

The Constellation Coma Berenices

Berenice's Hair

The Constellation Coma Berenices is a traditional asterism that has since been defined as one of the 88 modern constellations. It is located near Arcturus, and the constellation Leo to which it formerly belonged, and contains the North Galactic Pole. Its name means "Berenice's Hair" (in Greek, via Latin), and refers to the legend of Queen Berenice II of Egypt, who sacrificed her beautiful long amber-colored hair.

Coma Berenices is one of the few constellations to owe its name to a historical figure, in this case Queen Berenice II of Egypt, wife of Ptolemy III Euergetes (fl. 246 BC–221 BC), the king under whom Alexandria became an important cultural centre.

Ptolemy was away at war against the Assyrians, and Berenice was worried about him. She asked the royal oracle, Conon, what to do and Conon advised the queen to offer her hair to Aphrodite for the safe return of her husband. After weeks of waiting and tension Ptolemy returned safe and sound. The nation rejoiced but when Berenice told Ptolemy about her promise to sacrifice her hair, Ptolemy was very upset because it was the crowning glory of his queen; and it had the admiration of the nation, and it gave inspiration to the poets. Nothing, however, would change Berenice's mind. She went to the temple where her beautiful locks were cut off and laid on the altar by the priests.

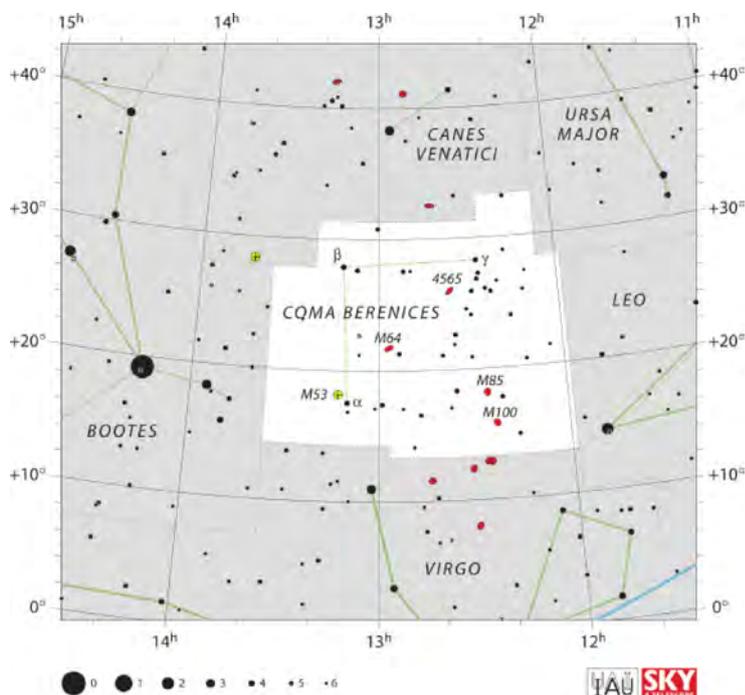
The next day when the king went to the temple to have a look at his wife's hair, he was furious to find the hair had been stolen. He summoned the priests and would have put them to death then and there had not the court astrologer Conon, intervened: "No, no, your majesty, do not blame the priests, it is not their fault, wait until it is dark and I will show you where your wife's hair is".

So when day turned into night the astronomer took the king to look at the night sky **"Look! Dost thou not see the clustered curls of thy queen, too beautiful for a single temple to possess, placed there by the gods for all the world to see? Look! They glitter like a woven net, as golden as they were on Berenice's head"**.

And there, between Canes Venatici, Bootes, Leo and Virgo, twinkled a mass of very faint stars. **The astronomer declared that Jupiter had descended from Heaven the night before to take the golden locks up to the heavens where they could be admired by the whole world, not only by one nation.** The king was satisfied with this explanation and Berenice was delighted that Venus (Aphrodite) had so honoured her.

Coma Berenices consists of a number of stars close together, and has been recognized as a distinct asterism since the Hellenistic period. **Eratosthenes** referred to it as both "Ariadne's Hair" and "Berenice's Hair". **Ptolemy** referred to it as "the lock" of hair; however, he did not list it as one of his 48 constellations, considering it to be a part of Leo, specifically, the tuft at the end of the lion's tail. **Tycho Brahe, who is usually given credit for Coma's promotion to constellation status, listed it in his star catalogue of 1602,** but it originally occurred on a celestial globe by the cartographer **Caspar Vopel** from 1536. **Gerardus Mercator** has also been credited as its promoter in 1551. Coma Berenices and the now-defunct constellation Antinous are considered to be the first post-Ptolemaic constellations to be depicted on a celestial globe. It appeared in **Johann Bayer's Uranometria** of 1603 and a few other maps that followed suit.

