

U.S. research has raised hopes of developing a drug therapy to reverse the learning problems associated with Down's syndrome.

At birth children with Down's syndrome are not developmentally delayed, but memory problems often mean they soon tend to fall behind.

The new study, in mice, pinpoints the key defects in the brain, and suggests a possible way to tackle them.

The study appears in the journal *Science Translational Medicine*.

Down syndrome is a genetic disorder caused by an extra copy of chromosome 21.

It is often associated with deficits in the memory centers, making it difficult for the brain to collect and make use of experiences in a way necessary to form new memories and underpin the development of learning. In the latest study researchers from Stanford University and the Lucile Packard Children's Hospital - both located in Stanford, California - worked on mice genetically engineered to mimic Down's syndrome.

Unlike other mice, the genetically engineered animals, when placed in a cage with which they were unfamiliar, failed to start building new nests.

The researchers showed that cells in an area of the animals' brain called the hippocampus were starved of a supply of a chemical called noradrenaline, which helps nerve cells to communicate with each other.

The problem seems to be due to the deterioration of another area of the brain called the locus coeruleus, which usually communicates with the hippocampus during the formation of memories.

It seems that the copy of the extra chromosome carried by people with Down's contains a specific gene - APP - which spells trouble for the locus coeruleus.

The researchers found that when levels of the chemical were artificially boosted, it had an almost instant positive effect on the animals' behavior -



they started nest building, and improved their performance on other tests too.

Drugs that target the noradrenaline system have already been developed for depression and attention deficit hyperactivity disorder (ADHD).

The researchers say their work suggests they might also help people with Down's syndrome.

They suspect the most fruitful approach might

be to focus in tandem on noradrenaline and another brain chemical which has been implicated in Down's syndrome, called acetylcholine.

Lead researcher Dr. Ahmad Salehi said the study suggested that an early intervention with the right drugs might help children with Down's syndrome to collect and make sense of information.

He said: "Theoretically, that could lead to an im-

provement in cognitive functions in these kids."

Dr. Melanie Manning, director of the Center for Down Syndrome at Lucile Packard Children's Hospital, said: "It's very exciting."

"We still have a long way to go, but these are very interesting results."

Professor Tony Holland, an expert in learning disabilities at the University of Cambridge, said: "This type of research offers the possibility of understanding the problems that can arise in the brain as a result of inheriting an extra copy of chromosome 21."

"This is turn could lead to targeted and rationale therapies."

However, whether such treatments are safe and effective in humans and whether they can have significant effects on function and bring longer term benefits is a very different matter."

Carol Boys, chief executive of Down's Syndrome Association said: "There is a great deal of research being done in this field, mainly in the U.S. and we are following progress with interest."

"However, it will be quite some time before any of these treatments are available and safe for use with human beings."

"There is much that we need to understand about the genetic makeup of people with Down's syndrome."

(Source: BBC)

HEALTH TIP

When baby is teething

When babies are teething, they're generally miserable from the pain, swelling and tenderness in their gums.

Here are suggestions from the Nemours Foundation to help comfort little ones who are teething:

Use a warm, wet cloth to wipe down baby's face and remove any drool. This may help prevent a rash.

Offer baby something soothing, such as a teething ring or a wet washcloth that's been chilled in the freezer for about 30 minutes. Be sure to wash the cloth after each use.

Treat baby to a gentle gum massage, making sure to use a clean finger.

Ask your doctor if it's safe to give baby acetaminophen. Make sure your doctor approves a specific dose and frequency.

Never tie a teething ring to baby, especially around the neck, as it could cause strangulation.

(Source: HealthDay News)

Sunbeds:

250,000 English kids at risk of cancer

LONDON (AFP) — A quarter of a million children in England aged 11 to 17 face a higher risk of developing malignant skin cancer by using tanning beds, researchers said.

Writing in the *British Medical Journal* (BMJ), the researchers called for urgent legislation to stop sunbed use by minors in England, as is already the case for Scotland and Wales.

The risk of melanoma -- the most lethal form of skin cancer -- increases by 75 percent when use of tanning devices before the age of 30, according to a study published earlier this year in Britain's *The Lancet Oncology*.

In July, the International Agency for Research on Cancer (IARC) placed tanning beds alongside cigarettes and asbestos as a top-level cancer threat.

