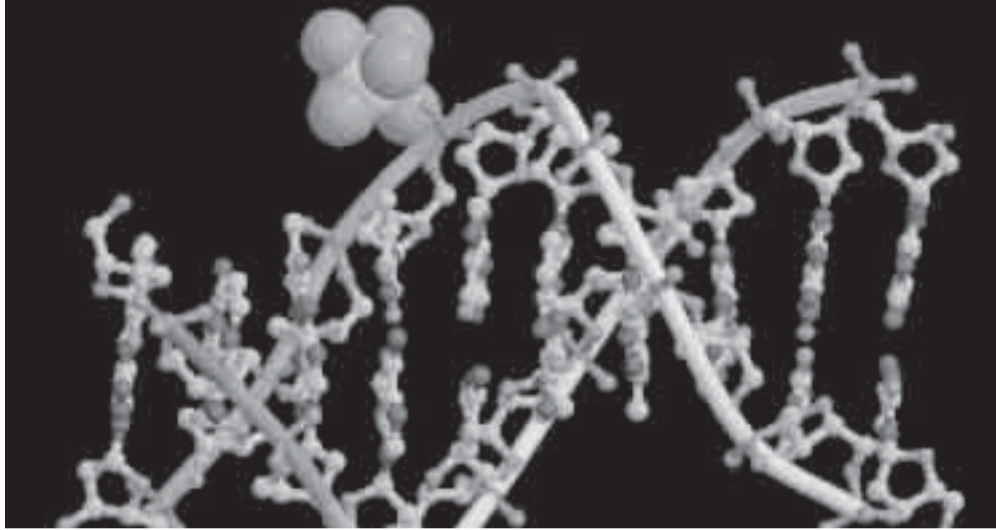


# Scientists crack gene code of common cancers



**LONDON (AFP)** — Two common forms of cancer have been genetically mapped for the first time, British scientists announced, in a major breakthrough in understanding the diseases.

The maps have exposed the DNA mutations that lead to skin and lung cancers, in a discovery scientists said could transform the way these diseases are diagnosed and treated in coming years.

All cancers are caused by damage to genes -- mutations in DNA -- that can be triggered by environmental factors such as tobacco smoke, harmful chemicals or ultraviolet radiation, and causes cells to grow out of control.

Scientists from Britain's Wellcome Trust Sanger Institute and their collaborators have mapped this genetic damage from the tumors of two patients suffering from lung cancer and malignant melanoma, a deadly skin cancer.

"This is a fundamental moment in cancer research. From here on in we will think about cancers in a very different way," said Professor Mike Stratton who led the institute's cancer genome project.

"Today for the first time, in two individual cancers, a melanoma and a lung cancer, we have provided the complete list of abnormalities in DNA in each of those two cancers," he told the BBC.

"We now see uncovered all the forces that have generated that cancer and we now see all the genes that are responsible for driving those two cancers."

The scientists' research, published in the

journal *Nature*, also gained deeper insights into the way the body tries to repair the damage caused by the cancers and stop the disease spreading.

Stratton said the research could in future change the way cancers are treated -- by using genetic maps to find the defects that

caused them.

"Now that we have these comprehensive complete catalogues of mutations on individual cancers, we will be able to see how each cancer developed, what were the exposures, what were the environmental factors and that's going to be key for our understanding gener-

ally of how cancers develop," he said.

"And for our individual patients, we will see all the genes that are abnormal and are driving each cancer and that's really critical, because that will tell us which drugs are likely to have an effect on that particular cancer and which are not."

Peter Campbell, a cancer-genomics expert involved in the research, said the number of mutations discovered -- 33,345 for melanoma -- and 22,910 for lung cancer -- was remarkable.

"It is amazing what you can see in these genomes," he said on the website of the journal *Nature*.

The research shows most mutations could be traced to the effects of chemicals in tobacco smoke (in the lung tumor) or ultraviolet light (in the melanoma tumor), supporting the idea that they are largely preventable.

"Every pack of cigarettes is like a game of Russian roulette," he said.

"Most of those mutations will land where nothing happens in the genome and won't do major damage, but every once in a while they'll hit a cancer gene."

## HEALTH TIP

### Blueberries are good for you

Blueberries are more than a tasty, decorative addition to a fruit plate.

One serving of blueberries contains a cup full of goodness, says Moses Taylor Hospital in Pennsylvania.

Here's why they are good for you:

One cup of blueberries has 15 percent of your daily vitamin C requirement.

One cup contains 14 percent of required daily dietary fiber.

Blueberries have no cholesterol or fat.

They are low in calories.

