Los Angeles

SpaceX on Thursday launched the first satellite designed and built entirely in Taiwan, a spacecraft that aims to boost disaster forecasts and mapping, environmental observation and space research. The satellite, called FORMOSAT-5, weighs nearly 1,000 pounds (450 kilograms) and blasted off atop a Falcon 9 rocket at 11:51 am (1851 GMT).

“Falcon 9 has lifted off,” SpaceX engineer Lauren Lyons said as the rocket soared into the sky over the launch pad at Vandenberg Air Force Base in California, leaving billowing clouds of smoke in its wake.

About 10 minutes after launch, SpaceX confirmed that FORMOSAT-5 had been successfully deployed into orbit. The satellite is designed to operate for five years, and will orbit the Earth once every 100 minutes. Its predecessor, FORMOSAT-2, was decommissioned last year after 12 years, a lifespan in which it mapped a series of major disasters in parts of Asia and Africa. It, too, had been designed to operate for just five years.

“This is the 15th successful landing of a Falcon 9,” Lyons said.

Sydney

Taking a common vitamin supplement could significantly reduce the number of miscarriages and birth defects worldwide, Australian scientists said Thursday, in what they described as a major breakthrough in pregnancy research.

The study, published in the New England Journal of Medicine, found that deficiency in a key molecule among pregnant women stopped embryos and babies organs from developing correctly in the womb, but could be treated by taking the dietary supplement vitamin B3, also known as niacin.

“Now, after 12 years of research, our team has also discovered that this deficiency can be cured and miscarriages and birth defects prevented by taking a common vitamin,” said Sally Dunwoodie, a biomedical researcher at the Victor Chang Cardiac Research Institute.

“The ramifications are likely to be huge. This has the potential to significantly reduce the number of miscarriages and birth defects around the world, and I do not use those words lightly.”

Health Minister Greg Hunt hailed the study as a “historic medical breakthrough”.

About 10% of pregnancies end in miscarriage, and birth defects are found in 3 to 4% of newborns. The researchers believe the new findings could help prevent miscarriages and birth defects in one in four pregnant women.

Dementia risk

In the United States alone, up to 3.8 million such injuries occur each year in professional, amateur and school sports. The study, based on a sampling of 27 college varsity athletes from unnamed universities who had suffered concussions, showed that the problem is not confined to violent contact sports such as American football or boxing.

“Changes in brain structure and function after a concussion remained visible in university athletes even after they were medically cleared to resume competitive sports, researchers reported Thursday. Using advanced magnetic resonance imaging (MRI), scientists detected lingering alterations in the brain’s white matter, and changes in zones linked to vision and planning, they reported in the journal Scientific Reports.

White matter consists of nerve fibres, called axons, that allow various parts of the brain to interact. In athletes that took longer than usual to recover, the tests also spotted anomalies in areas of the brain associated with movement.

“This is the first concrete evidence we have that the brain is lagging behind in terms of recovery from a concussion,” said lead author Nathan Churchill, a post-doctoral fellow at St. Michael’s Hospital in Toronto, Canada.

“Our study shows that the neurobiological consequences of concussion may outlast the symptoms we’re typically looking for when determining whether an athlete is ready to return to play,” he said in a statement.

In making a “return-to-play” determination, trainers and doctors monitor symptoms reported by the athlete, perform fitness tests, and follow a step-by-step protocol for the resumption of intense physical activity.

The findings, however, suggest that longer recovery times may be needed to reduce the chances of repeat injuries in athletes who have been knocked out. Concussion in sport and recreation is a growing health concern worldwide.

Vitamin ‘breakthrough’ to cut miscarriages

Picture for representation only

Today’s announcement provides new hope to the one in four pregnant women who suffer a miscarriage,” Hunt said Thursday, citing Australian data.

“And with 7.9 million babies around the world currently being born with birth defects every year, this breakthrough is incredible news.”

The scientists used genetic sequencing on families suffering from miscarriages and birth defects and found gene mutations that affected production of the molecule, NAD (nicotinamide adenine dinucleotide).

With Vitamin B3 -- found in meat and vegetables -- needed to make NAD, they tested the effect of taking the supplement on developing mice embryos that had similar NAD deficiencies as human ones, and found a significant change.

“Before vitamin B3 was introduced into the (mice) mother’s diet, embryos were either lost through miscarriage or the offspring were born with a range of severe birth defects,” the Victor Chang Institute said in a statement.

“In the absence of NAD, the miscarriages and birth defects were completely prevented, with all the offspring born perfectly healthy.” (AFP)