The Boundary of Galaxy Formation:

Constraints from the Ancient Star Formation History of the Isolated, Extremely Low-Mass Galaxy Leo P

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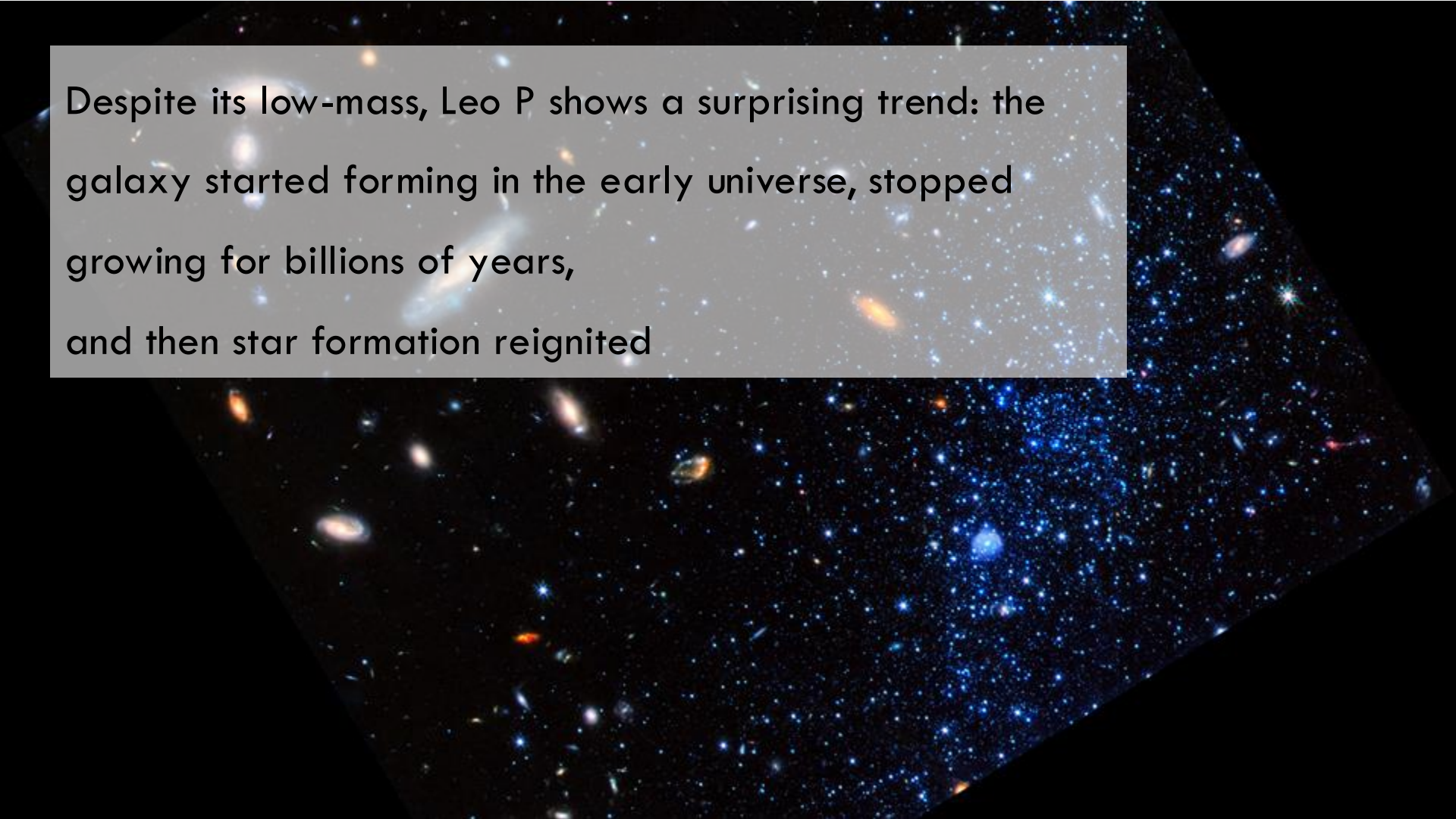


