

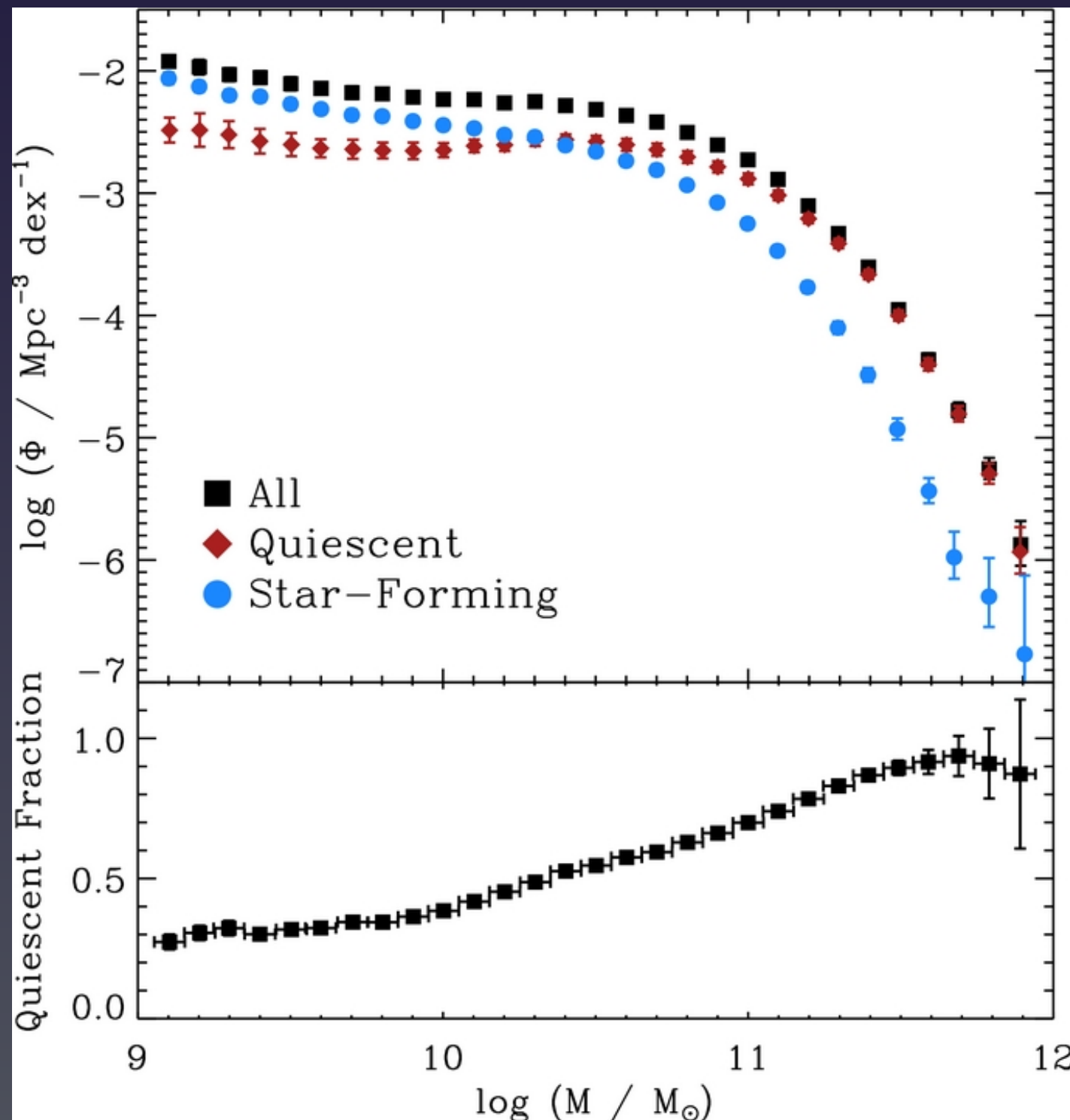


THE SATELLITE POPULATION AROUND LUMINOUS RED GALAXIES IN THE LEGACY SURVEYS



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PALOOZA 2021 * 23 Feb. 2021*

