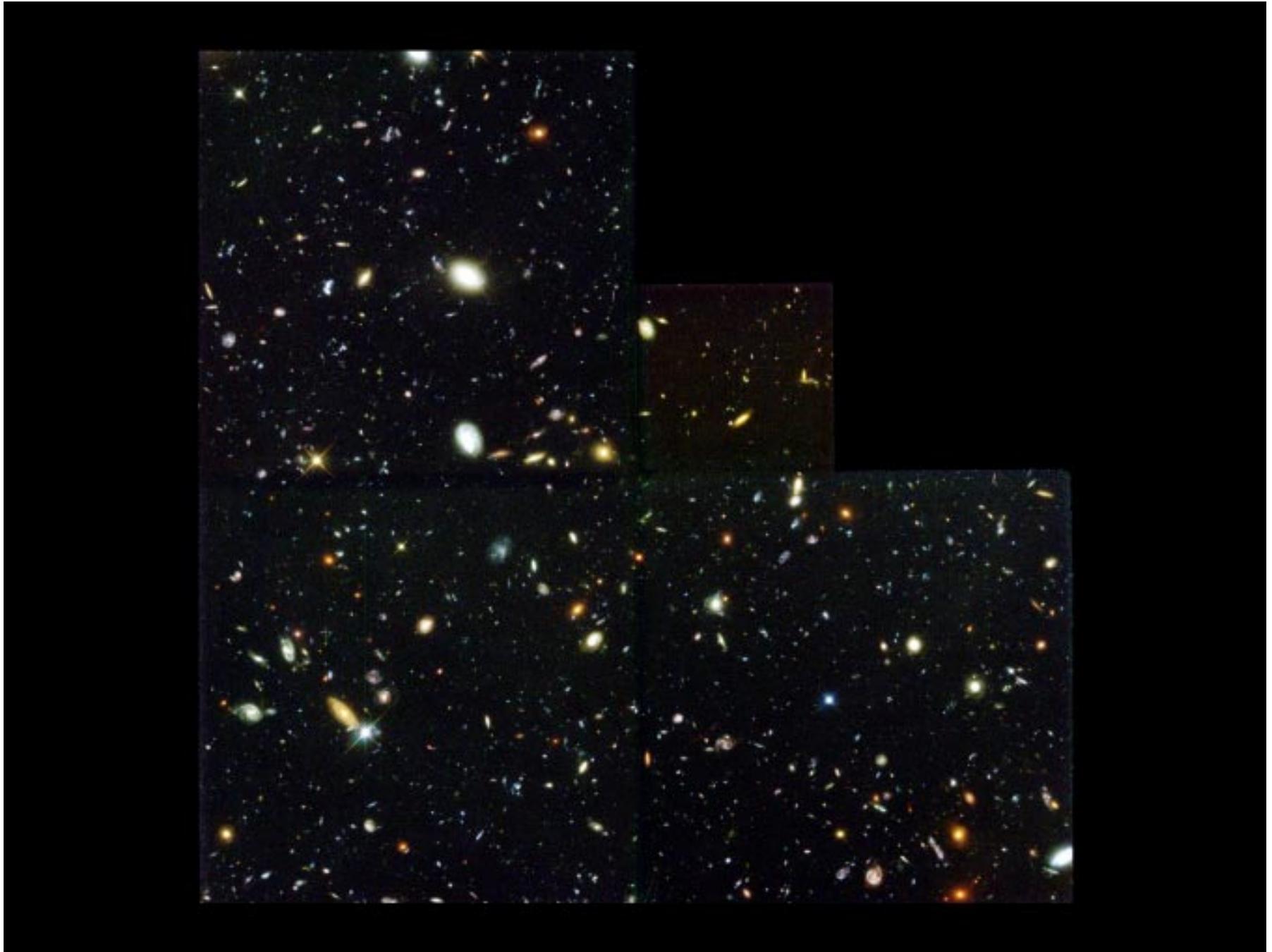


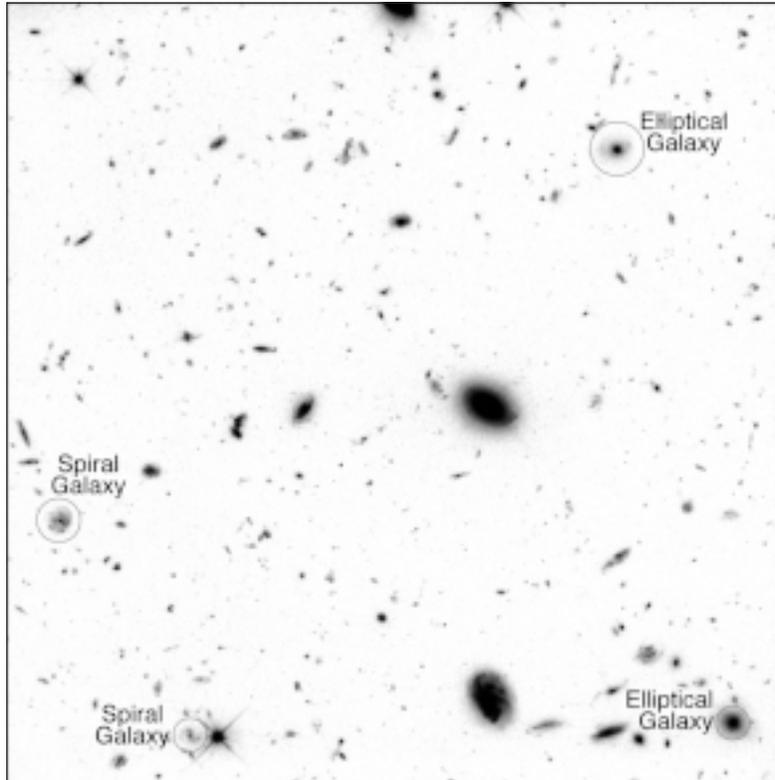
Hubble's Galaxy Gallery



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 Hubble reached back 10 billion years to capture a view of young, never-before-seen galaxies in various stages of evolution. Called the Hubble Deep Field, this view shows the dimmest, most distant objects in the universe. Most are about four billion times fainter than can be seen by the human eye. Besides uncovering the classical spiral and elliptical-shaped galaxies, Hubble found a bewildering assortment of other galaxy shapes and sizes that may yield important clues to the evolution of the universe. Some of the galaxies may have formed less than one billion years after the Big Bang, the initial cosmic explosion that many scientists believe jump-started the universe. Scientists will use the deep field image to test theories of galaxy formation.

Images from Deep Space  
 The Hubble Deep Field represents a narrow view of the universe, covering a speck of sky. Essentially a narrow, deep "core sample" of sky, the field is similar to a geologic core sample of the Earth's crust. Just as a core sample represents a history of the evolution of the Earth's surface, the Hubble Deep Field image contains information about the universe at many different stages in time. Unlike a geologic sample, scientists cannot measure the precise ages and distances of all the galaxies in the image. Using large ground-based telescopes, they have measured distances to the 100 brightest galaxies. For the remaining several thousand galaxies, scientists are using galaxy size and color, and theories and statistics to estimate their distance.

