Curiosity lands safely on Mars

CURIOSITY has phoned home from the dusty surface of Mars.

Radio signals and images received at 10:32 p.m. PDT by NASA's Jet Propulsion Laboratory confirm that the rover has reached Mars' Gale Crater, Curiosity's intended destination after an 8.5-month journey of 567 million kilometers.

Scientists and engineers packed into the JPL mission control room erupted in cheers upon receiving word that the one-ton, six-wheeled rover had survived a complicated sequence of maneuvers that ferried the spacecraft from the top of the Martian atmosphere to the floor of the crater a descent covering 640 kilometers in just seven minutes.

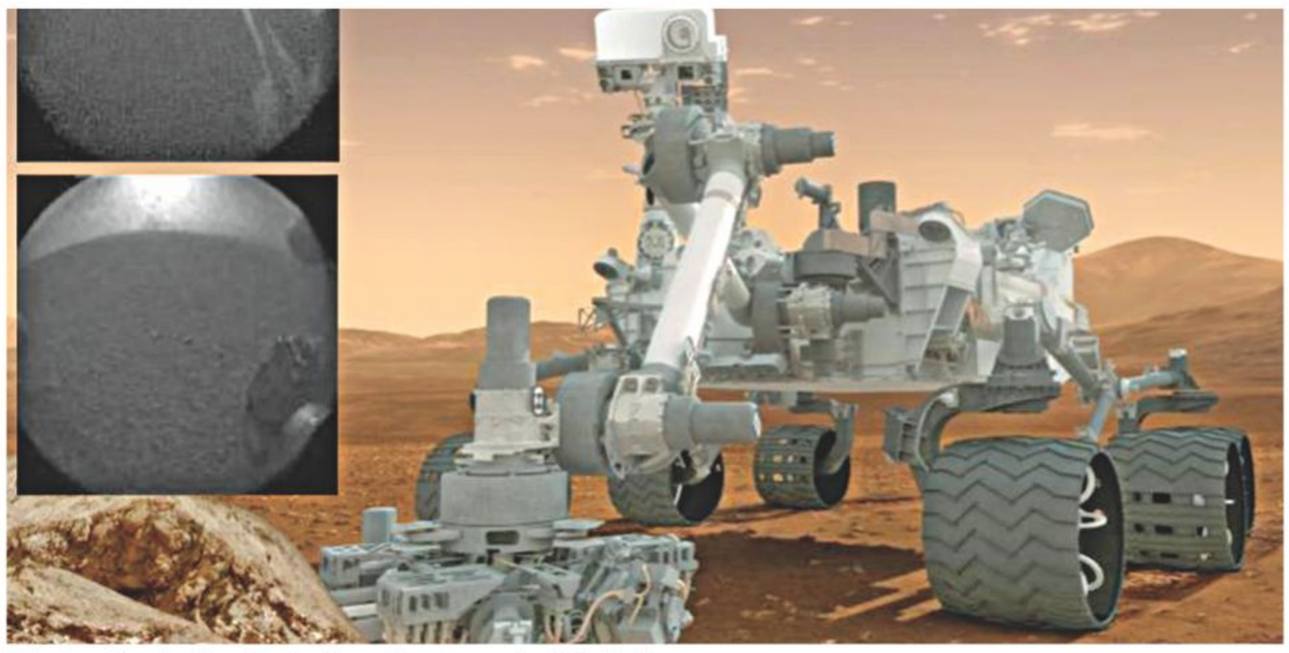
Dubbed "seven minutes of terror" by NASA engineers, Curiosity's touchdown was the interplanetary equivalent of a high-flying, hypersonic circus act, a performance that included firing 76 pyrotechnic charges, dropping 150 kilograms of tungsten, deploying a massive parachute and being lowered to the planet's surface from a rocket-powered sky crane.

"It's like us launching out of Kennedy Space Center, sending something here to the Rose Bowl, and having it land on the 50-yard line on a Frisbee," said NASA Administrator Charles Bolden.

Like any considerate traveler, the rover's first task after phoning home with news of its safe arrival was to send pictures. A thumbnail image from Curiosity, relayed through the Mars Odyssey Orbiter, depicted one of the rover's wheels resting on Mars.