Characteristics of Massive Galaxies

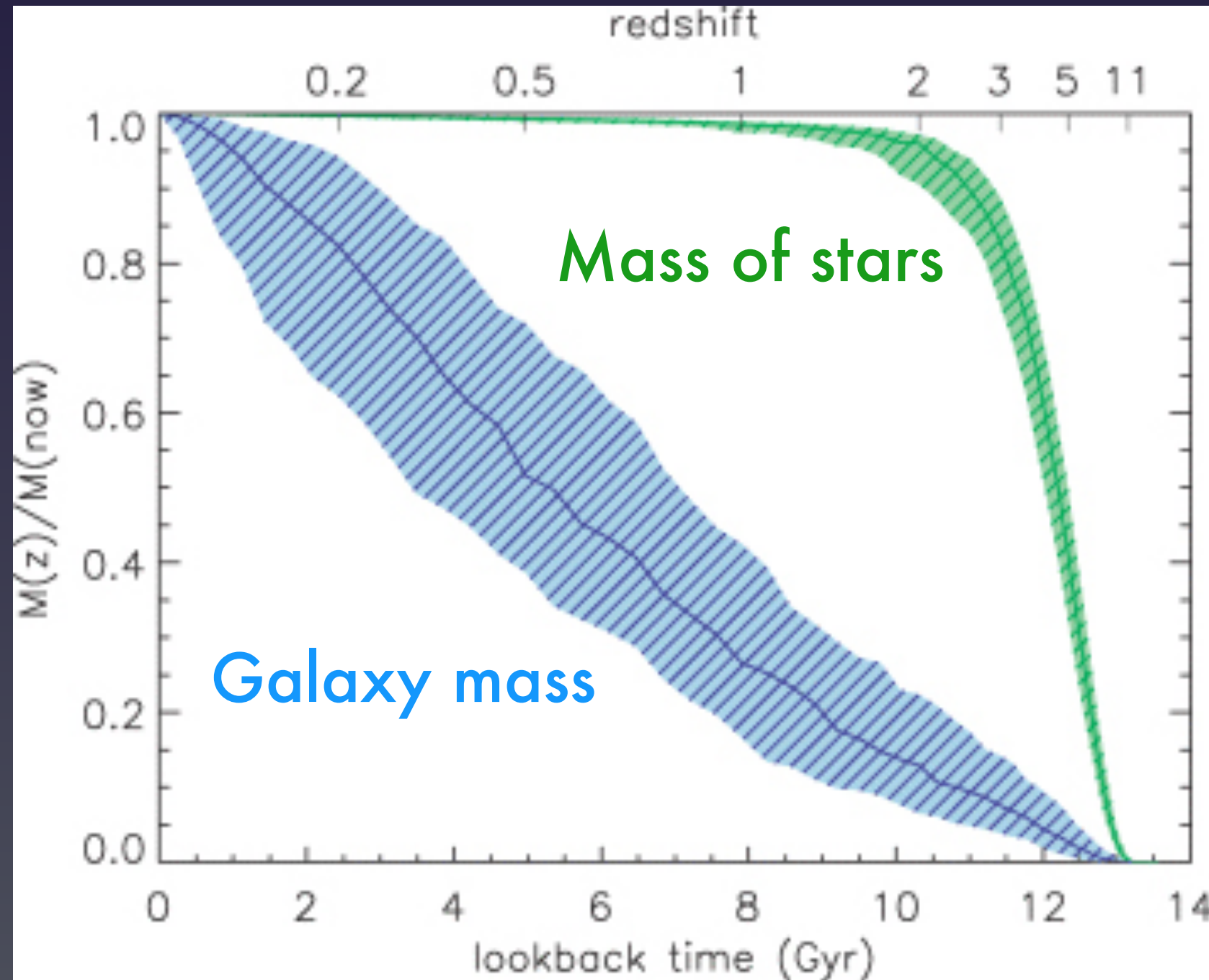


Massive galaxy characteristics:

