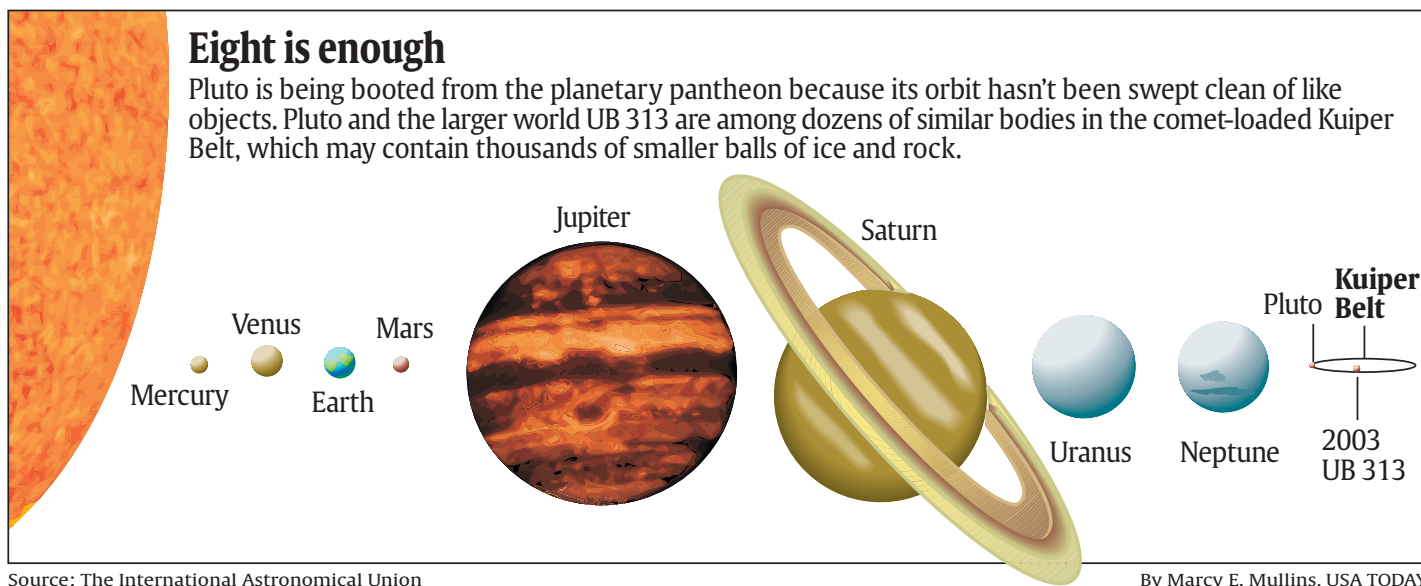


# The universe has room for change

## Pluto's demotion is in realm of ordinary



Source: The International Astronomical Union

By Marcy E. Mullins, USA TODAY

By Dan Vergano  
USA TODAY

Pluto's push from the planetary pantheon last week shows that change is the only constant in science, just as in the rest of life.

"Science advances not by overthrowing previous strong conclusions but rather by adding previously undreamed-of possibilities," says astronomer Bradley Schaefer of Louisiana State University, who also is an astronomy historian.

Pluto's demotion to "dwarf" in a vote Thursday by the International Astronomical Union leaves eight planets, by definition, in our solar system and adds to a history of changing planet tallies, he says. Earth was considered a planet only after Copernicus realized

in the 1600s that it orbited the sun. And in the early 1800s, the four largest asteroids between Mars and Jupiter were counted as planets, which established the total then at 11.

More broadly, astronomers realized only in the 1930s that the universe contains more galaxies than our own Milky Way. Today we know it's likely there are more than 100 billion galaxies.

"So a historical view of it all is that expanding knowledge keeps forcing updates in the accepted number of planets," Schaefer says.

Anyone pondering Pluto, or the latest health news for that matter, knows that science tends to zig and zag. Science writer Boyce Rensburger, head of the Knight Science Journalism Fellowships at the Massachusetts Institute of

Technology, notes numerous examples:

- ▶ Stress and stomach acid once were thought to trigger ulcers. But we now know that bacteria is the main culprit, and antibiotics are the treatment.

- ▶ Raindrops are shaped like raindrops, right? Nope. They're almost spherical — no long tail.

- ▶ The brain was once thought to stop growing cells past childhood. But studies show brain cells keep appearing as we age.

- ▶ Hormone therapy was once thought to protect postmenopausal women from heart disease. The latest studies suggest the opposite is true.

- ▶ People were thought to use only 10% of their brains. That's more urban

myth than fact; brain imaging shows that most of the brain is suitably employed.

Pluto's demotion is more a matter of

scientific definition than the result of any new finding, Schaefer notes, which means astronomers may go through a similar exercise again someday. The good news, he says, is that "for ques-

tions relating to the physical universe, modern science has been finally answering the age-old questions with reality, and not with myths."

### Reading strategy: Summarizing

**Directions:** As you read the article, "The universe has room for change," highlight unfamiliar words or concepts. Next, get your peers' input on the ideas and words you highlighted. If necessary, consult a reference source (a book, your teacher, the Internet, etc.) until you have a good grasp of the article. Finally, use the graphic organizer below to summarize the story using fewer and fewer words. As a class, discuss how summarizing information can enhance your understanding of it.

Summarize the article in two paragraphs:

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**Extension:** Read one of the articles on the front page of today's News section. Summarize the story in one sentence, and then, one word. Compare your work with a peer's. Are your summaries very similar or different? When there are two different summaries of the same article, can both be accurate? Explain.