

**First sentence ideas to start your Introduction paragraph:**

1. **Ask a question:** What's the biggest thing you can imagine? Now imagine something bigger than that! Galaxy clusters are so huge that our human minds can talk about them, but it's hard to really understand how big they are.
2. **State a cool and interesting fact:** The gas in a galaxy cluster can be 100 million degrees Celsius.
3. **Humor?** A joke on your topic? A quote from a science fiction book?

Galaxy clusters are the largest objects that can be found in the universe. They are made of hundreds of galaxies containing stars, gas, and dust. Gravity draws all the galaxies together. Some of the clusters are several millions of light years across. In addition, huge clouds of gas surround the space between the galaxies. The gas is 30 to 100 million degrees Celsius. Amazingly, the gas has more mass than all the galaxies in the cluster. Dark matter makes up the rest of the portion of a galaxy cluster. Less is understood about this part, but it's clearly there, even though it can't be observed.

Our Milky Way is part of a poor cluster called the Local Group. The Local Group has two large spirals, one small spiral, two ellipticals, at least 19 irregulars, at least 17 dwarf ellipticals and at least 5 dwarf spheroidals. There may be more irregular and dwarf galaxies. The Local Group is about 3 million light years across with the two large spirals, the Milky Way and Andromeda Galaxy, at the two ends. Each large spiral has several smaller galaxies orbiting them. The way the different types of galaxies in the Local Group are spread out is probably how the number of the different types of galaxies in the rest of the universe are laid out, too. The small galaxies can be seen in the Local Group because they are close enough to us. But the dwarf galaxies are hard to see if the clusters are far away.

The closest large cluster to us is the cluster called the *Virgo Cluster* because you see it when you look at the Virgo constellation. It has many hundreds of galaxies (mostly spirals and irregulars) spread into an irregular shape. It is about 10 million light years across, and about 49 to 59 million light years from us. A giant elliptical at the center has grown by gobbling up nearby galaxies that were attracted by its enormous gravity. The total mass of the Virgo cluster is large enough that its gravity pulls nearby groups of galaxies (including the Local Group) toward it.

**Conclusion paragraph: three sentences is enough, but you can write more.** Usually it is a looking forward -

Sentence 1: Scientists continue to study

Sentence 2: I think galaxy clusters are interesting because

Sentence 3: Maybe in the future, they will find out more about

Citations

"Chandra X-ray Observatory - Learn About Galaxy Clusters." Chandra X-ray Observatory - Learn About Galaxy Clusters. Web. 28 May 2015.

Ogliore, Taglia. "UH Scientist Maps Supercluster of Galaxies, Names It Laniakea : University of Hawai'i System News." University of Hawaii System News. University of Hawaii, 3 Sept. 2014. Web. 29 May 2015.