1. Little cold gas
2. Old stellar pops
3. Very low specific star formation rate

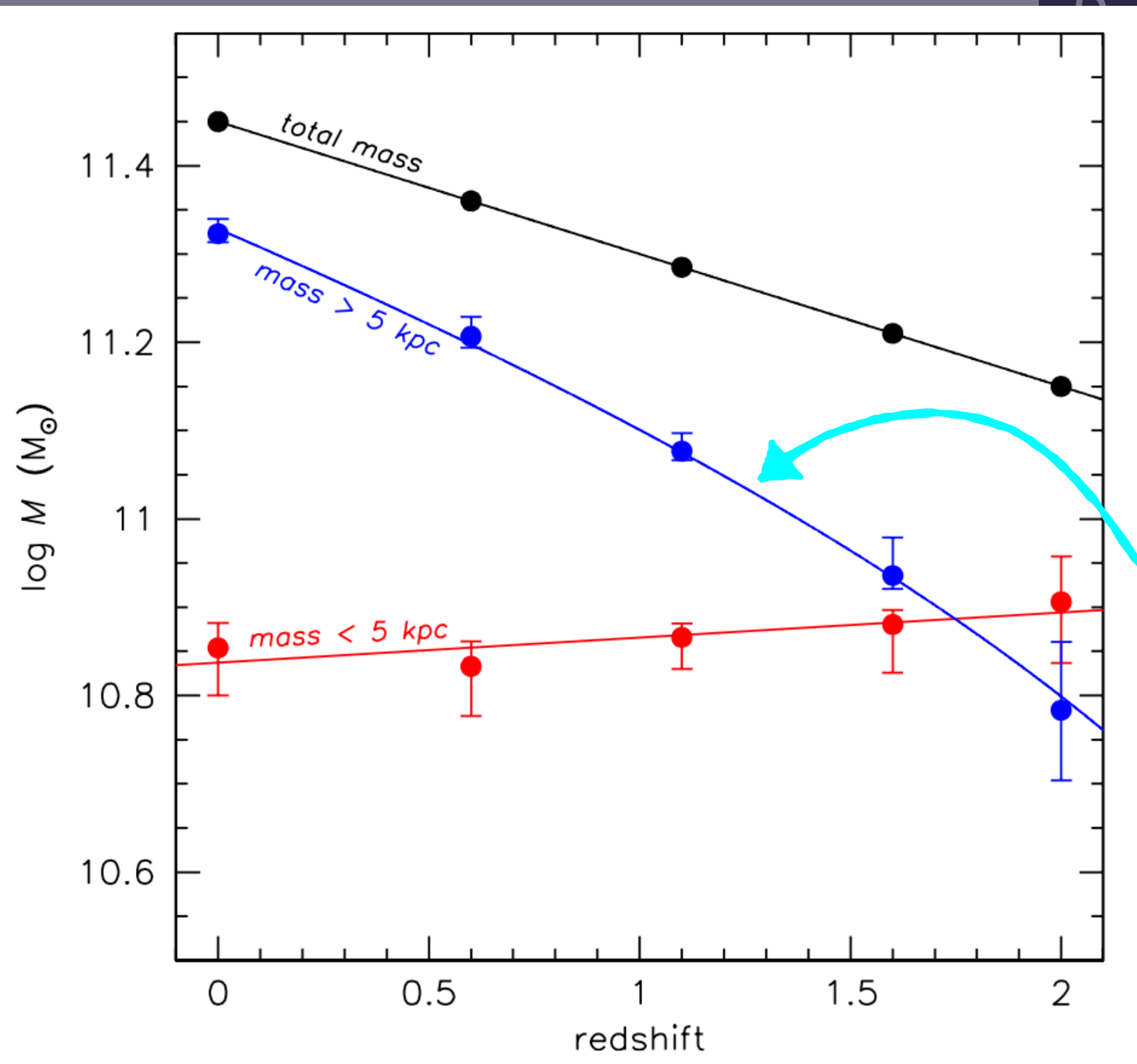
How massive galaxies form is one of the biggest questions in galaxy evolution