Although Coma Berenices is not a large constellation, it contains eight Messier objects. The constellation is rich in galaxies, containing the northern part of the Virgo cluster (the Coma-Virgo cluster), some 60 million light years away. The cluster is quite large, containing 1,000 large galaxies and possibly up to 30,000 smaller ones. A survey by **Fritz Zwicky** in 1957 identified 29,951 galaxies in the area brighter than 19.0m.



STARS

Coma Berenices is not particularly bright, having no stars brighter than fourth magnitude.

Beta Comae Berenices is the brightest star in the constellation, at magnitude 4.2; it is 30 light-years from Earth. Like the Sun, it is a yellow-hued main-sequence star. It is intrinsically only slightly brighter than the Sun, which gives an idea of how faint the Sun would appear seen from Beta Comae's distance.

Alpha Comae Berenices also called Diadem is the second brightest star in Coma Berenices is. The name represents the gem in Berenice's crown. It is a binary star, with two components of almost equal magnitude.. This binary has a period of 26 years and is 47 light-years from Earth.

Gamma Comae Berenices, which is superimposed on the Coma Star Cluster, is an orange-hued giant star of magnitude 4.4, 170 light-years from Earth.

35 Comae Berenices is a binary star with an optical companion. The two physically related components have a period of 360 years and are 324 light-years from Earth.

24 Comae Berenices is a double star with contrasting colors. The primary is an orange-hued giant star of magnitude 5.0, 610 light-years from Earth, and the secondary is a blue-white hued star of magnitude 6.6.

Over 200 variable stars are known in Coma Berenices, although many of them are obscure.

FK Comae Berenices, which varies between 8.14m and 8.33m over a period of 2.4 days, is the prototype for the FK Com class of variable stars. It is believed that the variability of FK Com stars is caused by large, cool spots on the rotating surfaces of the stars.

CLUSTERS

The Coma Berenices Cluster is a large, diffuse open cluster of about 50 stars that range between 5th and 10th magnitudes, including several of the naked eye stars in the constellation. *12 Comae Berenices*, at magnitude 4.8, is the cluster's brightest member. The cluster is spread over a huge region, more than 5 degrees across. It has such a large apparent size because it is only 288 light years away.

M53 (NGC 5024) is a globular cluster that was discovered by **Johann Elert Bode** in 1775 and independently by Charles Messier in February 1777. it is of magnitude 7.7 and is 56,000 light-years from Earth. Only 1° away is NGC 5053, a globular cluster that is sparser and has a less dense nucleus of stars. Its total luminosity is around 16,000 suns, which is one of the lowest luminosities of any globular cluster. It was discovered by **Sir William Herschel** in 1784. It is around magnitude 9.9 m. NGC 4147 is a somewhat dimmer (magnitude 10.2m) globular cluster with a much smaller apparent size.

GALAXIES

Coma Berenices contains a number of famous deep sky objects: **M64 (NGC 4826) is known as the Black Eye Galaxy** because of the prominent dark dust lane in front of the galaxy's bright nucleus. Also known as the Sleeping Beauty and Evil Eye galaxy, it is relatively nearby, at around 17 million light years away from Earth. Recent studies have revealed that the interstellar gas in the outer regions of the galaxy rotates in the opposite direction from that in the inner regions, leading astronomers to believe that at least one satellite galaxy had collided with it less than a billion years ago. All other evidence of the smaller galaxy has been destroyed; it has been completely assimilated. At the interface between the clockwise- and counterclockwise- rotating regions, there are many new nebulae and young stars. **NGC 4565 is a very well known edge-on spiral galaxy. Known as the Needle Galaxy** it is of the 10th magnitude and appears superimposed on the Virgo Cluster, though it is only 20 million light-years from Earth. Like many edge-on spiral galaxies, it has a prominent dust lane and a central bulge.

NGC 4676, sometimes called the "Mice" galaxies, is a pair of interacting galaxies at a distance of 300 million light-years from Earth. The progenitor galaxies were both spiral galaxies; astronomers estimate that they had their closest approach about 160 million years ago. That close approach caused large regions of star formation in both galaxies, along with long "tails" of dust, stars, and gas. The two galaxies are predicted to interact significantly before completely merging into a larger, probably elliptical galaxy.

The neighbouring constellations of Coma Berenices are Boötes, Canes Venatici, Leo, Ursa Major, and Virgo. **Coma Berenices belongs to the Ursa Major family** of constellations, along with Boötes, Camelopardalis, Canes Venatici, Corona Borealis, Draco, Leo Minor, Lynx, Ursa Major and Ursa Minor.

A meteor shower that peaks on December 18 originates in the constellation

