

# RMRC, Bhubaneswar

(Laxmi Narayan Memorial Library)

## Weekly Current Awareness Service

VOL 3#17

23<sup>rd</sup> April

2018

*“What we have to learn to do, we learn by doing”*

— Aristotle

### About Monday Morning

Monday morning is a weekly E- CAS (Electronic Current Awareness Service) of RMRC Library, Bhubaneswar which carries one Biomedical & health science news item and some useful current medical research links so that the scientists can access the articles. This E- Bulletin starts its journey from 21<sup>st</sup> Nov. 2016. In this maiden attempt we cordially invite your inputs and suggestions to improve in future.

Dr. Banamber Sahoo, Lib & Inf. Officer  
Poonam Singh Deo & Hemanti Mahali (Lib. Trainee)

## Artificial moles as cancer warning system



### MEDICAL MARVEL

GENEVA: Scientists have developed a synthetic gene network that serves as an early warning system against cancer, producing visible moles on the skin as soon as the system detects the development of a tumour in the body. Cancer has become the one of the top causes of death in industrialised countries.

Many of those affected are diagnosed only after the tumour has developed extensively. This often reduces the chance of recovery significantly.

The ability to detect such tumours reliably and early would not only save lives, but also reduce the need for expensive, stressful treatment. The gene network, developed by researchers from ETH Zurich in Switzerland, recognises the four most common types of

cancer — prostate, lung, colon and breast cancer — at a very early stage, when the level of calcium in the blood is elevated due to the developing tumour.

The early warning system comprises a genetic network that researchers integrate into human body cells, which in turn are inserted into an implant. This encapsulated gene network is then implanted under the skin where it constantly monitors the blood calcium level. As soon as the calcium level exceeds a particular threshold value over a longer period of time, a signal cascade is triggered that initiates production of the body's tanning pigment melanin in the genetically modified cells. The skin then forms a brown mole that is visible to the naked eye. The mole appears long before the cancer becomes detectable through conventional diagnosis.

“An implant carrier should then see a doctor for further evaluation after the mole appears,” said Martin Fussenegger, professor at ETH Zurich. The mole does not mean that the person is likely to die soon, he said.

The researchers used calcium as the indicator of the development of the four types of cancer, as it is regulated strongly in the body. Bones serve as a buffer that can balance out concentration differences. Early detection increases the chance of survival significantly. For example, if breast cancer is detected early, the chance of recovery is 98 per cent.

## 1. RNA Injection Restores Hearing in Guinea Pigs

Loud sounds, infections, toxins, and aging can all cause hearing loss by damaging so-called hair cells in the cochlea of the inner ear. In a study published today (April 18) in Molecular Therapy, researchers stimulated hair cell renewal with small interfering RNAs (siRNAs) delivered via nanoparticles to the cochlea of adult guinea pigs, restoring some of the animals' hearing. For more details click on the below link

<https://www.the-scientist.com/?articles.view/articleNo/52319/title/RNA-Injection-Restores-Hearing-in-Guinea-Pigs/>

## 2. Rising CO2 levels might not be as good for plants as we thought

Long-term experiment finds a surprising flip in the rules for plant photosynthesis. Two major groups of plants have shown a surprising reversal of fortunes in the face of rising levels of carbon dioxide in the atmosphere. During a 20-year field experiment in Minnesota, a widespread group of plants that initially grew faster when fed more CO<sub>2</sub> stopped doing so after 12 years, researchers report in the April 20 Science. Meanwhile, the extra CO<sub>2</sub> began to stimulate the growth of a less common group of plants that includes many grasses. For more details click on the below link

<https://www.sciencenews.org/article/rising-co2-levels-might-not-be-good-plants-we-thought?tgt=nr>

## 3. 'Warm transplants' save livers and lives

A machine that maintains livers for transplant at body temperature, instead of in a cold solution on ice, helps to improve tissue quality and reduce the discard rate of organs that are suitable for transplantation. In the first randomized clinical trial of its kind, researchers tested the technique head-to-head against cold storage, with the results published in Nature on 18 April. The method could prolong survival for organ recipients and reduce the death toll among the tens of thousands of patients globally who need donor livers today. For more details click on the below link

<https://www.nature.com/articles/d41586-018-04816-8>

## 4. New 'brain health index' can predict how well patients will do after stroke

A new computer programme developed by scientists at the Universities of Edinburgh and Glasgow can assess whole brain deterioration and help predict cognitive function after stroke up to ten times more accurately than current methods. The new approach, published today in the International Journal of Stroke, can quantify visible brain injury from cerebral small vessel disease (SVD) and brain atrophy by translating the million plus bits of information stored in brain scans into a single measure, the "brain health index". For more details click on the below link

[https://www.eurekalert.org/pub\\_releases/2018-04/s-nh041618.php](https://www.eurekalert.org/pub_releases/2018-04/s-nh041618.php)



## E- CAS (Current Awareness Service)

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