Motivation



De Lucia & Blaizot 2007

Motivation

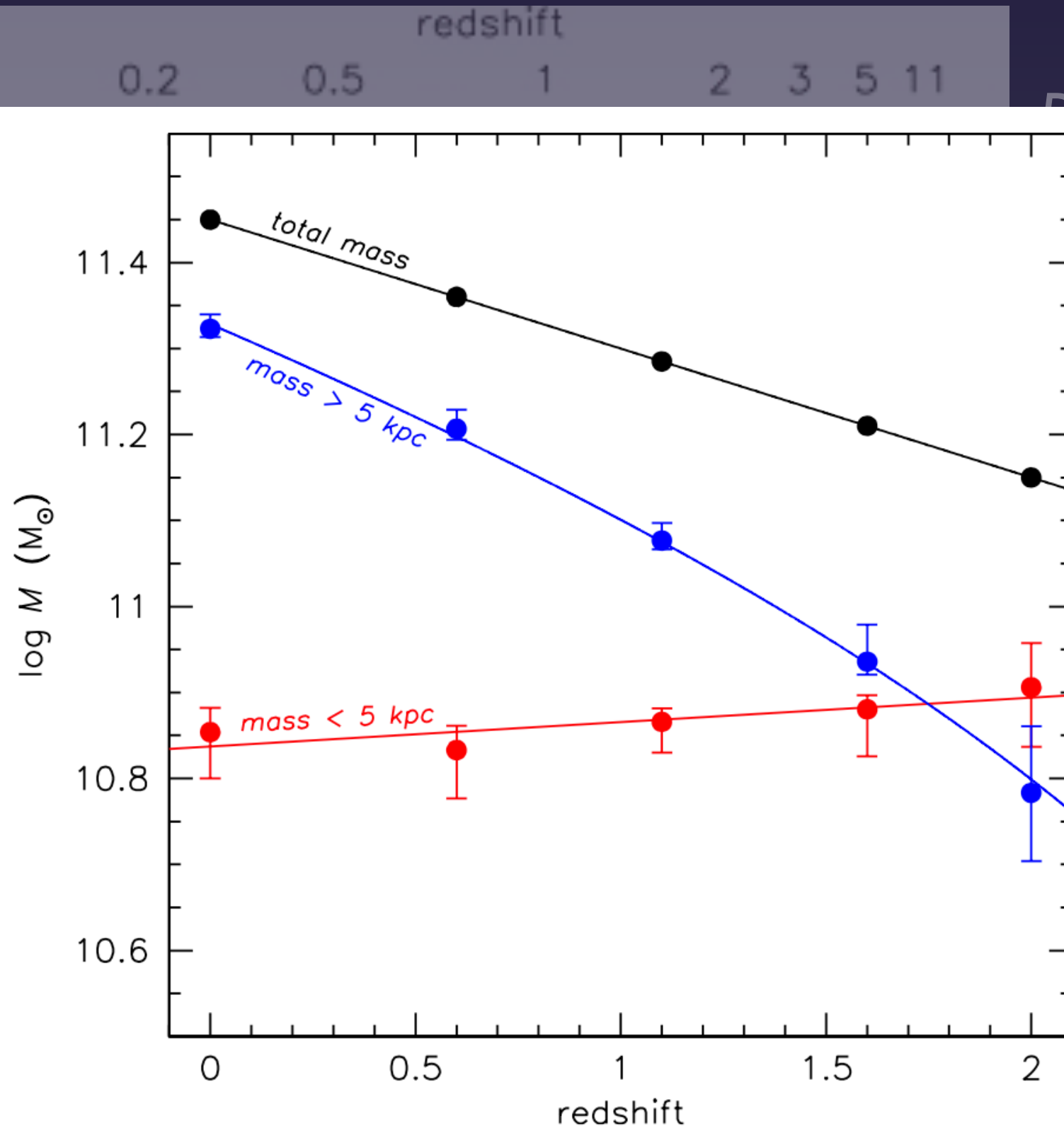


De Lucia & Blaizot 2007

van Dokkum+2010

Caused by
"dry mergers"

