

Drug to treat the mentally retarded



A patient with Fragile X Syndrome is taking part in a clinical trial in Atlanta. A clinical trial coordinator administers electrocardiogram

pill to ease a type of mental retardation? An experiment is under way to develop one, aimed at a genetic disorder that might unravel some of the mysteries of autism along the way.

A handful of drug makers are working to develop the first treatment for Fragile X, spurred by brain research that is making specialists rethink how they approach developmental disorders.

"We are moving into a new age of reversing intellectual disabilities," predicts Dr. Randi Hagerman, who directs the MIND Institute at the University of California, Davis, a study site.

Fragile X, more common in males than females, ranges from learning disabilities to severe cognitive impairment, along with emotional and behavioral problems. The genetic defect disrupts a basic foundation of learning: How brain cells respond to experiences by forming connections between each other, called synapses. Those structures aren't destroyed - they're too immature to work properly.

"The process of learning is just that much more difficult but not impossible, because there's nothing wrong with the synapse," says Dr. Stephen Warren, an Emory University geneticist who led the discovery of Fragile X's mutated gene.

The experimental drugs have an unwieldy name - mGluR5 antagonists (pronounced EM-gloo-ahr). But they aim to get the brain back on track by simply blocking an overactive receptor that plays a key role in weakened synapses. The goal is to strengthen synapses, to make learning easier and behavior more normal.

These are early-stage studies, beginning in adults to look for side effects. Specialists expect, if they work, any effect would be bigger in children's still-developing brains.

Scientists are watching closely because "this looks like a really promising pathway" for some types of autism, too, says Dr. Andrea Beckel-Mitchener of the National Institute of Mental Health, which, along with

the patient advocacy group FRAXA, helped fund the underlying research.

Researchers don't expect a cure: Drugs can't turn back adults' decades of cognitive impairment, Warren cautions.

What goes wrong in Fragile X? That mutated gene on the X chromosome shuts off production of a brain protein called FMRP. Boys are usually more affected than girls, because they have only one X chromosome while girls have two.

FMRP puts the brakes on other brain proteins. Among other things, its absence allows too much activity by that mGluR5 receptor. Some drug companies already had been exploring drugs to tamp down mGluR5 because it may play a role in anxiety, too.

Now in the Fragile X pipeline: -New Jersey-based Hoffman-La Roche Ltd. just began a Phase II trial at Emory, UC-Davis and three other hospitals comparing its candidate to a dummy pill in 60 adults with Fragile X.

-Hagerman says results are due soon from Swiss drug maker Novartis AG's similar study in Europe.

-Massachusetts-based Seaside Therapeutics LLC - co-founded by Massachusetts Institute of Technology's Dr. Mark Bear, who made the mGluR5 link - is testing one drug thought to indirectly affect mGluR5 and will open trials of a more targeted one soon.

What's the evidence? The approach worked in mice bred with the Fragile X gene. More startling, when Hagerman gave a single dose of one experimental drug to 12 patients, she measured brain or behavior changes that lasted until the dose wore off in half of them.

Eye contact and language improved, Hagerman recalls; one young man even asked the nurse for a date. "That got us pretty jazzed."

