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Subject: NASA SELECTS MISSIONS TO EXPLORE TWO LARGE ASTEROIDS AND SEARCH FOR EARTH-LIKE PLANETS

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NASA SELECTS MISSIONS TO EXPLORE TWO LARGE ASTEROIDS AND SEARCH FOR EARTH-LIKE PLANETS

Two new NASA missions, selected today in the agency's Discovery Program, promise to bring staples of science-fiction stories to reality.

The missions are Dawn, slated for launch in 2006, which will orbit the two largest asteroids in our solar system, and Kepler, a spaceborne telescope, also scheduled for launch in 2006, which will search for Earth-like planets around stars beyond the solar system.

"Kepler and Dawn are exactly the kind of missions NASA should be launching, missions that tackle some of the most important questions in science yet do it for a very modest cost," said Dr. Edward Weiler, associate administrator for space science at NASA Headquarters in Washington. "It's an indicator of how far we've come in our capability to explore space when missions with such ambitious goals are proposed for the Discovery Program of lower-cost missions rather than as major projects costing ten times as much."

The Dawn mission will make a nine-year journey to orbit the two most massive asteroids known, Vesta and Ceres, two "baby planets" very different from each other yet both containing tantalizing clues about the formation of the solar system. Using the same set of instruments to observe these two bodies, both located in the main asteroid belt between Mars and Jupiter, Dawn will improve our understanding of how planets formed during the earliest epoch of the solar system.

Ceres has quite a primitive surface, water-bearing minerals, and possibly a very weak atmosphere and frost. Vesta is a dry body that has been resurfaced by basaltic lava flows, and may have an early magma ocean like Earth's Moon. Like the Moon, it has been hit many times by smaller space rocks, and these impacts have sent out meteorites at least five times in the last 50 million years.

The Dawn mission builds on the highly successful ion-propulsion technology pioneered by NASA's Deep Space 1 spacecraft. During its nine-year journey through the asteroid belt, Dawn will rendezvous with Vesta and Ceres, orbiting from as high as 800 kilometers (500 miles) to as low as 100 kilometers (about 62 miles) above the surface.

The mission will determine these pre-planets' physical attributes, such as shape, size, mass, craters and internal structure, and study more complex properties such as composition, density and magnetism.

Led by principal investigator Dr. Christopher T. Russell of the University of California, Los Angeles, the project is managed by NASA's Jet Propulsion Laboratory, Pasadena, Calif. Orbital Sciences Corporation, Dulles, Va., will develop the spacecraft.

"With its cutting-edge capability, Kepler may help us answer one of the most enduring questions humans have asked throughout history: are there others like us in the universe?" said principal investigator William Borucki of NASA's Ames research Center, Moffett Field, Calif., leader of the second selected mission.

The Kepler Mission differs from previous ways of looking for planets which have led to the discovery of about 80 Jupiter-sized planets around 300 times more massive than Earth. Kepler will look for the 'transit' signature of planets that occurs each time a planet crosses the line-of-sight between the planet's parent star the planet is orbiting and the observer. When this happens, the planet blocks some of the light from its star, resulting in a periodic dimming. This periodic signature is used to detect the planet and to determine its size and orbit. Kepler will continuously fix its gaze at a region of space containing 100,000 stars and will be able to determine if Earth-sized planets make a transit across any of the stars.

The industrial partner for mission hardware development is Ball Aerospace & Technologies Corp., Boulder, Colo. Kepler's selection involves a delayed start of development of up to one year due to funding constraints in the Discovery program.

NASA selected these missions from 26 proposals made in early 2001. The missions must stay within the Discovery Program's development-cost cap of about \$299 million.

The Discovery Program emphasizes lower-cost, highly focused scientific missions. The past Discovery missions are NEAR Shoemaker, Mars Pathfinder and Lunar Prospector, all of which successfully completed their missions. Stardust and Genesis are in space; both have begun collecting science data, although Stardust has not yet arrived at its target comet. CONTOUR is scheduled to launch next summer, Deep Impact in January 2004 and MESSENGER in March 2004. ASPERA-3 and NetLander are Discovery Missions-of-Opportunity under development.

Information about Dawn and images are available at:
<http://www-ssc.igpp.ucla.edu/dawn/>

Details about the Kepler Mission are available at:
<http://www.kepler.arc.nasa.gov>
Kepler images are available at:
<http://www.kepler.arc.nasa.gov/downloading.html>

Information about the Discovery Program is available at:
<http://discovery.nasa.gov/>

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