Motivation

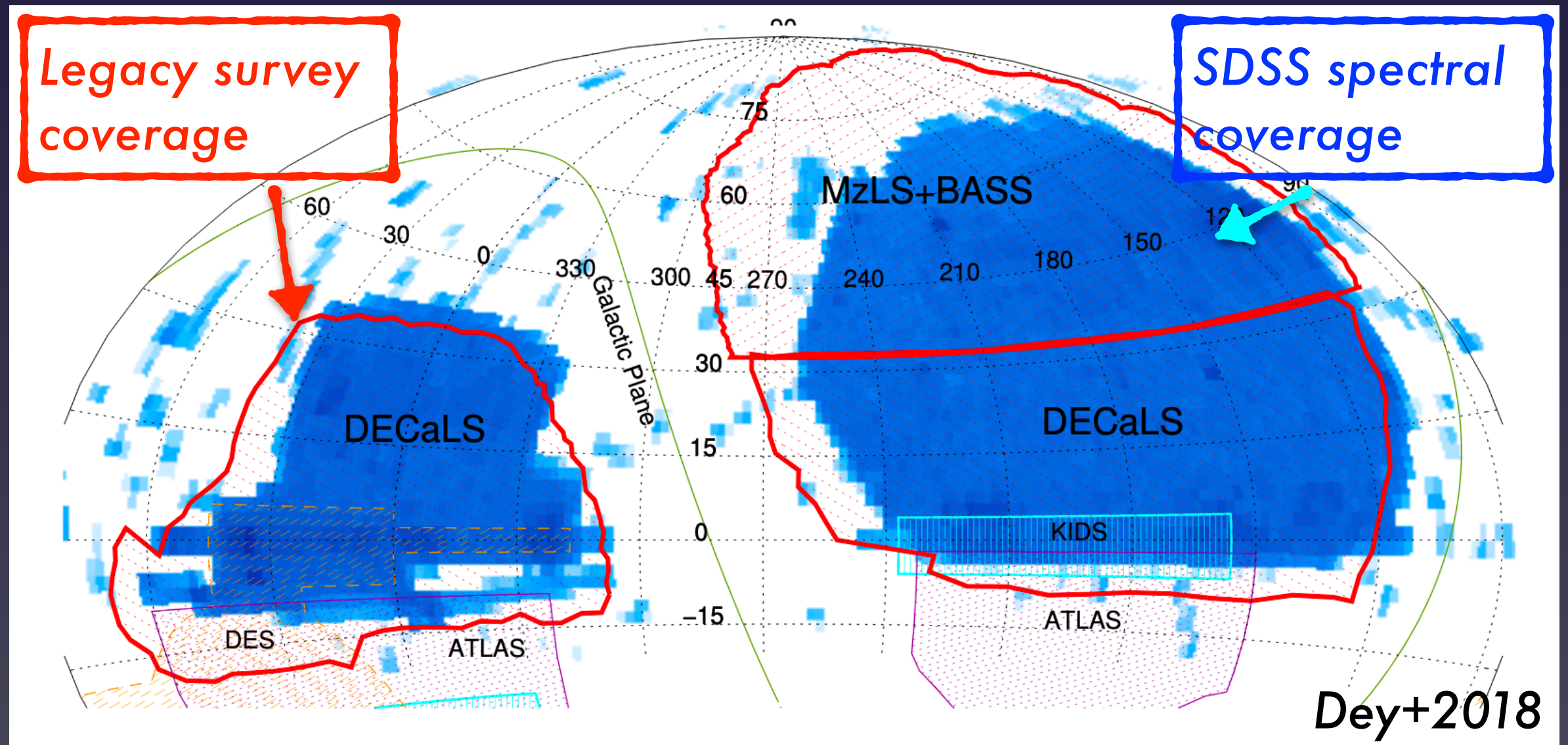


Lucia & Blaizot 2007

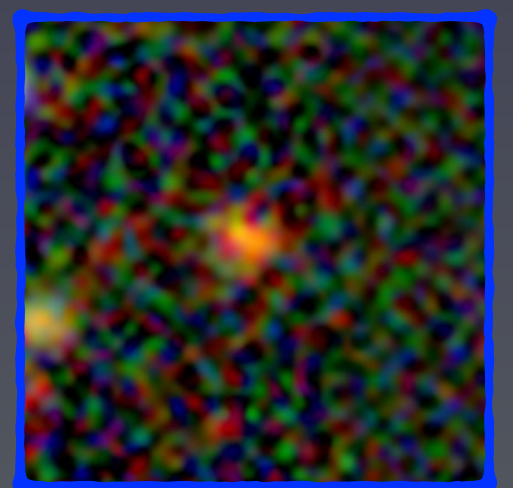
van Dokkum+2010

Stars form
early and find
their way into
massive
galaxies via
“dry mergers”

