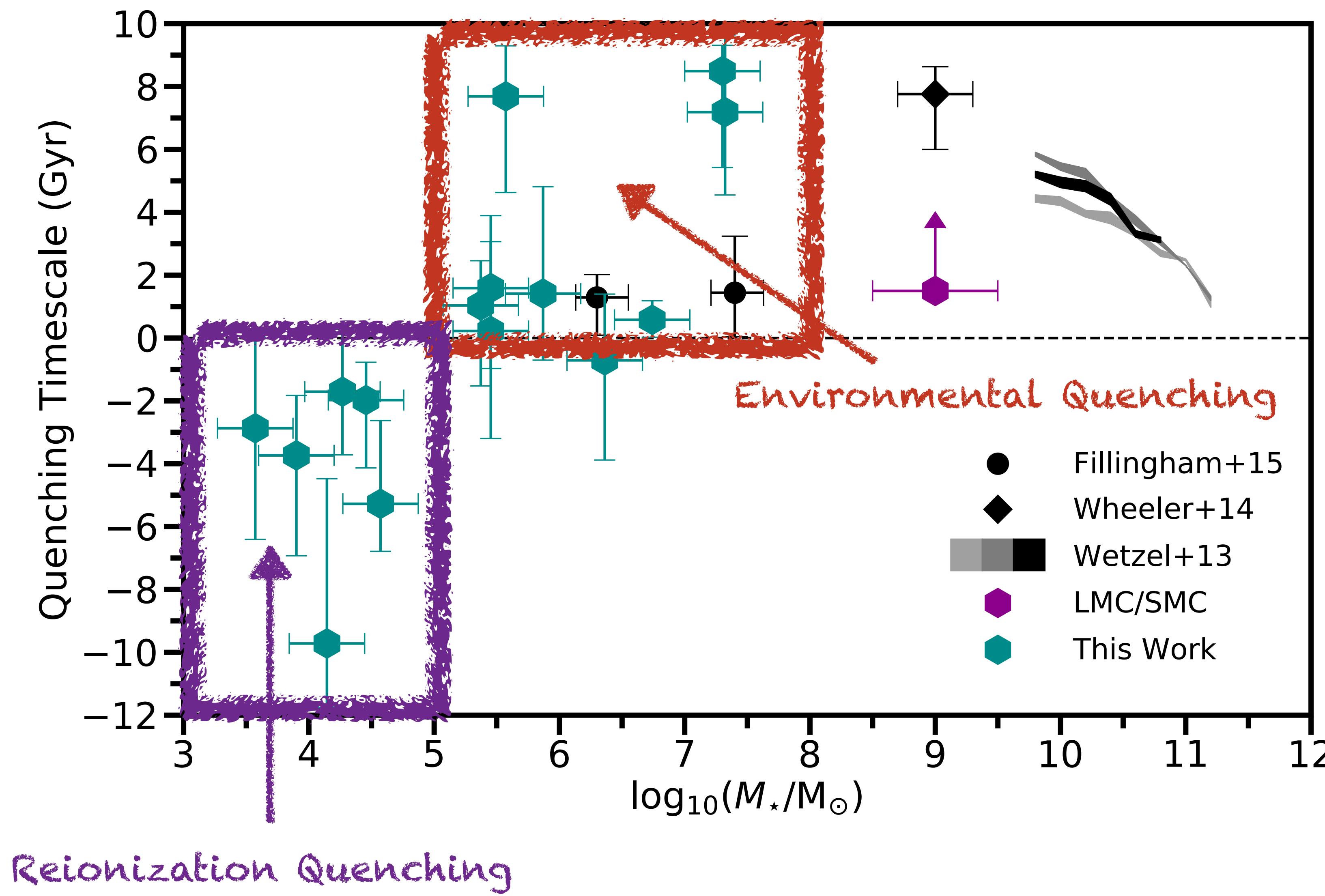




$$\tau_{\text{quench}} = t_{\text{infall}} - t_{\text{quench}}$$

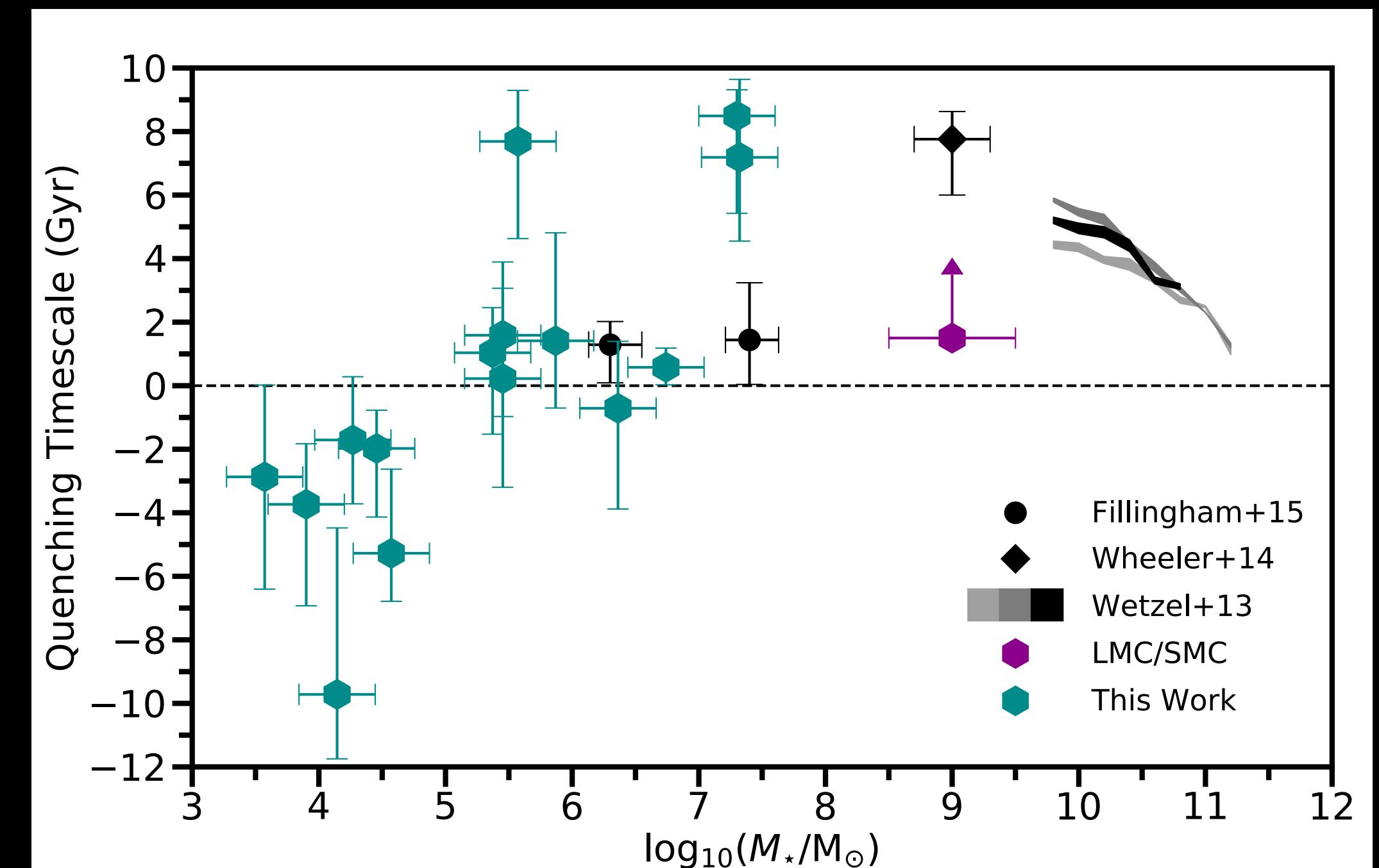
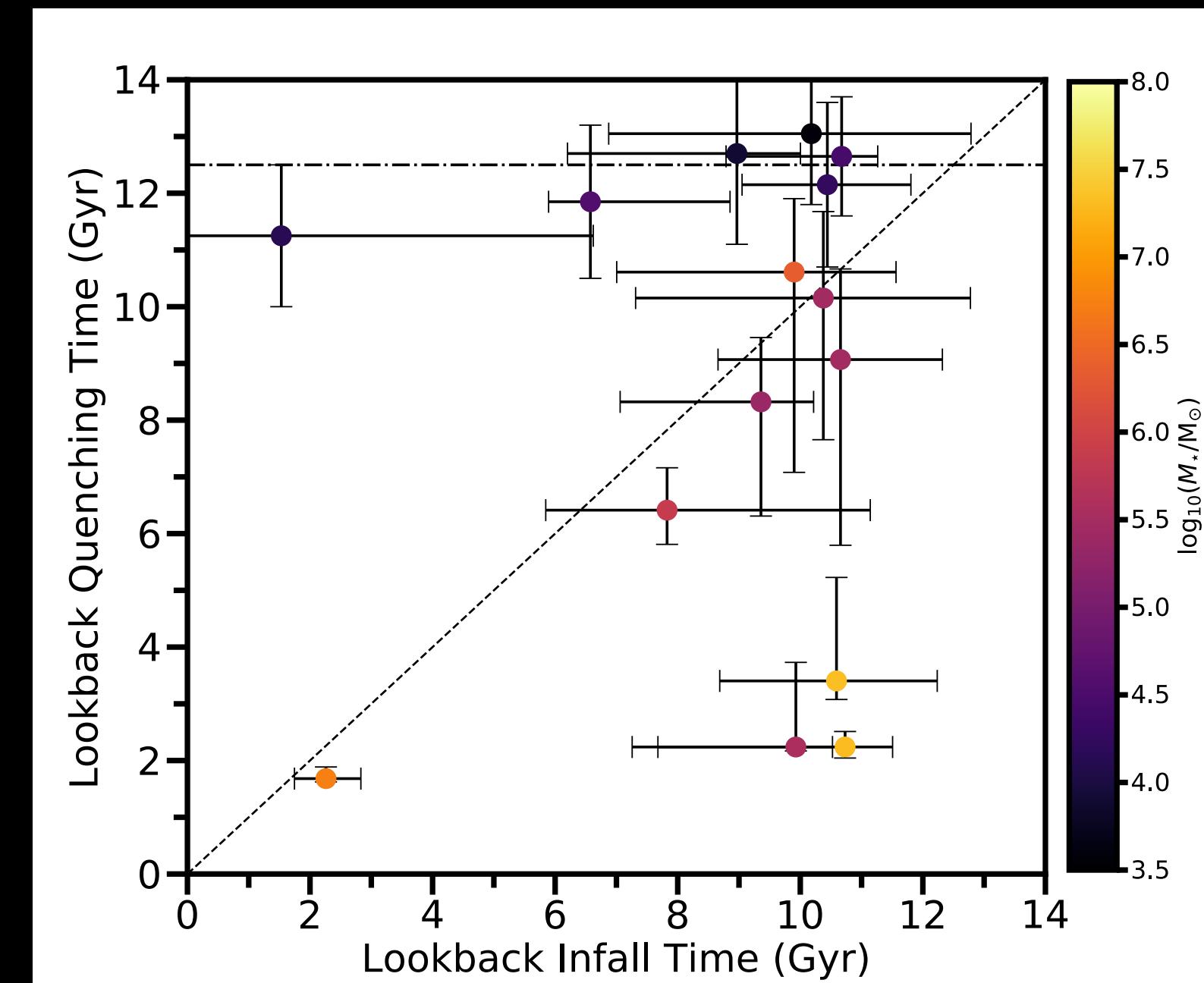


$$\tau_{\text{quench}} = t_{\text{infall}} - t_{\text{quench}}$$



# Summary:

- Object-by-object studies around the MW are generally consistent with previous work.
- Space-Based (*WFIRST*, *JWST*, *HST*) resolved stellar population studies can strongly constrain the quenching times for LV galaxies.





A wide-angle photograph of the night sky, centered on the Milky Way galaxy. The image shows a dense band of stars and interstellar dust, appearing as a bright, glowing band across the center. The sky is dark blue to black, with numerous small white stars visible. In the lower right quadrant, there is a faint, diffuse purple glow, likely from a distant galaxy or nebula.

Thanks!