Name: _____ Date: _____

Galaxies

Science Literacy Article

Galaxies are huge systems of millions or billions of stars, together with gas and dust, held together by gravity. It has been estimated that there are over 200 billion galaxies in the universe. Galaxies contain many different characteristics, but they are ultimately grouped and classified by their shape. There are three main types of galaxies:

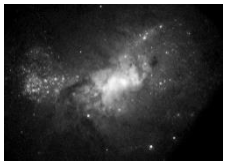
1. **Spiral galaxies** are flat, disk-shaped galaxies that contain a central bulge and winding "arms" that extend outward. Spiral galaxies tend to contain *older stars within the central bulge and newer stars are found within the arms* due to the large amounts of gas and dust. Our galaxy, the Milky Way, is an example of a spiral shaped galaxy. Our Sun is actually one star out of the billions of other stars within the Milky Way. The Milky Way has been estimated to be approximately 100,000 light years in diameter. Although the center bulge may look like one giant star, the center of the Milky Way is believed to be full of gas, dust, many other stars, and even a *supermassive black hole*. Therefore, our solar system is not located in the center of the galaxy. Instead, our solar system, which contains the Sun and all of the planets, is located on one of the outer bands called the Orion Arm. Although we have never traveled outside of our galaxy, astronomers use data and images from telescopes to create a visual representation of what the Milky Way looks like. Some other examples of spiral galaxies include the Whirlpool galaxy and the Andromeda galaxy.
2. **Elliptical galaxies** are smooth, circular or oval shaped galaxies. They often look like one giant star when viewing an image of them. Elliptical galaxies are the *most abundant type* of galaxy in the universe. They generally contain older, low-mass stars. This is because they have a lack of available gas and dust which is necessary for new star formation. Because they *mostly contain older stars*, elliptical galaxies often are not as bright as spiral galaxies. Elliptical galaxies also have a greater range in size than other types of galaxies. Some are 10,000 light years in diameter while others are over a million light years in diameter. Scientists believe elliptical galaxies also have a supermassive black hole at the center. Some examples of elliptical galaxies include the Messier 60 galaxy and the NGC 1316 galaxy.
3. **Irregular galaxies** are random and scattered galaxies. They *do not form a distinct shape or pattern* like spiral and elliptical galaxies. They are the smallest type of galaxy in the universe, however, they can be very bright. They contain large amounts of gas and dust which is beneficial for forming new stars. Some examples of irregular galaxies include the Large and Small Magellanic Clouds which are two small galaxies that orbit around the Milky Way galaxy.



Spiral Galaxy



Elliptical Galaxy



Irregular Galaxy

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