Current rates of use in England "would lead to more than an estimated quarter of a million 11- to 17-year-olds being put at risk of developing malignant melanoma," wrote Catherine Thomson from Cancer Research UK and Professor Chris Twelves from St James's University Hospital in Leeds.

"National legislation to limit access to sunbed salons to those over 18, and close down unsupervised or coin operated salons, is required to stop more children being put at unnecessary risk," they said.

Six percent of English youngsters in the 11-to-17 age bracket use sunbeds, according to recent studies. The average age at which the practice starts is 14.

Usage rates are nearly three times as high in the north, and more common among older girls and within economically-deprived communities.

More than a quarter of the kids who darken their skin with the devices do so at least once a month, the studies found.

Sunbed use was highest in Liverpool and Sunderland, reaching 51 percent and 48 percent respectively among 15-17 year old girls, with over 40 percent using them weekly.

Exercise important in teens' blood pressure control

NEW YORK (Reuters) — Regular exercise may help keep teenagers' blood pressure in check, regardless of their body weight, a new study suggests.

Researchers found that among nearly 1,300 Canadian teenagers they followed for five years, declining exercise levels over time were linked to small increases in blood pressure.

Gains in body fat were also linked to blood pressure increases, but excess weight did not fully account for the relationship between exercise and blood pressure changes -- especially in girls.

The implication, the researchers report in the *American Journal of Epidemiology*, is that both weight and exercise habits independently affect teenagers' blood pressure.

And that means that getting teens off the couch might help keep their blood pressure under better control, write Katerina Maximova and colleagues of McGill University in Montreal.

The findings are based on 1,293 boys and girls who were 12 to 13 years old at the start of the study. The teens reported on their typical physical activity levels and had their body fat and blood pressure measured at the outset, and then periodically over five years.

For each exercise assessment, the teenagers reported the number of times in the past week they had engaged in moderate to vigorous activities -- like biking, walking or jogging -- for at least 5 minutes.

Overall, the researchers found, the teens' blood pressure inched upward for each session of exercise they lost over time. The increase amounted to less than one point in systolic blood pressure -- the top number in a blood pressure reading -- but the findings do suggest that sed-



entary lifestyles directly affect teenagers' blood pressure, according to Maximova's team.

And that, they write, could have "important public health implications."

High blood pressure and other heart disease risk factors like type 2 diabetes and high cholesterol were once uncommon, or unheard of, in children and teenagers. But rates of these conditions in teenagers have

risen since the 1990s, in tandem with escalating obesity rates.

A study of Canadian teenagers published last month found that between 2002 and 2008, the percentage with at least one heart disease risk factor -- such as high blood pressure or high cholesterol -- rose from 17 percent to 21 percent.

Those researchers also noted that more than half of Canadian children between the ages of 5 and 17 are not getting enough exercise.

And while young people may not see immediate health effects, studies show that teens who are overweight, inactive and carrying heart disease risk factors tend to become adults with those same problems.

The American Heart Association recommends that all children ages 3 and older have their blood pressure checked yearly. Diet changes and exercise are usually the first-line treatment for high blood pressure in teenagers, though some may also need medication.

When it comes to exercise, experts generally recommend that kids strive for 30 minutes of moderate activity, like brisk walking, on most days of the week, as well as 20 minutes of vigorous exercise, like running or bicycling, at least three days per week.

Obesity in adolescence may increase girls' MS risk

NEW YORK (Reuters) — A woman's risk of developing multiple sclerosis (MS) during her lifetime is doubled if she was obese at age 18, new research shows.

"This is the first study to link MS risk with obesity," study co-author Dr. Kassandra L. Munger of the Harvard School of Public Health in Boston told Reuters Health in a telephone interview.

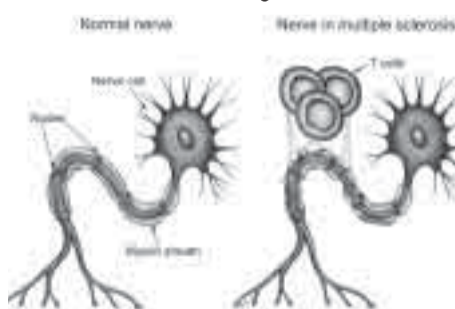
MS is a disease of the central nervous system. Up to half a million Americans have MS, with about 10,000 new cases diagnosed every year. While it is not usually fatal, it's a chronic unpredictable disease with no known cure. The symptoms, including dizziness, blurred vision, slurred speech, incontinence, shakiness, loss of coordination, and weakness, can be debilitating when flare-ups occur.