Now, the rover's journey on the Red Planet can begin, a trek that will take it from the floor of Gale Crater to the slopes of Mount Sharp, the massive mountain rising from the crater's depths. There, this most advanced rover ever will search for organic compounds and signs of life-friendly environments, while reading in the crater's layers a story of Martian history. All along the way, the rover will stamp "JPL" into Mars' reddish sands in Morse code, a message engineers imprinted into its tire treads.

Landing Curiosity successfully is "one of the greatest feats in planetary exploration ever," says Doug McCuistion, director of NASA's Mars Exploration Program. "It shows the leadership that the United States has had in the exploration of Mars."



Minutes after landing, Curiosity sent an image back to Earth.

The $2.5 billion rover, probably the last mission of its size to launch in this decade, is crucial for the continuing success of NASA's Mars program. "Our nation has had a continuous presence on Mars for 15 years," says Charles Elachi, director of the Jet Propulsion Laboratory. "It is a great day; it is a great moment."

Curiosity's experiments will take several steps toward determining if Mars' early environment was warmer and wetter billions of years ago, as scientists suspect, and answering the question of whether life ever evolved on the planet.

"One of the main reasons for going there is to figure out whether life ever started," said Michael Meyer, lead scientist for NASA's Mars Exploration Program. "My conclusion would be that life is easy, it's a natural process, and that the universe is just littered with places that support life."

SOURCE: SCIENCE NEWS

Rover's own shadow

CHIMERA

Bio-engineered jellyfish

A synthetic jellyfish mimic swimming.

USING rat heart cells and silicone polymer, researchers have bioengineered a "jellyfish" that knows how to swim.

The odd jellyfish mimic, dubbed a "Medusoid" by its creators, is more than a curiosity. It's a natural biological pump, just like the human heart. That makes it a good model to use to study cardiac physiology, said study researcher Kevin Kit Parker, a bioengineer at Harvard University.

"The idea is to look at a muscular pump other than the heart or other muscular organ and see if there are some fundamental similarities, or design principles, that are conserved across them," Parker told LiveScience. "This study revealed that there are."

Building a jelly: Jellyfish propel themselves with a pumping action, as anyone who has ever watched them float around an aquarium tank can attest. Parker was looking for a way to tackle questions about the heart that aren't well understood when he saw some jellyfish in a display in 2007.

"I thought, 'I can build this,'" he said.

The ingredients were rat heart muscle cells and a thin silicone film. ("The world needs less rats and more jellyfish, so I thought it would be cool to do a one-for-one swap," Parker joked.) Along with researchers from the California Institute of Technology, he and his team engineered the cells and silicone in a pattern that mimicked the structure of a real jellyfish. They then stuck the creature in a tank full of electrically conducting fluid and zapped it with current.

SOURCE: **LIVE SCIENCE**

LIGHTS

Father of Genetics

SOURCE: WIKIPEDIA

Gregor Mendel

JOHANN Mendel was an Austrian scientist who is famous as the founder of the new science of genetics. Mendel verified that the inheritance of certain traits in pea plants follows particular patterns, which now is referred as the laws of Mendelian inheritance. His work was recognised by the turn of the 20th century. The independent rediscovery of these laws formed the foundation of the modern science of genetics.

On July 20, 1822, Mendel was born in an ethnic German family in Hyn?ice, Czech Republic. During his childhood, Mendel worked as a gardener, studied beekeeping, and as a young man attended Gymnasium in Opava. In 1840, he joined the University Of Olomouc, Faculty of Philosophy.

In 1843 Mendel began his training as a priest. Born Johann Mendel, he took the name Gregor upon entering religious life. In 1851 he was sent to the University of Vienna to study under the sponsorship of Abbot C. F. Napp. Besides his work on plant breeding while at St Thomas's Abbey, Mendel also bred bees in a bee house that was built for him, using bee hives that he designed. He also studied astronomy and meteorology, founding the 'Austrian Meteorological Society' in 1865. The majority of his published works were related to meteorology. After completing his work with peas, Mendel turned to experimenting with honeybees to extend his work to animals.

He also described novel plant species, and these are denoted with the botanical author abbreviation "Mendel."