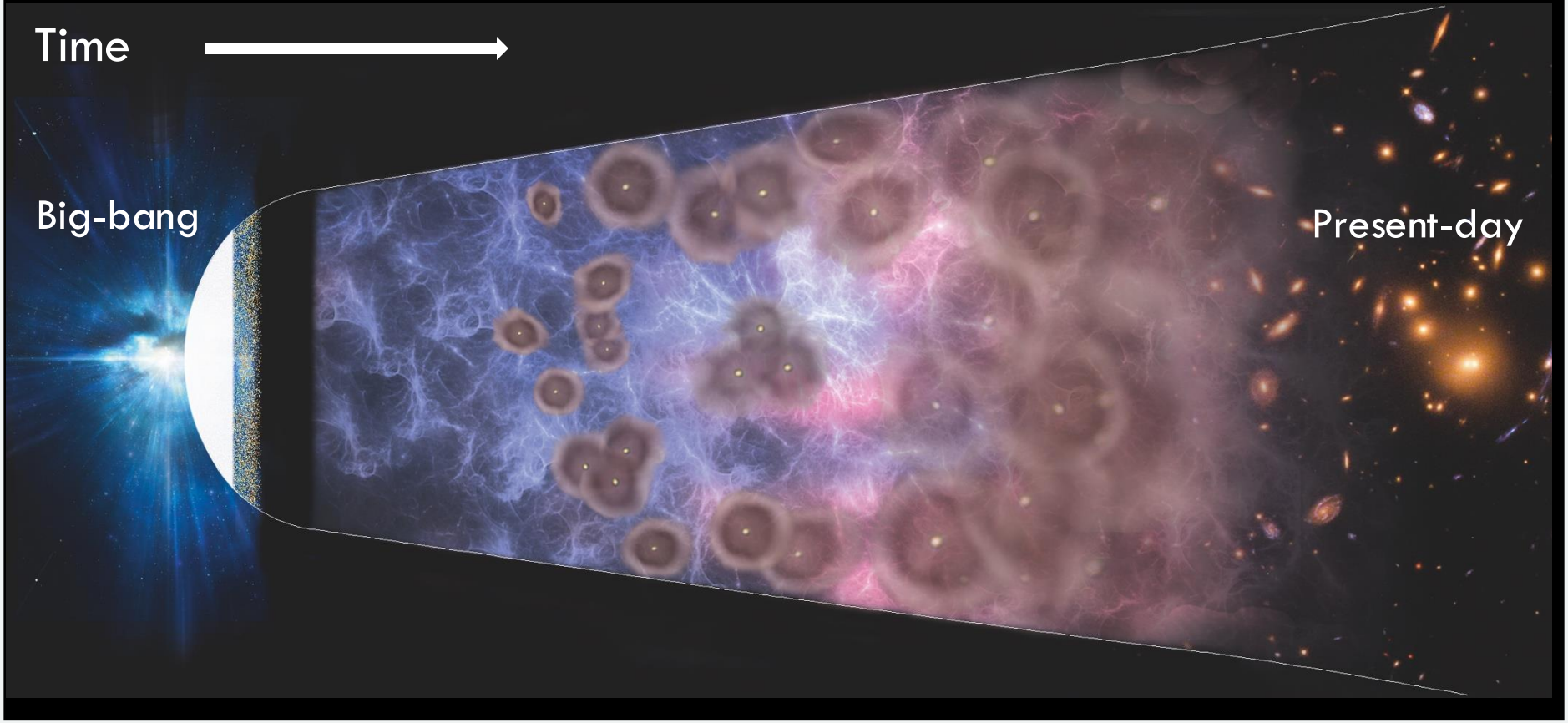
Despite its low-mass, Leo P shows a surprising trend: the galaxy started forming in the early universe, stopped growing for billions of years,
and then star formation reignited