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## About the Image

Hubble produced the image shown on the front by observing nearly continuously for 10 days. This image represents the longest Hubble exposure yet taken. The telescope used three different filters to obtain this natural color image. (Astronomers prefer to use the negative image (above) for analysis, because the details of celestial objects are easier to see.)

## Definitions

**Galaxy:** Huge, swirling cities of millions or billions of stars, gas, and dust that are held together by gravity.

**Spiral:** A galaxy with spiral arms, which wind out from near the galaxy's center. The arms are composed of gas, dust, and young stars. Our Sun is a star in the spiral Milky Way Galaxy.

**Elliptical:** A galaxy that is shaped like a football and contains mainly old stars with little gas or dust.

**Light-year:** The distance light travels in a year ( $6 \times 10^{12}$  or 5 trillion 900 billion miles).

## Fast Facts

### Location

In the constellation Ursa Major (Big Dipper)

### Distance from Earth

The nearest galaxies are about 2.5 billion light-years; the farthest, about 10.5 billion light-years.

### Size

The galaxies vary in diameter from about 3,000 to 55,000 light-years.

Count the galaxies yourself, go to the "Hubble Deep Field Academy" at [amazing-space.stsci.edu](http://amazing-space.stsci.edu)

## Electronic Address

You can get images and other information about the Hubble Space Telescope on the World Wide Web:

[hubble.stsci.edu](http://hubble.stsci.edu)