Source: AP

Space shuttle blasts off

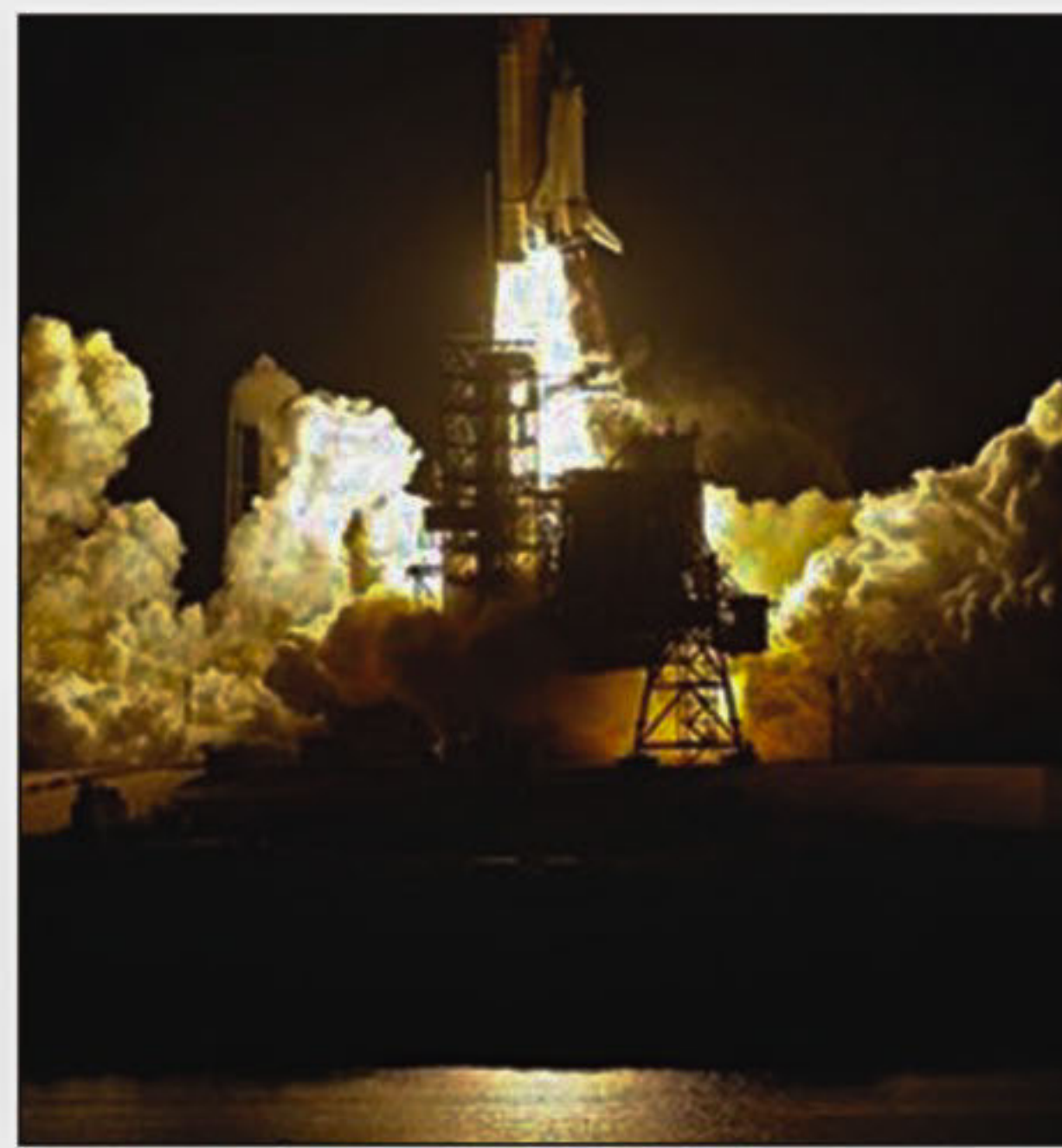
ENDEAVOUR and six astronauts rocketed into orbit Monday on what's expected to be the last nighttime launch for the shuttle program, hauling a new room and observation deck for the International Space Station.

The space shuttle took flight before dawn, igniting the sky with a brilliant flash seen for miles around. The weather cooperated at the last minute; Sunday (07.02.10) morning's try was thwarted by thick, low clouds that returned and almost caused another delay.

Endeavour's destination the space station, home to five men was soaring over Romania at the time of liftoff. The shuttle is set to arrive at the station early Wednesday.

Zamka and his crew will deliver and install Tranquility, a new room that will eventually house life-support equipment, exercise machines and a toilet, as well as a seven-windowed dome. The lookout has the biggest window ever sent into space, a circle 31 inches across.