Leo P: An **Isolated Star-Forming** Galaxy with $M_* = 2 \times 10^5$ Msun

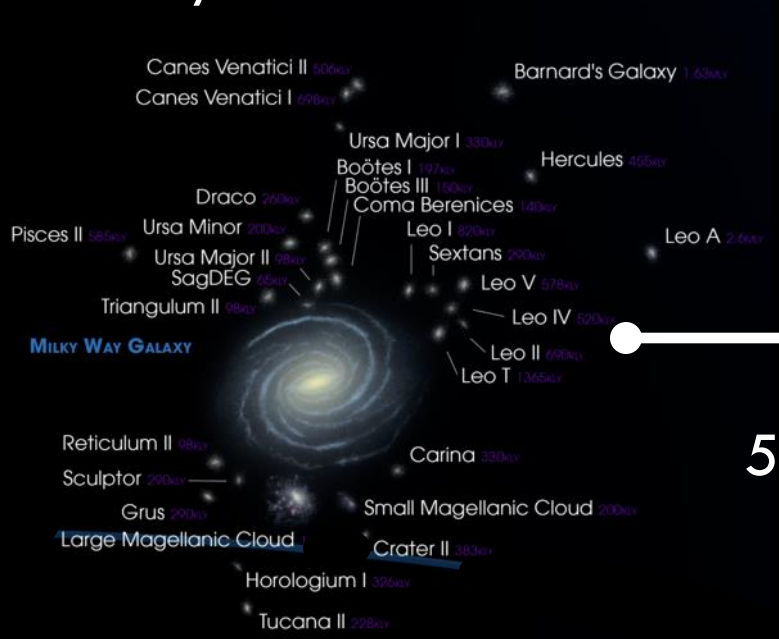
Leo P

Approximate Scale

The Smallest Galaxies Inform on the Conditions in the Early Universe



