

## Hidden Universe | Gallery Explorer

### Cygnus X Marks the Spot

In autumn evenings it is hard to miss the majestic Cygnus setting in the western sky. But astronomers in 1952, just beginning to study the sky in radio light, found an even more unmistakable glow across the belly of this celestial swan, in a region they named Cygnus X.

Over the last half-century this peculiar place has been yielding its secrets to the scrutiny of infrared observations. NASA's Spitzer Space Telescope has now provided the best view yet of what we now know is one of the largest single areas of star formation in our Milky Way galaxy.

The Cygnus X complex is almost 5,000 light years away and is about 650 light years in diameter. This swirling region of gas, dust, and stars weighs in at about 3 million times the mass of our sun.

Other better-known star-forming areas, like the Orion Nebula or the Omega Nebula are lightweights in comparison. While they are closer and easy to see in visible light, Cygnus X is over 10 times as massive!

Shrouded behind clouds of dust, it is only with longer infrared wavelengths that we can peer more deeply into this region to see the life history of stars playing out.

The lives of stars begin within dark filaments of gas and dust so dense that they begin to collapse under their own gravity. The cores of baby stars begin to glow at the longest infrared wavelengths, seen here as a scattering of red dots.

When these massive stars ignite they burst out of their dusty cocoons and tear apart the surrounding dust clouds. The most massive stars shine brightly in ultraviolet light that hollows out bubbles and cavities that pop up everywhere in this region.

As the stars whittle away at their surroundings, only the densest knots of dust survive. These lumps shield the dust behind them from the destructive light, forming giant pillars. Sometimes they look almost like fingers pointing accusingly at the destructive stars.

Here, at the heart of Cygnus X, the entire story plays out in microcosm. From the protostar-laden dark filament, to the eroding pillar of dust, the early stages of starbirth lay next to the final stages of a star's life. This red orb encircles a kind of star known as a luminous blue variable, which has become unstable in its final years, shedding its outer layers to form the surrounding nebula.

Spitzer's 100 megapixel image of Cygnus X survey is strikingly large, spanning about 5 degrees of sky. To really appreciate the dramatic detail hidden within the swan, you should visit the Spitzer website and explore it yourself!