

1
00:00:07,570 --> 00:00:12,690
galaxies are vascular

2
00:00:09,599 --> 00:00:15,419
of stars gas and dust they come in a

3
00:00:12,689 --> 00:00:17,399
variety of shapes and sizes the most

4
00:00:15,419 --> 00:00:19,829
familiar galaxy shape is a spiral

5
00:00:17,399 --> 00:00:24,118
pattern traced out by bright stars and

6
00:00:19,829 --> 00:00:28,379
by dark dust lanes some spiral galaxies

7
00:00:24,118 --> 00:00:31,439
have many spiral arms while others have

8
00:00:28,379 --> 00:00:32,789
just a couple a good percentage of

9
00:00:31,440 --> 00:00:36,090
spiral galaxies have an elongated

10
00:00:32,789 --> 00:00:39,479
straight region across the middle these

11
00:00:36,090 --> 00:00:42,379
are barred spiral galaxies all of these

12
00:00:39,479 --> 00:00:45,750
spiral arms are within a thin disc

13
00:00:42,378 --> 00:00:48,268
resembling the shape of a pancake in the

14
00:00:45,750 --> 00:00:52,228
center of the disk is a rounded bulge of

15
00:00:48,268 --> 00:00:54,530
stars some bulges of stars are very

16
00:00:52,228 --> 00:01:00,058
small compared to the size of their disk

17
00:00:54,530 --> 00:01:02,070
while others are quite large a galaxy

18
00:01:00,058 --> 00:01:05,459
that is entirely this rounded shape is

19
00:01:02,070 --> 00:01:07,620
called an elliptical galaxy elliptical

20
00:01:05,459 --> 00:01:10,819
galaxies are dominated by stars and

21
00:01:07,620 --> 00:01:13,290
generally have very little gas and dust

22
00:01:10,819 --> 00:01:15,839
elliptical galaxies can appear roughly

23
00:01:13,290 --> 00:01:19,649
spherical or they can be rather

24
00:01:15,840 --> 00:01:21,899
elongated the largest galaxies in the

25
00:01:19,649 --> 00:01:24,599
universe are giant elliptical galaxies

26
00:01:21,899 --> 00:01:27,890
found in the cores of large clusters of

27
00:01:24,599 --> 00:01:30,569
galaxies on the other end of the scale

28
00:01:27,890 --> 00:01:32,549
dwarf elliptical galaxies can be found

29

00:01:30,569 --> 00:01:36,629
as small satellites around larger

30
00:01:32,549 --> 00:01:38,520
galaxies while dwarf elliptical galaxies

31
00:01:36,629 --> 00:01:41,099
can have as few as tens of millions of

32
00:01:38,519 --> 00:01:46,170
stars giant ellipticals can have as many

33
00:01:41,099 --> 00:01:49,108
as a trillion stars other dwarf galaxies

34
00:01:46,170 --> 00:01:53,039
have no specific shape these are

35
00:01:49,108 --> 00:01:55,679
irregular galaxies irregular galaxies

36
00:01:53,039 --> 00:01:58,289
exhibit a wide variation in their shapes

37
00:01:55,679 --> 00:02:01,320
and their composition many dwarf

38
00:01:58,289 --> 00:02:03,498
irregular x' have lots of gas dust and

39
00:02:01,319 --> 00:02:06,029
bright regions where stars are forming

40
00:02:03,498 --> 00:02:08,758
it is important to note that there are

41
00:02:06,030 --> 00:02:11,430
many more dwarf galaxies elliptical and

42
00:02:08,758 --> 00:02:16,619
irregular then there are large galaxies

43
00:02:11,430 --> 00:02:19,469

in the universe large irregular galaxies

44

00:02:16,620 --> 00:02:20,969

also exist but their shapes are due to

45

00:02:19,469 --> 00:02:23,300

the collisions and mergers between

46

00:02:20,969 --> 00:02:25,710

galaxies

47

00:02:23,300 --> 00:02:28,410

across the entire universe there are

48

00:02:25,710 --> 00:02:31,110

about a hundred billion galaxies they

49

00:02:28,409 --> 00:02:34,049

come in spiral elliptical and irregular

50

00:02:31,110 --> 00:02:37,160

shapes and their sizes range from dwarfs

51

00:02:34,050 --> 00:02:37,160

to Giants

52

00:02:42,439 --> 00:02:44,500

you