Milky Way and its Satellite Systems of Small Galaxies



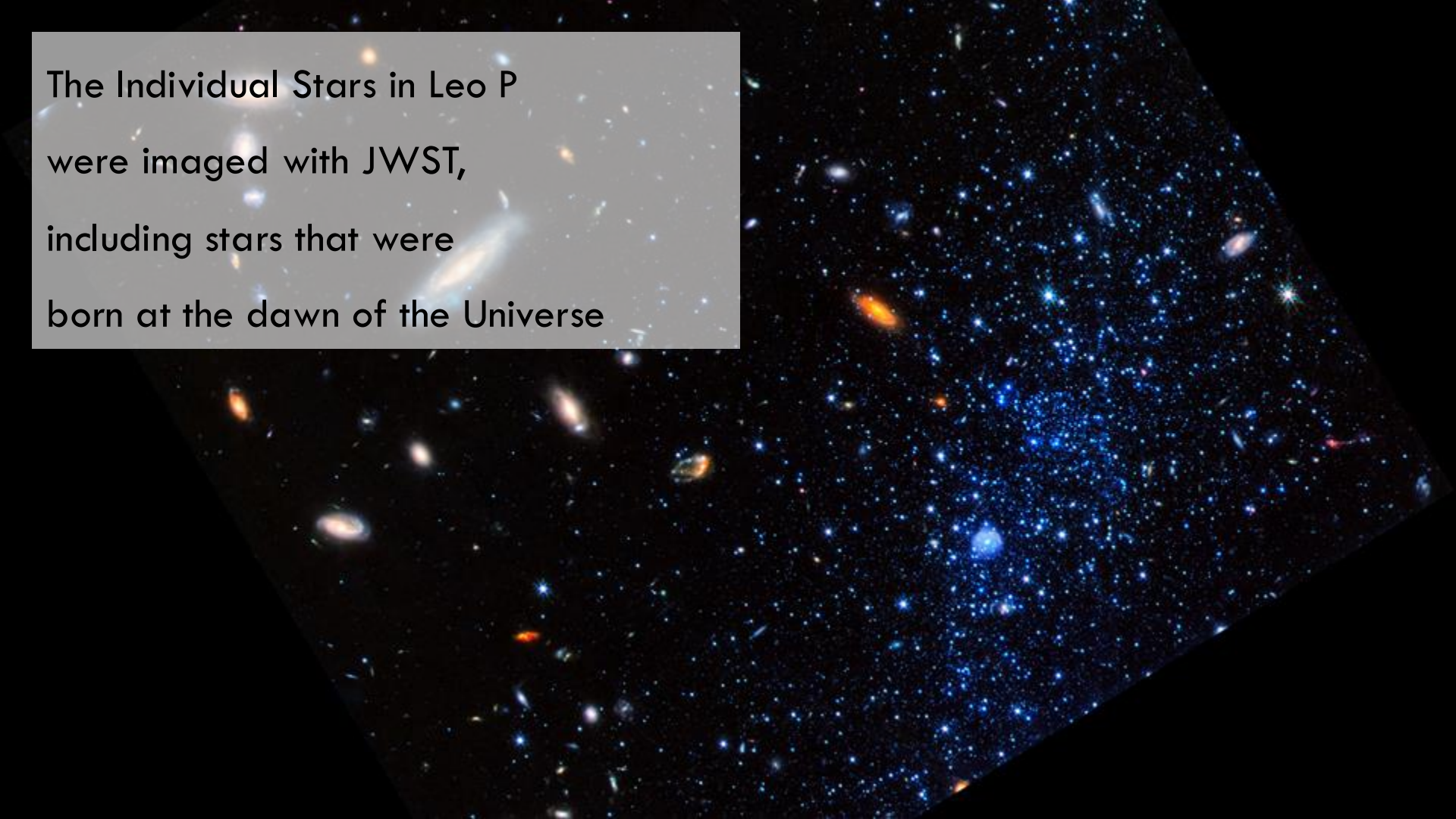
Leo P

5.3 Million Light-years

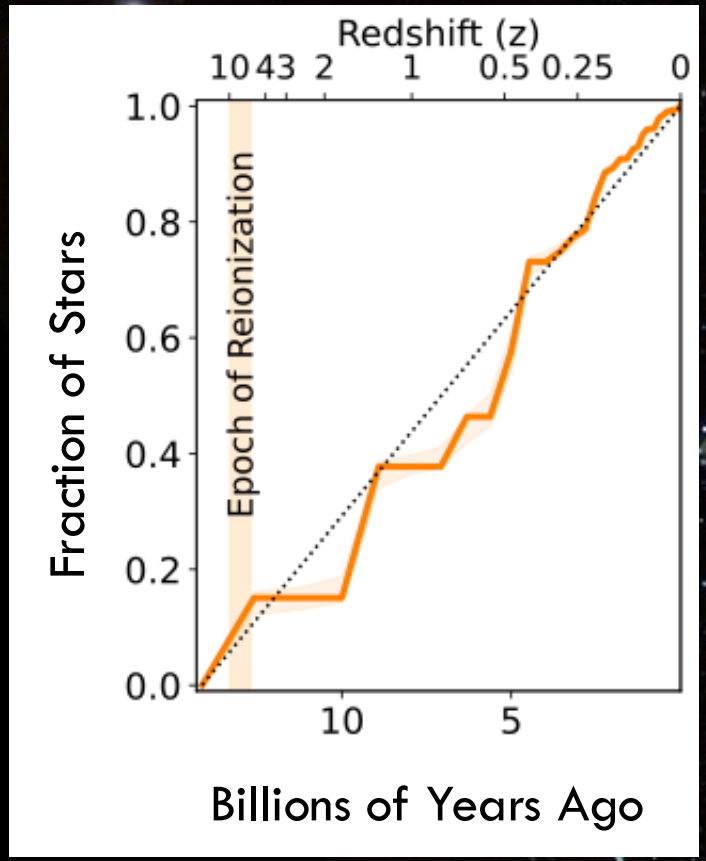
Leo P: An **Isolated** **Star-Forming** Galaxy with $M_* = 2 \times 10^5$ Msun

