



# James Webb Telescope spots 6 Monster Galaxies

**Prelims:** James Webb telescope, Big Bang, Hubble space telescope, Monster Galaxy, Big Dipper.

**Mains:** James Webb telescope.

## Why in News?

The [James Webb Space Telescope \(JWST\)](#) has discovered six Monster galaxies, formed roughly **500-700 million years after the Big Bang, according to a Study.**

## How were these Galaxies Found?

- Researchers spotted the six monster galaxies using the **Cosmic Evolution Early 44 Release Science programme** of JWST.
  - The programme studies the formation of the **earliest galaxies when the universe was less than 5%** of its current age.
- Researchers turned the telescope to **a patch of the sky close to the Big Dipper**, which appears to harbor a group of stars that form a pattern in the night sky. The [Hubble space telescope](#) **first observed this region in the 1990s.**
  - The Big Dipper is an asterism of stars, in the constellation Ursa Major (also known as the Great Bear). It consists of **seven bright stars, four forming a rectangular "bowl" shape** and three forming a "handle". It is often used as a **navigational tool, a reference point for stargazing**, and as a symbol in popular culture.

## What are the Findings of these Galaxies?

- Despite having the same mass as the Milky Way, one of the galaxies is 30 times smaller.
  - This indicates the presence of large and mature but remarkably **compact galaxies teeming with stars far sooner than scientists had considered possible.**
- The telescope reveals that six large, mature galaxies are as old as the Milky Way and exist around 540-770 million years after the Big Bang.
  - The universe was roughly 3 % of its current age at the time.
- These galaxies challenge our **current understanding of galaxy formation** as they should not have existed so early in their life.

## What is JWST?

- The telescope is the result of an international collaboration between [NASA](#), the **European Space Agency (ESA)** and the Canadian Space Agency which was launched in December 2021.
- It is currently at a point in space known as the Sun-Earth L2 Lagrange point, approximately 1.5 million km beyond Earth's orbit around the Sun.
  - Lagrange Point 2 is one of the five points in the orbital plane of the Earth-Sun system.
  - Lagrange Points are positions in space where the gravitational forces of a two-body system (like the Sun and the Earth) produce enhanced regions of attraction and repulsion.

- It's the **largest, most powerful infrared space telescope** ever built.
- It's the **successor to Hubble Telescope**.
- It can see backwards in time to just after the Big Bang by looking for galaxies that are so far away that the light has taken many billions of years to get from those galaxies to our telescopes.

### **UPSC Civil Services Examination Previous Year Question (PYQ)**

**Q.** Launched on 25th December, 2021, James Webb Space Telescope has been much in the news since then. What are its unique features which make it superior to its predecessor Space Telescopes? What are the key goals of this mission? What potential benefits does it hold for the human race? **(2022)**

**Source: DTE**

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