(Source: *HealthDay News*)



### Low hormone levels in

### pregnancy linked to hard birth

Expectant mums who are low in a hormone made by the thyroid gland in the neck are more likely to struggle in labor, findings suggest.

Too little of the hormone thyroxine is already known to complicate pregnancy, increasing the risk of miscarriage, premature birth and pre-eclampsia.

Now a Dutch team has found even "low to normal" levels of thyroxine may cause problems, Clinical Endocrinology says.

Babies were more often positioned wrongly, making labor more difficult.

Although still head down, the babies tended to face the wrong way - towards their mother's back rather than stomach.

Not only are these labors generally longer and harder, they are also more likely to end in an assisted delivery with forceps or a Caesarean.

The researchers from the University of Tilburg believe the hormone problem is so common - affecting about one in 10 pregnancies - a blood test for it should become a routine part of the antenatal check.

In their study of nearly 1,000 apparently healthy mums-to-be, lower levels of thyroxine at 36 weeks of pregnancy was strongly linked to abnormal positioning of the baby's head and risk of assisted delivery.

Professor Victor Pop and his team believe the relative lack of hormone might stop the unborn child moving as well as it should.

This means that instead of getting into the optimal position for labor, the baby is stuck in a more awkward one.

Professor Pop said: "Recent findings have shown that motor development in children at the age of two is related to low levels of thyroid hormone in pregnancy."

"It follows that impaired maternal thyroid function could also influence fetal movement."

The baby is unable to make its own thyroid hormones until 20 weeks into the pregnancy. Before this, it is entirely reliant on its mother's stores, he said.

Professor Pop said more work was needed to explain the link found and to see if giving pregnant women extra thyroxine, even if they do not have full-blown thyroid disease, would be beneficial.

Professor John Lazarus, an expert in endocrinology at Cardiff University School of Medicine, said the link found was not necessarily causal.

"However it does highlight the importance of checking thyroid hormone levels in pregnancy."

(Source: *BBC*)

## Greater education may mean lower heart attack risk



**NEW YORK (Reuters)** — More education may mean a lower heart attack risk later in life, with benefits seen in low-income countries as well as wealthy nations, a new study finds.

A number of studies in Western countries have found a link between higher socioeconomic status and lower heart disease risk. However, studies measure socioeconomic status in various ways -- by people's education or current job or current family income, for instance -- and it is not clear whether all of those factors are equally important.

In addition, little is known about how socioeconomic factors affect heart disease risk in developing countries.

For the new study, reported in the journal *Heart*, researchers analyzed data on more than 12,000 heart attack sufferers and 14,000-plus healthy adults the same age from 52 countries.

They found that across the nations, education -- but not family income, material possessions or persons' occupations -- was strongly connected to heart attack risk. That connection was stronger in the wealthiest countries, but also apparent in middle- and low-income countries.

"The stronger association with education is probably due to better knowledge about what causes heart disease and how to avoid these causes," lead researcher Dr. Annika Rosengren, of Sahlgrenska University Hospital in Goteborg, Sweden, told Reuters Health in an email.

In support of that idea, the study found that higher rates of abdominal obesity and poorer lifestyle habits -- including less exercise, more smoking and lower intake of fruits and vegetables -- explained about half of the risk connected to low education levels.

Knowledge of these risk factors, Rosengren said, "is a first step toward making healthy choices."

Still, the study found that even with lifestyle, income, age and other factors considered, people with low education levels (defined as eight years of school or less) were 31 percent more likely to suffer a heart attack than those with some education beyond high school.

Across wealthy countries, low education was linked to a 61 percent higher risk of heart attack, while the corresponding figure across low- and middle-income countries was 25 percent.

The findings, according to the researchers, suggest that with economic development and increasing incomes across a nation, the heart-health gap between the well-educated and the less-educated widens.

More research is needed to fully understand the reasons for the education-related disparity. But for now, the findings suggest that expanding education in developing countries could help counter their rising rates of heart disease, according to Rosengren's team.

"These findings," they write, "suggest that improving education levels has the potential to partially prevent the rising epidemic of (heart disease) in developing countries, as it could lead to healthier lifestyles."

## Minute organs in the ear can alter brain blood flow

Minute organs hidden deep within the ear appear to directly alter blood flow to the brain, scientists have revealed.

Until now, experts thought the inner ear's job was to control balance alone.

But Harvard medics working with NASA found that as well as helping us keep our head, the balance organs affect brain blood flow.

They told *BMC Neuroscience* journal that the connection probably evolved to enable man to stand upright and still get enough blood up to the brain.

The organs of balance are deep within the ear, inside a maze of bony chambers.

Two sacs, called the utricle and saccule, make up the inner ear's vestibule and three fluid-filled loops, known as the semi-circular canals, detect the rotation and tilting movements of the head.