Leo P

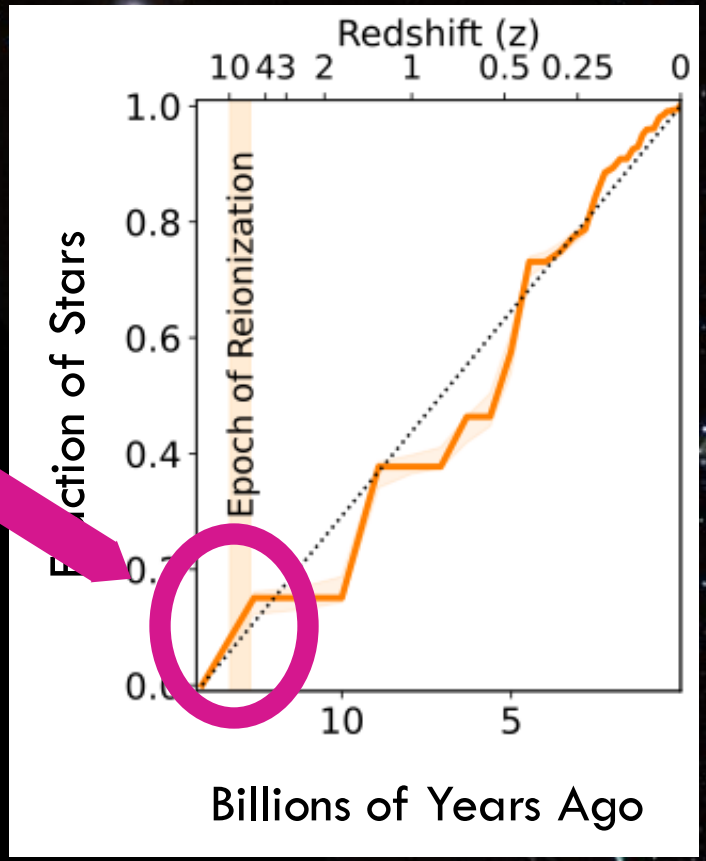
Approximate Scale


The Individual Stars in Leo P
were imaged with JWST,
including stars that were
born at the dawn of the Universe

Birthrate of Stars Reveals 3 Phases of Evolution

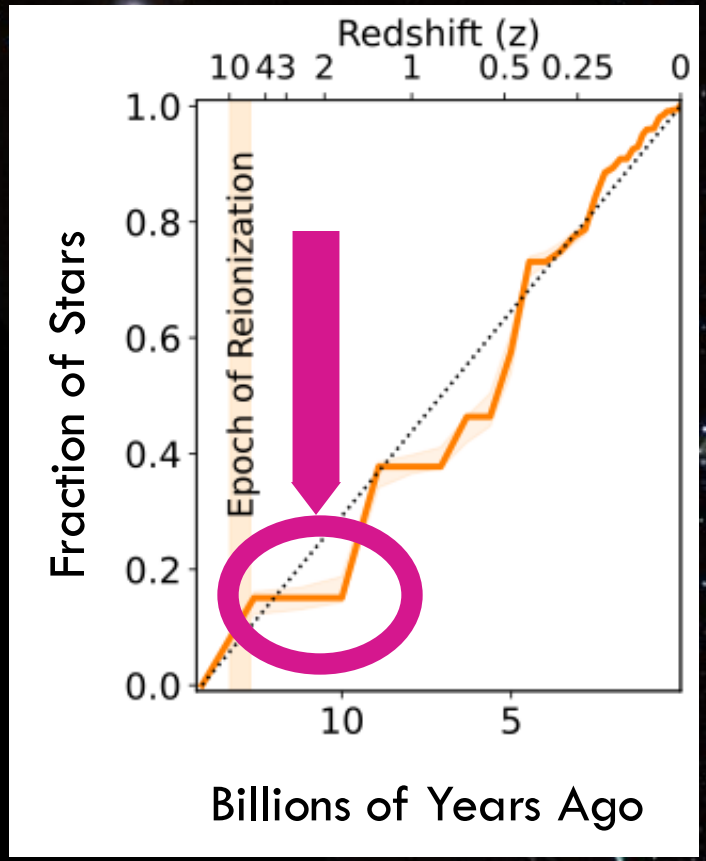


Birthrate of Stars Reveals 3 Phases of Evolution



1. Early Star Formation

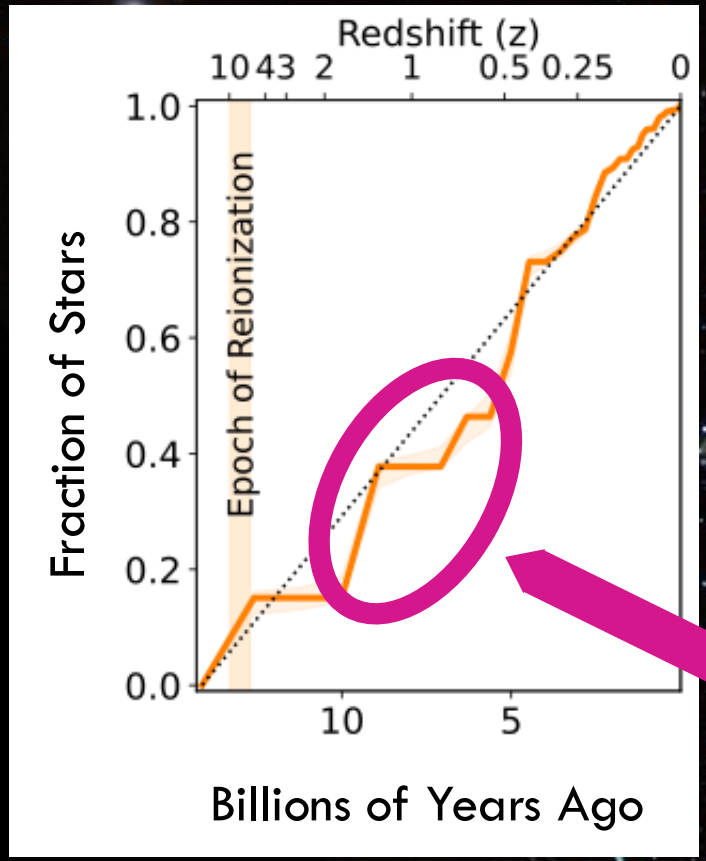
Birthrate of Stars Reveals 3 Phases of Evolution