Mendel died on January 6, 1884, at age 61, in Brno, Moravia, Austria-Hungary (now Czech Republic), from chronic nephritis.

WAR GOES ON

Battle against malaria parasite

GENETIC variability revealed in malaria genomes newly sequenced by two multi-national research teams points to new challenges in efforts to eradicate the parasite, but also offers a clearer and more detailed picture of its genetic composition, providing an initial roadmap in the development of pharmaceuticals and vaccines to combat malaria.

The research appears in two studies published in the latest issue of the journal Nature Genetics. They focus on Plasmodium vivax (P. vivax), a species of malaria that afflicts humans and the most prevalent human malaria parasite outside Africa, and Plasmodium cynomolgi(P. cynomolgi), a close relative that infects Asian Old World monkeys.

"The bad news is there is significantly more genetic variation inP. vivax than we'd thought, which could make it quite adept at evading whatever arsenal of drugs and vaccines we throw at it," said Professor Jane Carlton, senior author on both studies and part of New York University's Center for Genomics and Systems Biology. "However, now that we have a better understanding of the challenges we face, we can move forward with a deeper analysis of its genomic variation in pursuing more effective remedies."

In one study, the researchers examined P. vivax strains from different geographic locations in West Africa, South America, and Asia, providing the researchers with the first genome-wide perspective of global variability within this species. Their analysis showed that P. vivax has twice as much genetic diversity as the world-wide Plasmodium falciparum (P. falciparum) strains, revealing an unexpected ability to evolve and, therefore, presenting new challenges in the search for treatments.

The second study, performed jointly with Professor Kazuyuki Tanabe at Osaka University, Japan, sequenced three genomes of P. cynomolgi. The researchers compared its genetic make-up to P. vivax and to Plasmodium knowlesi (P. knowlesi), a previously sequenced malaria parasite that affects both monkeys and humans in parts of Southeast Asia.

Their work marked the first time P. cynomolgi genomes have been sequenced, allowing researchers to identify genetic diversity in this parasite. Its similarity to P. vivax means that their results will also benefit future efforts to understand and fight against forms of malaria that afflict humans.

"We have generated a genetic map of P. cynomolgi, the sister species to P. vivax, so we can now push forward in creating a robust model system to study P. vivax," explained Tanabe. "This is important because we can't grow P. vivax in the lab, and researchers desperately need a model system to circumvent this."

SOURCE: SCIENCE DAILY

Genetic variability revealed in malaria genomes newly sequenced by two multi-national research teams points to new challenges in efforts to eradicate the parasite.

Much of the work occurred under a seven-year grant from the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health. The funding has established 10 International Centers of Excellence for Malaria Research (ICEMR). Carlton is heading an ICEMR based in India, where malaria -- and P. vivax in particular -- is a significant public health burden. A particular aim of this Center of Excellence is to support and help train scientists in India who can then work to combat infectious diseases, such as malaria, where they are most prominent. The P. vivaxsequencing was funded by NIAID as part of the NIAID funded Genomic Sequencing Center for Infectious Diseases at the Broad Institute under Contract No. HHSN272200900018C. The Burroughs Wellcome Fund was instrumental in providing pilot funds for the P. cynomolgi sequencing.

Researchers at the following institutions were also part of theP. vivax sequencing: The Broad Institute, the National Institute of Malaria Research in India, Arizona State University, and the Centers for Disease Control and Prevention.

Researchers at the following institutions were also part of the work on P. cynomolgi: Osaka University, Dokkyo Medical University, Japan's Corporation for Production and Research of Laboratory Primates, Nagasaki University, Juntendo University's School of Medicine, the University of Tokyo, the National Institute of Biomedical Innovation, the Centers for Disease Control and Prevention, and Arizona State University.

CHRONOLOGICAL BRAIN

Autobiographical memory

UC Irvine scientists have discovered intriguing differences in the brains and mental processes of an extraordinary group of people who can effortlessly recall every moment of their lives since about age 10.