It will be the last major construction job at the space station. No more big pieces



Space shuttle Endeavour lifts off from launch pad 39A at Kennedy Space Center in Cape Canaveral, Fla., Monday, Feb. 8, 2010

like that are left to fly.

Endeavour's launch also was broadcast to the space station residents, who got to watch it live.

The 13-day shuttle mission comes at one of the most agonizing times for NASA.

Exactly one week ago, the space agency finally got its marching orders from President Barack Obama: Ditch the back-to-the-moon Constellation program and its Ares rockets, and pack on the research for an as-yet-

unspecified rocket and destination.

NASA's boss, ex-astronaut Charles Bolden, favors Mars. But he, too, is waiting to hear how everything will play out.

The space station came out a winner in the Obama plan. The president's budget would keep the outpost flying until at least 2020, a major extension.

The spectacle of the night launch illuminating the sky attracted a crowd, including some members of Congress and federal big shots. Endeavour shot through some thin clouds on its way into orbit, and its bright flame was visible for several minutes from the launch site.

But the roads weren't nearly as jammed as they were the night before. More than 100 Europeans also were on hand because of the Italian-built Tranquility and domed cupola.

Within 15 minutes of taking off, the astronauts were enjoying "a beautiful sunrise" from orbit, with the moon as a backdrop. "Wish you could be here," Zamka called down. "Great show, Endeavour," replied Mission Control.

Source: AP

Arctic birds resistant to antibiotic!



Birds in the Arctic tundra carry bacteria resistant to antibiotic, say Swedish scientists.

ZAHANGIR KABIR

SWEDISH researchers report that birds captured in Arctic tundra are carriers of antibiotic-resistant bacteria. These findings indicate that resistance to antibiotics has spread into nature, which is an alarming scene for future health care.

The scientists took samples from 97 birds in northeastern Siberia, northern Alaska, and northern Greenland. These samples were cultivated directly in special laboratories that the researchers had installed onboard the icebreaker Oden and were further analyzed at the microbiological laboratory at the Central Hospital in Växjö, Sweden.

The researchers' hypothesis is that immigrating birds have passed

through regions in Southeast Asia, where there is a great deal of antibiotics pressure and carried with them the resistant bacteria to the tundra.

It's alarming to find that these bacteria exist also among the birds out on the tundra as findings states that birds in the Western world has also proved to be carriers of bacteria that are resistant to antibiotics.

Findings show that resistance to antibiotics is not limited to society and hospitals but is now spreading into the wild. Escalating resistance to antibiotics over the last few years has crystallized into one of the greatest threats to well-functioning health care in the future.

The writer teaches English at Shanto-Mariam University of Creative Technology, Dhaka

MESOZOIC LIFE

Dinosaur with stripes



The image provided by the National Geographic Society shows an Anchiornis huxleyi, in flying colors. Just days after one group of researchers reported that some dinosaurs had russet-colored feathers, another set of scientists says their ancient fossil appears to have had a Mohawk crest and stripes. The reports are the first to confidently assign colors to dinosaurs, long a subject of speculation among researchers and school children

SCIENCE QUIZ

Quiz 1
If you could travel in a space-ship at the speed of light away from the solar system, how long could you see the sun?
a. 100 years
b. 10 years
c. 30 years

Quiz 2
Approximately how many stars does the Andromeda Nebula contain?
a. 200,000,000,000
b. 500,000
c. 100,000,000,000

For answers see next issue
Answers to last week's Quiz
Quiz 1: c) J
Quiz 2: c) Shakespearean Characters
Collected

SOLAR FAMILY

Pluto changing colour

SURNED Pluto is changing its looks, donning more rouge in its complexion and altering its iceball surface here and there.

Color astronomers surprised.

Newly released Hubble Space Telescope photos show the distant one-time planet - demoted to "dwarf planet" status in 2006 - is changing color and its ice sheets are shifting.

To the layman, it has a yellow-orange hue, but astronomers say it has about 20 percent more red than it used to have.