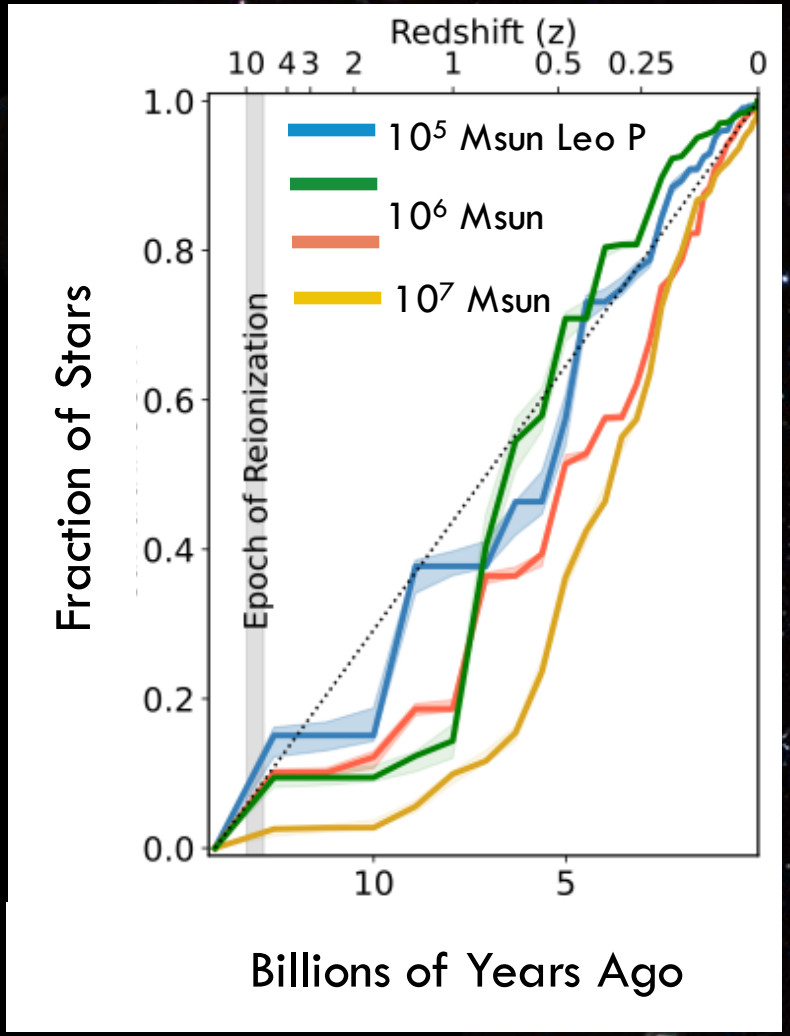
1. **Early Star Formation**

2. **Pause post-reionization**

Birthrate of Stars Reveals 3 Phases of Evolution



1. **Early Star Formation**
2. **Pause post-reionization**
3. **Reignition of Star Formation**



All Isolated Low-Mass Galaxies with the Requisite Data Show the Same Pattern

1. Reionization may halt star formation in galaxies more massive than ultra-faint dwarfs
2. Impact of Reionization may vary with environment
3. Cause of Re-ignition of star formation remains an open question
4. If the trend continues, the extended pause in star formation means few UV photons from low-mass galaxies between redshift of z~5-1

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