It's not a common disease. According to Munger, women, generally, have a 1 in 100 risk of developing MS during their lifetime compared to the 1 in 8 lifetime risk of breast cancer.

Munger and her colleagues studied women enrolled in the Nurses' Health Study and Nurses' Health Study II over a 40 year period. Participants answered questions throughout the study about weight, height, body size, smoking and exercise habits, and disease status.

Among the more than 200,000 participants in the two groups, there were 593 cases of MS.

The study found no association between MS risk and hav-



ing a large body size at ages 5 and 10 or as an adult. However, obesity at age 18 was associated with a greater than twofold increased risk of MS and a large body size at age 20 was associated with a 96% increased risk of MS, the study team found.

The findings, reported in the medical journal *Neurology*, underscore the obesity threat, Munger said. "We have another disease which being obese is associated with."

The findings also provide another reason to encourage a healthy weight in young people.

"The prevention of adolescent obesity may contribute to reduced MS risk," they conclude in their report.

The investigators caution that the study has its limitations. The findings need to be validated with further research and only apply to white women.

"There's no reason to believe that the biological mechanisms would be different" in boys, Munger said, but the same can't be said about the racial differences in the disease.

It's possible that any genetic protection that may be at work for African Americans and Asians, who have a lower incidence of MS, may be "stronger than obesity would be at increasing their risk," Munger said.

Weight is not the most significant risk factor for MS, Munger pointed out. The three top ranking risks are environmental: infection with the Epstein Barr virus, vitamin D deficiency, and cigarette smoking, she said.

Mutation found in swine flu virus: WHO

GENEVA (AFP) — The World Health Organization said Friday that a mutation had been found in samples of the swine flu virus taken following the first two deaths from the pandemic in Norway.

However, it stressed that the mutation did not appear to cause a more contagious or more dangerous form of A(H1N1) influenza and that some similar cases observed elsewhere had been mild.

"The Norwegian Institute of Public Health has informed WHO of a mutation detected in three H1N1 viruses," the WHO said in a briefing note.

"The viruses were isolated from the first two fatal cases of pandemic influenza in the country and one patient with severe illness," it said, although it added that no further instances were found in tests.

"Norwegian scientists have analyzed samples from more than 70 patients with clinical illness and no further instances of this mutation have been detected. This finding suggests that the mutation is not widespread in the country," the UN health agency explained.

WHO spokesman Gregory Haertl told AFP that the global health watchdog did not believe "that this has any significant impact for the time being."

However, the agency revealed that a similar mutation had been observed in Brazil, China, Japan, Mexico, Ukraine, and the United States, as early as April.

"The mutations appear to occur sporadically and spontaneously. To date, no links between the small number of patients infected with the mutated virus have been found and the mutation does not appear to spread," the statement said. Some of those cases also produced mild symptoms, Haertl noted.

The WHO also underlined that there was no evidence of more infections or more deaths as a result, while the antiviral drugs used to treat severe flu, oseltamivir (Tamiflu) and zanamivir (Relenza), were still effective on the mutated virus.

"Studies show that currently available pandemic vaccines confer protection," it added, as mass vaccine campaigns were slowly gaining ground in the northern hemisphere amid signs of public skepticism in several European nations.

Scientists fear that mutations in flu viruses could cause more virulent and deadly pandemic flu. The global health watchdog reiterated a call for close monitoring.

The WHO was still assessing the significance of the latest observation, but it stressed that many such changes in the flu virus do not alter the illness it causes in patients.

"Although further investigation is under way, no evidence currently suggests that these mutations are leading to an unusual increase in the number of H1N1 infections or a greater number of severe or fatal cases," it added.

Norwegian authorities reported the country's first swine flu death on September 3, a 52 year-old Danish truck driver who died just over a week earlier.

On Friday, WHO data showed reported that around 6,750 people had died from swine flu since the virus was first uncovered in Mexico and the United States in April.

That represented an increase of about 500 more than a week ago, as the pandemic took hold in the northern hemisphere during the cold season.

The WHO estimates that some 250,000 to 500,000 people die every year from standard seasonal variants of swine flu.