The pictures show icy frozen nitrogen on Pluto's surface growing and shrinking, brightening in the north and darkening in the south. Astronomers say Pluto's surface is changing more than the surfaces of other bodies in the solar system. That's unexpected because a season lasts 120 years in some regions of Pluto.

"It's a little bit of a surprise to see these changes happening so big and so fast," said astronomer Marc Buie of the Southwest Research Institute in Boulder, Colo. "This is unprecedented."

From 1954 to 2000, Pluto didn't change in color when it was photographed from Earth. But after that, it did. The red levels increased by 20 percent, maybe up to 30 percent, and stabilized from about 2000 to 2002, Buie said. It's not as red as Mars, however, Buie said.

Buie said he can explain the redness, but not why it changed so dramatically and so recently. The planet has a lot of methane, which contains carbon and hydrogen atoms. The hydrogen gets stripped off by solar winds and other factors, leaving carbon-rich areas on the surface, which tend to be red and dark.

The Hubble photos were taken in



NASA photos paint a Pluto that is significantly redder than it had been for the past several decades

2002 and the analysis took a few years. But why Pluto changed so quickly was such a mystery that Buie held off for years on announcing what he had found, worried that he might be wrong. However, since Pluto's moon Charon hadn't changed color in the same telescope images, he decided the Pluto findings weren't an instrument mistake.

His analysis also found that nitrogen ice was shifting in size and density in surprising ways. It's horribly cold on Pluto with, paradoxically, the bright spots being the coldest at about -382 degrees Fahrenheit. Astronomers are still arguing about the temperatures of the warm dark spots, which Buie believes may be 30 degrees warmer than the darker

areas. Part of the difficulty in figuring out what is going on with Pluto is that it takes the dwarf planet 248 years to circle the sun, so astronomers don't know what conditions are like when it's farthest from the sun. The last time Pluto was at its farthest point was in 1870, which was decades before Pluto was discovered. Unlike Earth, Pluto's four seasons aren't equal lengths of time.

Buie's explanation makes sense, said retired NASA astronomer Stephen Maran, co-author of a book on Pluto. "Pluto is interesting and poorly understood, whether it qualifies as a planet or not," he said.

Source: AP

IN COLO STORE

Scotch in Antarctic



Whisky and brandy belonging to Ernest Shackleton have been recovered after being buried for 100 years in Antarctica

THE spirits were excavated from beneath Shackleton's Antarctic hut which was built in 1908.

"To our amazement we found five crates, three labelled as containing whisky and two labelled as containing brandy," said Al Fastier of the New Zealand Antarctic Heritage Trust, who previously believed there were only two crates.

"The unexpected find of the brandy crates, one labelled Chas Mackinlay & Co and the other labelled The Hunter Valley Distillery Limited Allandale are a real bonus."

Some of the crates have cracked and ice has formed inside which will make the job of extracting the contents delicate.

However, Fastier said the trust was confident the crates contained intact alcohol, given that liquid could be heard when the crates were moved.

The smell of whisky in the surrounding ice also indicated full bottles of spirits were inside, albeit that one or more might have broken.

Richard Paterson, master blender at Whyte and Mackay, whose company supplied the Mackinlay's whisky for Shackleton, described the find as "a gift from the heavens" for whisky lovers.

"If the contents can be confirmed, safely extracted and analysed, the original blend may be able to be replicated," he said.

"Given the original recipe no longer exists this may open a door into history." Fastier said the Trust would determine in the coming weeks how best to handle the "delicate conservation task".

Shackleton's expedition ran short of supplies on their long trek to the South Pole from Cape Royds in 1907-1909 and they eventually fell about 100 miles (160 kilometres) short of their goal.

No lives were lost, vindicating Shackleton's decision to turn back from the pole, first reached in 1911 by Norwegian explorer Roald Amundsen.

Shackleton's expedition sailed from Cape Royds hurriedly in 1909 as winter ice began forming in the sea, forcing them to leave some equipment and supplies -- including the whisky -- behind.

Source: AFP