Dr. Jorge Serrador and his team from Harvard Medical School asked 24 healthy people to undergo a range of tests normally used on astronauts.

These included a tilt test where the individual sits strapped to a chair that is then tilted to different angles, plus a ride inside a giant, spinning centrifuge.

In this way, the researchers were able to stimulate the different parts of the balance organs and monitor the effects on blood flow around the body.

This revealed that the utricle and saccule, also known as the



otoliths, directly affected brain blood flow regulation, independent of other factors, such as blood pressure.

Dr. Serrador explained why the connection may exist: "Standing up places the head above the heart and thus makes it harder to provide blood flow to the brain."

"Having a connection between the otoliths, which tell us that we are standing, and the cerebrovas-

culature may be part of the adaption that allows us to maintain our brain blood flow when upright.

"The knowledge gained from this study might lead to new treatment options for these conditions."

For example, some people who suffer from faints and dizzy spells when they stand up quickly, known as postural hypotension, could have poor brain blood flow linked to underlying inner ear problems, he said.

Ear, nose and throat expert Andrew McCombe, of ENT UK, said the balance organs may be one of the many reflexes that ensures our blood is sent to where it is needed.

"It makes sense that any organ that tells you that you are standing upright and not lying down will do this."

"And we know that as we age the whole inner ear does not work so well, so this may be involved in postural hypotension."

But he said it was only a small part of the equation, alongside the heart and blood vessels.

(Source: *BBC*)

## Skin needs protection from winter weather

When the air outside is chilly and low on humidity, and the air inside is heated and dry, you have a recipe for chapped skin and cracked lips, dermatologists say.

To prevent scaling, flaking and itching, pay special attention to your skin during the cold months by applying a cream-based moisturizer every day, recommends Dr. Anjali Dahiya, a dermatologist at the Iris Cantor Women's Health Center at New York-Presbyterian Hospital/Weill Cornell Medical Center.

A good time to use moisturizer is just after showering to help trap moisture on the skin's surface. Those with sensitive skin should choose a moisturizer without fragrance or lanolin.

And although frequent hand washing is often urged to prevent the spread of germs, all of that soap and water can also make hands chapped. Using a mild soap and moisturizing afterwards can help relieve the dryness, the experts say.

When it comes to bathing, stay away from very hot water. Short, lukewarm showers or baths with a non-irritating, non-detergent-based cleanser are easier on the skin. Immediately afterward, apply a mineral oil or petroleum jelly-type moisturizer and gently pat skin dry.

Rinsing your body daily but using less soap can also help



protect the skin's natural moisturizers, said Dr. Monica Halem, a dermatologist and dermatologic surgeon at New York-Presbyterian Hospital/Columbia University Medical Center.

To deal with dry air from heaters, add some moisture back into the air by using a humidifier, and don't forget to clean it often to prevent mold and fungus.

When heading outside, cover your face and use a petrolatum-based balm with an SPF for your lips. It's also advised to use sunscreen, which is just as important in the winter as in the summer if you're going to be spending time in the snow, the dermatologist added.

While it may be tempting to try to get rid of that pasty look by visiting a tanning bed, resist. Tanning beds damage the skin, leading to premature aging, and increase the risk of skin cancer. Instead, choose self-tanners with extra moisturizers, since some self-tanners can also dry out the skin.

Scaling, itching or cracked skin that is not relieved by moisturizers should be checked by a dermatologist, who may suggest a prescription medication.

(Source: *HealthDay News*)

## Lung cancer: New drug shows promise in lab mice

**PARIS (AFP)** — A new category of drug brakes the growth of treatment-resistant lung cancer among lab mice, according to a study published on Thursday in the science journal *Nature*.

The new type could add powerfully to a small family of drugs called epidermal growth factor receptor (EGFR) inhibitors, said its finders.

It tackles mutations in a specific form of lung tumor that often becomes hardened to frontline treatment, according to the study.

The molecule, identified by Pasi Janne and colleagues at the Dana Farber Cancer Institute in Boston, stymied the growth of lung cancer among batches of genetically modified mice.

Their work focuses on so-called non-small-cell lung tumors, which account for 70 to 80 percent of bronchial cancers.

These tumors carry mutations that cause a particular protein, the EGFR, to be permanently activated.

The frontline drugs for tackling non-

small-cell tumors are Iressa and Tarceva. They are designed to block the "switch," but secondary mutations often emerge that lead to drug resistance.

Much work remains to determine if the new compound can be a therapy for humans, says the study.

"Obviously these are very early days with respect to the possible use of these compounds in patients -- we still have much to learn about their possible liabilities," said co-author Michael Eck in a press release.