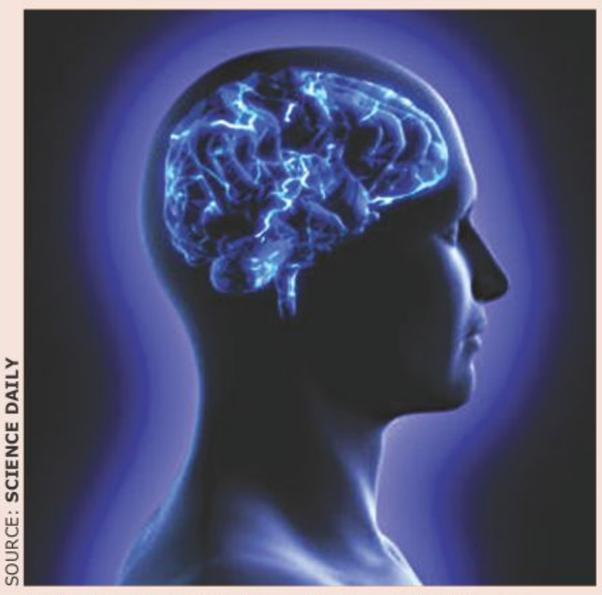
The phenomenon of highly superior autobiographical memory -- first documented in 2006 by UCI neurobiologist James McGaugh and colleagues in a woman identified as "AJ" -- has been profiled on CBS's "60 Minutes" and in hundreds of other media outlets. But a new paper in the peer-reviewed journal Neurobiology of Learning & Memory's July issue offers the first scientific findings about nearly a dozen people with this uncanny ability.

All had variations in nine structures of their brains compared to those of control subjects, including more robust white matter linking the middle and front parts. Most of the differences were in areas known to be linked to autobiographical memory, "so we're getting a descriptive, coherent story of what's going on," said lead author Aurora LePort, a doctoral candidate at UCI's Center for the Neurobiology of Learning & Memory.

Surprisingly, the people with stellar autobiographical memory did not score higher on routine laboratory memory tests or when asked to use rote memory aids. Yet when it came to public or private events that occurred after age 10½, "they were remarkably better at recalling the details of their lives," said McGaugh, senior author on the new work.

"These are not memory experts across the board. They're 180 degrees different from the usual memory champions who can memorize pi to a large degree or other long strings of numbers," LePort noted. "It makes the project that much more interesting; it really shows we are homing in on a specific form of memory."

She said interviewing the subjects was "baffling. You give them a date, and their response is immediate. The day of the week just comes out of their minds; they don't even think about it. They can do this for so many dates, and they're 99 percent accurate. It never gets old."



SOURCE: SCIENCE DAILY

UC Irvine scientists have discovered intriguing differences in the brains and mental processes of an extraordinary group of people.

SILK MAKER

SOURCE: LIVE SCIENCE

Can you imagine yourself holding this tarantula?

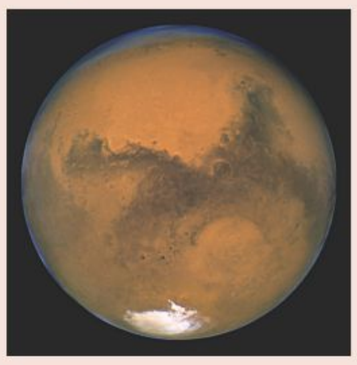
Eight-legged wonder

All spiders are predatory eight-legged creatures that have organs to spin silk at the back ends of their bodies. They are the largest part of the arachnid family, a group that also includes scorpions and ticks. Spiders all have the ability to bite with venom-injecting fangs to kill prey and nearly all of them are poisonous (even if it's just a little).

Beyond that, there are many different kinds of spiders just about 40,000 types living in all continents except for Antarctica.

DID YOU KNOW?

Why are we obsessed with Mars?



NASA's Hubble Space Telescope snapped this shot of Mars on Aug, 26, 2003.

As one of our closest and most familiar neighbours, the Red Planet has served as the source of legends since the first storytellers slept under the stars. With its 24.6-hour day and snowy polar caps, Mars is really the only place that looks promising for life whether alien or an outpost for humans. In modern times, that makes it a perfect slate for allegories about human behavior, from the recently deceased sci-fi author and space visionary Ray Bradbury's critiques of American culture to Kim Stanley Robinson's sci-fi books on the ecological and sociological sustainability on Mars.