DESI Legacy Imaging Surveys



Legacy Survey is
about two magnitudes
deeper than SDSS

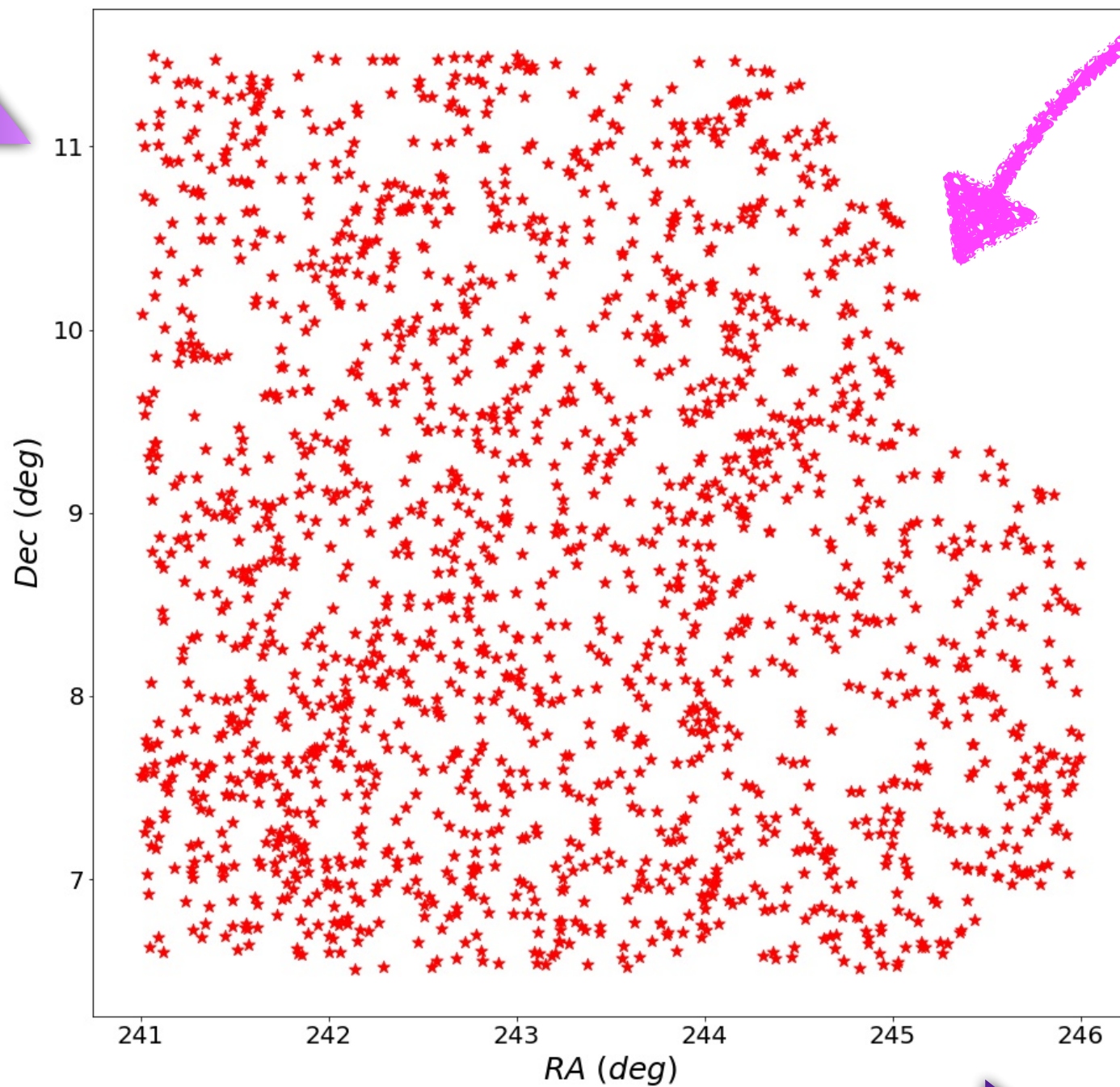


Data at a glance:

1823 LRGs

$0.2 < z < 0.65$

3 Luminosity-complete
samples



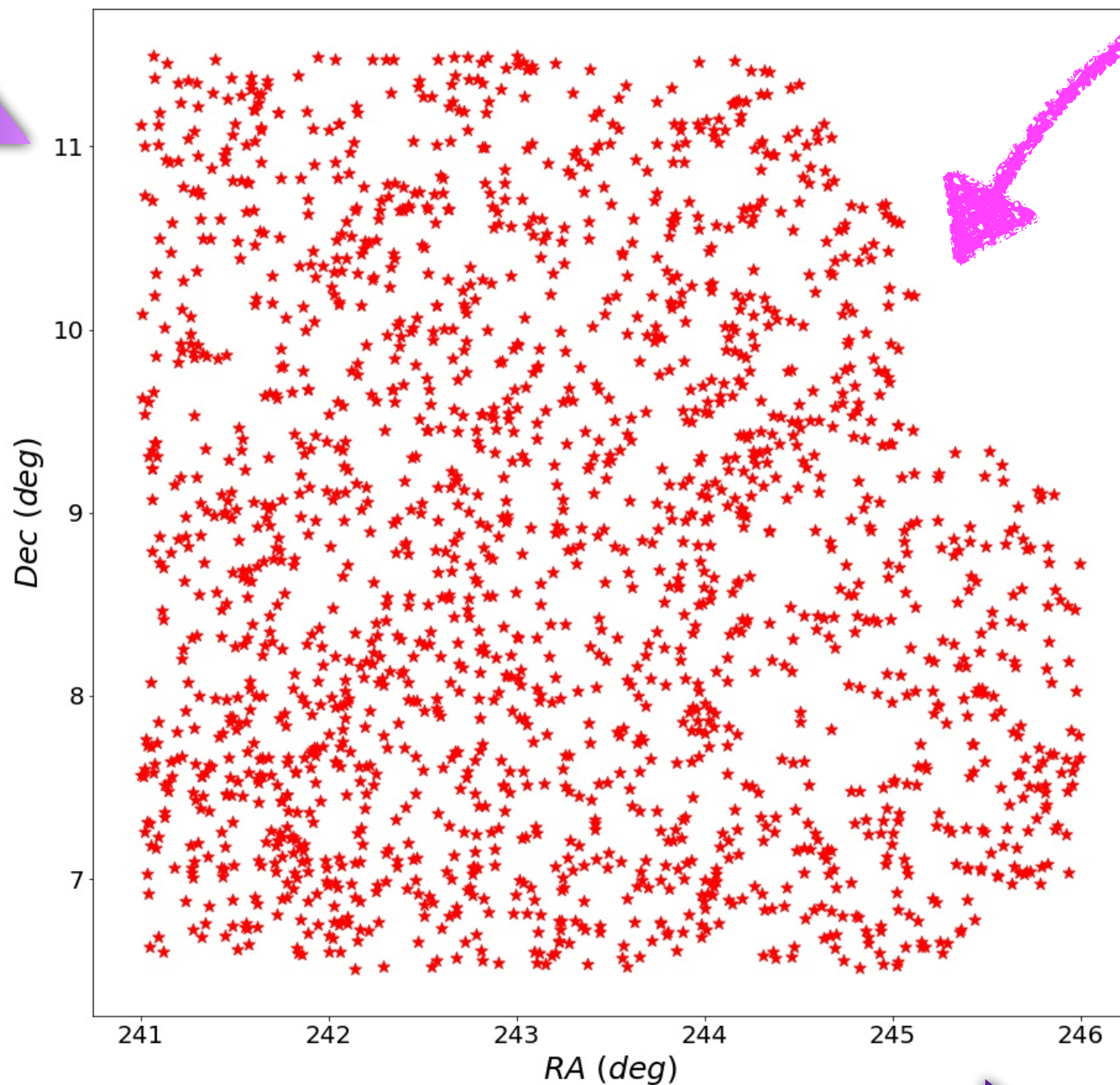
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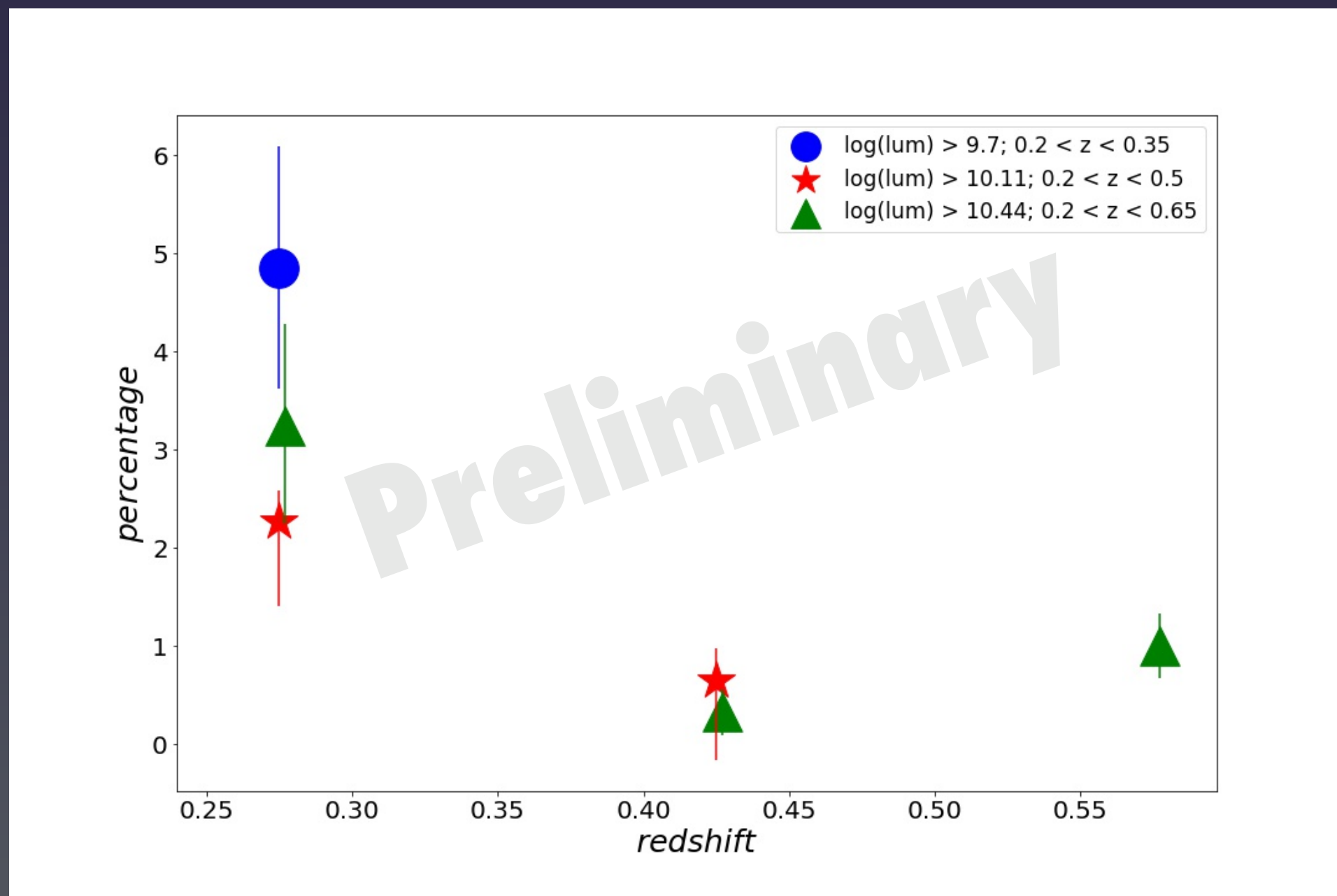
3 Luminosity-complete
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Science
question: What
percentage of
LRGs have a
significant
satellite
population?



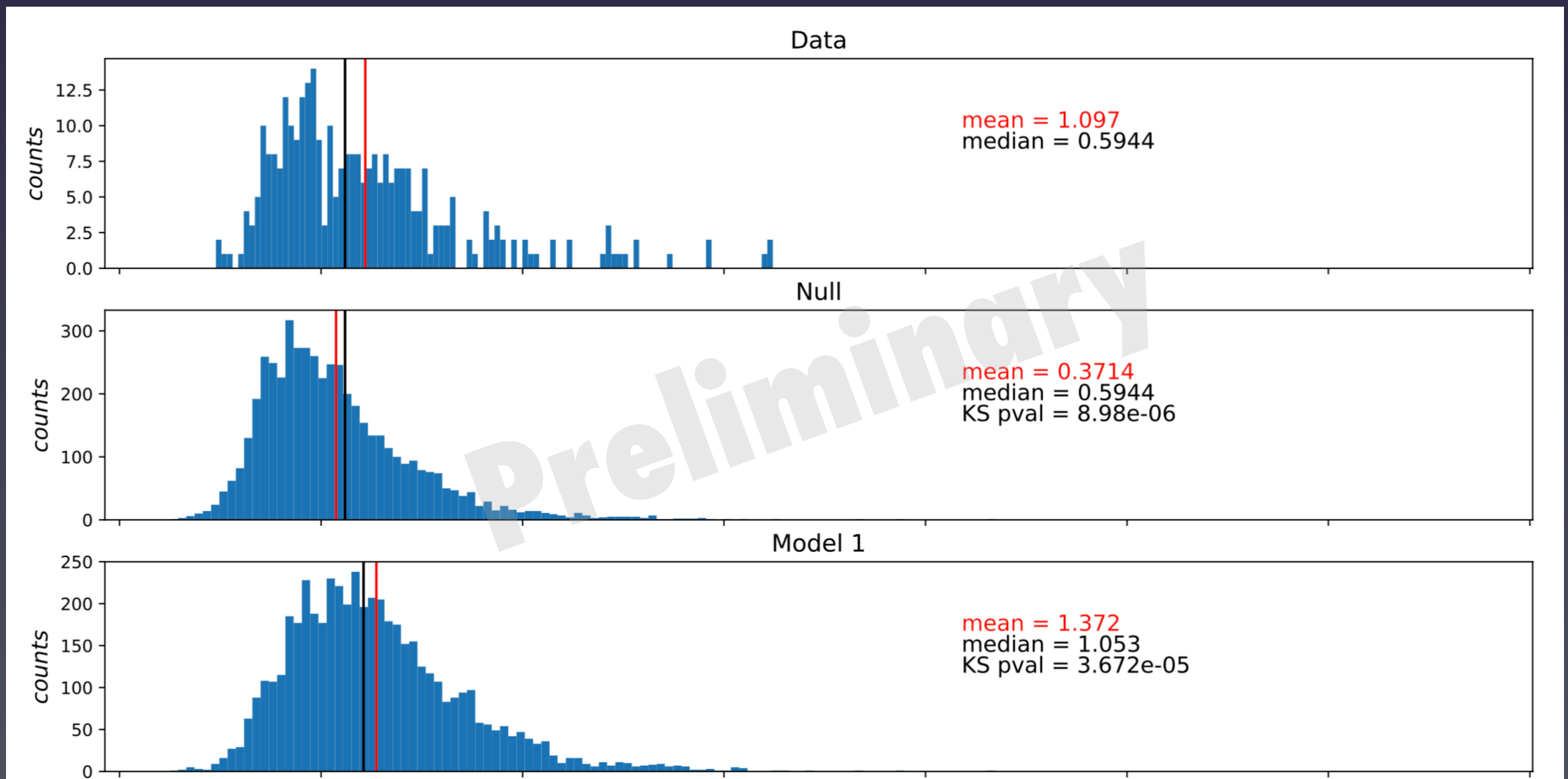
Preliminary Results

Percent of LRGs with Significant Satellite Population vs Redshift for different luminosity-selected samples



Next Steps - Modeling

Example model result



Summary

- Main Takeaways:
 - The Legacy Surveys offer a unique opportunity to study the environments of large elliptical galaxies on a large scale
 - The percentage of LRGs with significant satellite populations change with redshift from around 2-3 percent at low redshift to less than 1 percent beyond $z \sim 0.35$
 - Simple models that assume an intrinsic number of satellites are likely inappropriate

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